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TIME, INTENTIONALITY AND
ARTIFICIAL INTELLIGENCE

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TIME, INTENTIONALITY AND ARTIFICIAL
INTELLIGENCE

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REPORT

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF ARTS IN INTERDISCIPLINARY STUDIES

THE UNIVERSITY OF TEXAS AT EL PASO

December, 1983

TABLE OF CONTENTS

PREFACE-----	4	-	9
TEXT-----	10	-	36
NOTES-----	37	-	44
BIBLIOGRAPHY-----	45	-	46

PREFACE

This paper has been prepared to serve as the final report for the M.A.I.S. degree. The topic of the paper revolves around a philosophic discussion of certain theories held by cognitive science researchers in the field of artificial intelligence. The subject of artificial intelligence was selected because it represents a true interdisciplinary study encompassing the disciplines of philosophy, psychology, linguistics, rhetoric, computer science and of course, every other subject to some degree, since what better way is there to study about how disparate knowledge is acquired than study itself.

In particular, studies in Linguistics and Psycholinguistics have revealed the notion that developing a theory of the world which serves as a referent for all incoming information is based on much more than just verbal input. For example, work done by D.I. Slobin in Psycholinguistics suggests that not all mental representations depend on images or verbal inputs. Studies by cognitive psychologists such as Piaget and Vygotsky have shown that cognitive development can take place independent of language. And of course linguistic studies have shown that meaning is brought to language by much more than words arranged according to accepted rules.

Studies in Education have provided the ability to perform goal analysis. Educational goals start out as general, abstract agreements about what is good for a society. Those who are charged with curriculum development must develop a hierarchy from these overall goals and translate lower level goals into objectives. Finally, these objectives must be translated into desired individual actions or states of being. There are, at some levels, certain parallels between the analysis required in developing educational objectives at the lowest level and that required in considering an artificial intelligence system as being goal-directed.

Studies in philosophy have provided the basis for constructing propositions concerning the nature of being. For example, the Aristotelian notion of a soul (being) divided into two parts, namely the rational and the irrational, and the notion that the origin of all action is choice (efficient cause) and that of choice is desire and reasoning with a view towards an end, led me to more closely examine the notion of goal-directedness in machines as proposed by the artificial intelligence community.

The Whiteheadian theory of becoming was essential to development of certain claims made in this paper. These claims do not rely on the theory, per se, but on logical extensions of the theory. In fact, strict interpretation of Whitehead's theory would lead to an ambiguous application

of the claims made in this paper. Whitehead's epochal theory is based on the notion of process and that becoming is not extensive. The act of becoming, for Whitehead, is indivisible (even though it is constructed of actual occasions) because it is not extensive. The process of transition whereby each actual occasion develops into its successor is discontinuous because its component concrescences are indivisible. My claim in this paper is that each occasion of becoming is extensive in that they are realized in occasions of experience; further, I am not concerned with epochal theory as such.

Studies in English and literature have provided the basis for a critical approach to language; for determining the affective tone which results from extended literary discourse and relationships of paradigmatic structures to that tone. This knowledge was used in both the general sense and in specific claims made in this paper.

Finally, I would like to provide an introduction to the topic of this paper. The study of artificial intelligence is at once fascinating and illusory. The fascination lies in the study of the ingenious innovations developed by field workers in creating programs which serve the community of mankind. The application of such programs to psychological and linguistic research and medical science seems to be without limit. Progress in the field has been tremendous. Yet this progress seems to be accompanied (and curtailed) by

a degeneration into anthropomorphism. It is in this sense illusory. Because of the success of certain programs, the artificial intelligence community, by and large, adheres to the position that only inputs and outputs are significant (i.e., programs) and that programs which respond in the same linguistic fashion as a human can be considered to be capable of thought with all the attending ramifications of that assumption. It is reasoned that since mental states cannot be directly observed in a human and therefore must be inferred from the output of the subject, the same holds true for a machine. But while we cannot observe a mental state directly in a human, this is certainly not true for machine states: we can know completely how each symbol is produced by a machine, what processes and interrelationships are involved amongst the components, systems and subsystems. Furthermore, each program is developed with intrinsic recognition of the machine it is developed for, through the rules of the intervening computer language. These languages must be developed with machine capabilities and limitations in mind. Thus although the programs developed are seemingly independent of any particular machine, (i.e., the notion that any machine is only an instantiation of a program), they are in reality dependent on generic machine configurations.

Illusion pervades the community. It is propagated and reinforced by applying a totally anthropomorphic vocabulary to program elements and believing that these elements cause the

machine to respond accordingly. This illusion seems to be partly the cause for lack of any real advances in cognitive science. If we believe only inputs and outputs, we would be equally forced to accept the magician's trick as a credible but unknowable science.

But even explanations of outputs via programs and machine processes (of which, I contend, both are necessary) may not be complete. There is a fascinating element of the unknown which seems to intervene. Even if one successfully sheds the linguistically produced illusions referred to above, on occasion one finds oneself unable to completely reject the notion that something is going on which transcends all of these mechanical explanations. In this respect, one cannot make any firm propositional claims without further investigations. And these investigations should proceed on the basis of rationalism: the recognition that reason is based on experience.

There is also the question of whether or not philosophy is competent to solve this problem, even whether, in spite of postulations and positions, there exists a problem at all. The original question posed by A.M. Turing in his famous paper on artificial intelligence "can machines think?" may be, in his own words, "too meaningless to deserve discussion". Nevertheless, that is exactly what I shall now proceed to do.

I would like to take this opportunity to dedicate this

paper to those professors at the University of Texas at El Paso under whom I have had the privilege to study or from whom I have sought counsel and advice and who have been so instrumental in its creation.

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