

# The difficulties of Swiss Computer Science studies

## An example of the need for a new strategy

SARIT<sup>1</sup> is the Swiss association for research into information technologies. It was founded in 1989. Its purpose was to “*improve the quality of Swiss computer science research and provide Swiss computer scientists with access to top international research activities within the European Union (EU) and the United States*”. Activities in its first decade centered on exchange programs for postdocs and faculty members to ICSI (International Computer Science Institute) in Berkeley and to ERCIM (European Research Consortium for Informatics and Mathematics) sites. A small number of people managed exchanges in collaboration with a few companies. The work was supported by federal and related funds. However, this funding system could not be continued.

In 1998, SARIT was restructured, becoming a national scientific association with the goal of “*improving national and international relations within the IT research community and to making IT research better visible and recognized within Switzerland*”. All professors of IT related subjects in Swiss universities and Federal Institutes of Technology became individual members of SARIT together with industry-based IT research units.

### Decline... ?

Despite its goal of “*making IT research better visible and recognized within Switzerland*”, discussions at the annual SARIT conference in early 2006 pointed to the growing difficulties of Computer Science to hold its own as an area of study. The major issue on the agenda of the conference was the decline of Computer Science as a field of academic study in Switzerland. A number of indicators pointed to this decline including the decrease in student enrolments in computer science and a relative lack of political influence... Several hypotheses were put forward to explain this situation. One was that it was a question of image. The public don't know exactly what Computer Science is. The field changes so often. Some felt that the image of Computer Science had somehow lost its appeal. The field was no longer attractive to students, especially women. Young people prefer to do either mathematics or engineering. Another hypothesis discussed was that the origin of the problem lies in the confusion as to whether Computer Science is about science or about technology.

### Finding strategies

As we can see, SARIT is confronted with a similar problem to that of other organisations working in the field of ICT: the increasing integration of computer-based technology in society is creating an urgent need for a radical change in strategy.

To improve the situation, a number of strategies were put forward by members of SARIT. One person proposed to press the authorities to introduce Computer Science as a specialised subject in secondary schools. Participants recognised, however that there were a number of barriers to this idea, not the least being the lack of political weight of computer science in Switzerland. It would also go against the current trend to integrate ICT use across subject areas in schools rather than keep it as a separate subject. A second solution was seen to lie in an awareness campaign, public relations and lobbying. It was not mentioned at SARIT-06, but a difficulty with this strategy is that it involves activities that are not perceived as being part of those currently undertaken in Computer Science. Where would the funding come from?

### ... or mutation?

Despite a certain ambient pessimism, a number of key speakers pleaded strongly for optimism. They stressed the importance of Computer Science as being “*integral to all sciences*”. And went on to say that “*Computer Science will transform society in a profound way.*” These comments – true as they no doubt are – also point to an alternative way of seeing this situation that could explain why the strategies put forward might not work. Let's turn things round. Maybe it is because Computer Science is “*an integral part of all sciences*” and many other fields that it is undergoing a profound mutation. For those who are attached to Computer Science as it has been till now, this mutation might seem like a loss of substance. Paraphrasing the second quote above, we might say that is not so much Computer

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<sup>1</sup> <http://www.sarit.ch/>

Science that is changing society but rather society that is changing Computer Science (if it lets itself be changed). As the use of ICTs is progressively integrated into an increasing number of human activities, it becomes more and more difficult to deal with it as a separate field of study. Although there is clearly a distinct body of knowledge about computers and computing, that knowledge only makes sense for society at large in relationship to other fields of activity. It is this combination of a specific set of core knowledge about computing and the need for a transdisciplinary approach due to the integration of ICT in many human activities that is the major challenge facing Computer Science.

### **Water logic?**

A related challenge concerns the perceived identity of the field. For a scientific field to be able to prosper and develop, in current academic logic, it needs to be clearly defined and easily graspable. If we use a geographical metaphor we might say that a territory is more easily defended if it has clear boundaries. The nature of "Computer Science" as postulated here, flows in and out of so many areas of activities that it is difficult to set limits. Using a different metaphor, you might say that it is more of a "fluid" than a "solid". It cannot contain itself. If this hypothesis is true, then strategies that seek to contain this area of study within the traditional boundaries of a discipline will miss its essential transdisciplinary nature. At the same time, it is doubtful, given current academic structures and culture that such a radical fluid field of study could survive.

### **Possible paths to follow**

On the basis of these considerations, the following action lines seem to be necessary parts of a strategy for Computer Science in Switzerland:

- Develop the role of computer science as a largely transdisciplinary field by working closely with other academic disciplines.
- Reinforce the public image of computer science as a key activity in relation to many other human activities and also as a radically innovative and interdisciplinary approach to academic studies.
- Prepare the way for such an interdisciplinary approach by increasing understanding amongst young people of the set of core knowledge that is specific to Computer Science.

*Alan Victor McCluskey, St-Blaise 2006-03-13*