特集 ファジィ思考によるヒューマンフレンドリシステムへの挑戦

— LIFE 6 年間の活動を終えて —

LIFE アドバイザーの感想

The Role of LIFE in Intelligent Systems Research

Lotfi A. Zadeh*

My association with LIFE as an adviser, gave me an opportunity to observe at close distance its conception, birth and evolution.

In my assessment, during its six-year existence, LIFE has made a major contribution, both nationally and internationally, to the advancement of fuzzy logic and its applications. To the founders of LIFE, to the officials of MITI, to the corporate leaders, to the administrative staff and the researchers at LIFE, I should like to offer my warm congratulations on the many important successes which have been achieved. I should also like to express hope that there will be a Post-LIFE, perhaps in a somewhat different incarnation, which will continue to serve as a worldwide center of both basic and applied research in fuzzy logic and soft computing.

Instead of commenting on specific projects which were pursued at LIFE, I should like to articulate my perception of what may be viewed as the crux of LIFE's contributions.

To me, what stands out most is the pivotal role which LIFE has played in ushering the era of intelligent systems. Today, intelligent systems and, more particularly, systems with high MIQ (Machine Intelligence Quotient), are growing rapidly in number, capability and visibility.

In large measure, the underlying factor is the

advent of soft computing, that is, a partnership of fuzzy logic, neurocomputing and probabilistic reasoning, with the latter subsuming genetic algorithms, belief networks and chaotic systems. Within soft computing, fuzzy logic plays a major role. In this role, the main contribution of fuzzy logic — in my view — is a methodology for computing with words (CW). Seen in this light, much of the research activity at LIFE was aimed — both explicitly and implicitly — at the development of effective ways in which computing with words may be carried out and applied to the conception and design of intelligent systems.

What is important to note is that fuzzy logic is the only methodology which provides the basic infrastructure for computing with words. As a foundation for computing with words, fuzzy logic is having a wide-ranging impact on both basic and applied sciences. Indeed, it is very likely that, in the future, training in CW will be an essential part of the education of scientists and engineers.

A case in point is the brilliant achievement of Professor Sugeno in the conception, design and construction of an unmanned helicopter which can execute spoken commands. In this instance, the marriage of linguistics and control is a harbinger of the things to come. Increasing-

ly, linguistics and CW will be playing a pivotal role in the functioning of intelligent systems. In my perception, this is the perspective in which the major contributions made by LIFE should be viewed.

It has been recognized for some time that, in our industrialized world, the state of high technology has direct bearing on the ability of a country to compete in the international marketplace. But what is becoming clearer now is that the capability of a country to produce high MIQ systems is an essential ingredient of its industrial strength. Thus, by making a major contribution to the development of fuzzy logic and, more particularly, to CW, LIFE has played a highly important role in the enhancement of the industrial strength of Japan.

* Computer Science Division, Department of EECS, University of California

There is much that LIFE has accomplished that deserves high praise. To me, what is especially worthy of commendation is that LIFE has welcomed international participation in its activities and has shared freely the results of LIFE's research. Thus, the existence of LIFE has benefited not just Japan but the entire industrialized world.

The centrality of the role played by LIFE in the advancement of intelligent systems technology suggests a need for a reaffirmation and strengthening of this motive in the organization of Post-LIFE. In this perspective, the primary mission of Post-LIFE would be the advancement of our understanding of how intelligent systems with high MIQ can be conceived, designed and produced. This is where the action will be in coming years.

LIFE 設立のあれこれ[†]

菅野 道夫*

筆者は LIFE の設立準備に 1988 年 5 月より 1989 年 2 月頃まで携わった。最初、基盤技術促進センターの基金を導入して、半官半民の会社を設立する予定であった。このため通産省電子政策課の主導で 1988 年 8 月末に、100 頁もの設立計画書を作成した。とりまとめたのは電子政策課技術班長の西川泰蔵氏である。中野課長と共に西川氏はファジィの強力な支援者であった。

ところが 10 月の基盤センターの評価委員会で我々の提案は認められなかった。このため、急きょ技術研究組合方式で行くことになり、設立計画書を作り直し、1989 年 1 月に案が認められた。結

果的に、基盤センター案(25 億/6 年)と比べ LIFE の規模は 2 倍(50 億/6 年)になった。

評価委員会での主な否定的意見は、著名な AI の研究者によるもので(筆者はこの委員会には出ていない)、(1)「ファジィはアメリカでは評価されていない」、(2)「ファジィは手先の技術である」、(3)「ファジィ制御の応用は小さなシステムについてのものばかりである」というものであった。(1)については、「日本の AI の研究はすべてアメリカの受け売りで、日本のオリジナルは何もない」という AI への巷の陰口を思い出すと面白い。(2)については、ファジィの研究者なら、「ファジ