

of the 'faulty' part/s. Of course this simplistic, piecemeal tinkering is very 'functional' to the present social system. It means the wheels of business as usual grind on merrily, national indices of GNP gently swell with interim input from the medical sector, and the boys keep their jobs.

Anyway, bearing all this in mind, I wonder if you and your readers might like to have a look at my essay below and advise me how this particular technology could be made to meet your criteria for social responsibility. Polyvalent solutions only please.

Keep up the rumble and the rage! Your first issue was a ripper!

Ariel

(Ed. I commend your essay to all our readers and agree that technologists understand their technical problems far better than they understand the human community they serve (or fit into) or their own position in society or in history... Certainly lacking autonomy and conviviality! As for SR Approval: the idea was initially thought to be directed toward groups or companies of people, and not to be bestowed onto a 'technology' as such. The old argument as to how and by whom the tool is used... together with the ethical principle that individuals, not objects, can act conscientiously. Just the same we need a lot more discussion on these issues. Your article is a valuable contribution toward a vocabulary and a base for such a discussion.)

## 'FANTASY, DENIAL OR EDUCATION FOR SOCIAL RESPONSIBILITY IN COMPUTING'

by ARIEL SALLEN,  
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(article reprinted with the kind permission of the author from the Proceedings of the First Symposium on Computing and Social Responsibility, Macquarie University (Sydney) 27th September 1986, edited by Graham Wrightson)

From my perspective as academic sociologist and activist, there are three desirable outcomes to any educational process, aside of course, from the obvious ones of literacy and clear thinking. The first I would call autonomy; the second is conviviality; and sustainability is the third end-goal. Now, interest in education for social responsibility is very topical at the moment, as the New Right harangue us over what they see as 'wishy washy relevance courses' cropping up everywhere in university and high school curricula. So, I am happy to introduce these three ideas - autonomy, conviviality, sustainability - in response to that complacent and backward looking social attitude. But, what I am going to say, equally conflicts with many assumptions held by our supposedly forward-thinking labour technocracy.

In looking at any educational process then, I would ask first: Does the training produce individual autonomy? Does it produce individuals who can stand outside their social

conditioning? People who can look at themselves as part of an ongoing historical process? Reflect on it. Evaluate it. And then formulate their own life goals as a result of this process. Finally, are they able to act on these goals? Autonomy is not to be confused with that popular catchword 'initiative' either, its something quite different. You can exercise initiative without self-awareness or critical sense. Secondly, I would ask: does this training enhance conviviality? Is it producing individuals who are socially competent, politically aware, and whose work skills enable their interaction with others? Not of course to be confused with what passes for 'flexibility.' Autonomy, by the way is a prerequisite to conviviality, not its opposite. Unless people are reasonably self-reliant, they're not in any position to cooperate with others. Thirdly, I would ask: is this training compatible with the idea of sustainability? Does it lead to work which meets human needs with a minimum of social and environmental exploitation?

A good many of us, at the moment, are trying to devise academic experiences which focus on encouraging a sense of social responsibility in those we teach. This should mean a lot more than just tacking a complementary liberal studies component on to the vocational stream. It should involve a full rethink of the social and environmental impact of each particular profession in our time now. Unfortunately, this is especially difficult in the present climate. Education is increasingly pragmatic and so hyperspecialised, that it's impossible for people to contemplate how everything connects with everything else. Again, we're living in a time of such rapid and random social change, as to produce the decomposition of any ethical consensus to give direction. When it comes to making social decisions, this society hasn't got firm standards to hold on to anymore.

In the midst of this, the New Right is reinforcing a narrow dollar oriented vocationalism in the universities, and in a sense, coping with our current social crises by a process of blind denial. The labour technocrats, on the other hand, are be-dazzled by their own mystifying rhetoric - 'information revolution', 'modernization', and so on. They're coping with crisis by fantasy. And they're busy embellishing this fantasy with policy formulations based on hazy, and somewhat sexual cliches, like 'vigour' and 'maximisation' Even this morning, we were told that 'the significance' of our communications technology is that it's 'the fastest-growing investment industry' in Australia. This might be to state a correlation, but it is not to comment on meaning or social context.

Despite the collapse of the Keynesian economic paradigm, statements about public questions continue to be dressed up in the growth ethic. National governments lurch from accumulation crisis to legitimization crisis, and back again, such that effective political decision making is all but charade. On closer examination however, the pervasive rhetoric of growth reveals itself to be really a language of domination. Contemporary Western society is obsessed with technical mastery and control. Progress is measured by the extent to which humans have learned how to manipulate their natural, physical or social environments, regardless of what consequences follow. In university education, the well funded areas at the moment, are precisely the instrumental professions - computing, psychology, engineering, management, policy studies. Yet, planning and decision-making 'for other people', takes their autonomy away and it's the absolute antithesis of convivial democratic living. Computers are the expensive mediators of this obsessive 'technosis'.

As I see it, education for social responsibility involves two phases. The critical phase looks at this climate we're living in, exposing students to the social and political forces that

condition their experience and perceptions. The empowering phase brings students to see how their own choices and actions feed back into this ongoing history, and how they can affect the way it unfolds.

Critical experiences can be threatening to some people though, and this is where I think Joanna Macy's work on 'despair and empowerment' is useful. Macy points out that in order to arrive at a new plateau of awareness, we actually need to encounter despair. Further, we must assimilate and synthesise this pain and anger with our intellectual understanding in order to be able to act. Meanwhile, the empowering facet of education provides students with positive models of autonomous people, examples of convivial technologies, and sustainable ways of meeting daily needs.

I haven't got time to go into examples of this kind of education that are already happening around us, but I would refer you to the Context Curriculum that was set up at RMIT when Dennis Kenny was there. This was organised around the principle of individual identity: Who am I, Where do I stand, What can I do? I also think of the work that Ted Trainer is doing at the University of New South Wales in General Studies; of Frank Fisher's course in Environmental Science at Monash and the Human Sciences program taught by Ian Hughes at A.N.U. Some courses of my own at Wollongong and the University

of New South Wales would qualify here, too. Instead, I would like to push a little deeper with these ideas, applying my three educational end-goals, directly to an assessment of 'computing' as a profession and technology. How does the computer, as a human adjunct, fare on these three indices - autonomy, conviviality, sustainability?

We've heard from earlier speakers that the automated workplace is resulting in gross structural unemployment. We have EEC figures which indicate that 30-50% of the working population will be unemployed by the year 2000. What does this mean for the principle of autonomy, when more and more displaced people every year become dependent on government handouts in order to survive?

In the workforce itself, process workers have their decision-making faculty usurped by the



from The Age, Friday 29th Jan.

machine. Architects are deskilled by automated design programs. At the same time, a devolution of the workplace by domestic terminals in the home isolates and atomizes the workforce, weakens their negotiating power, and robs them of conviviality. A new generation of highly-educated piece-workers is emerging. Moreover, the majority of these are women, who now find themselves in a situation of double exploitation, processing data, changing nappies and making jam, all at once. These modern technologies do nothing to overturn traditional patriarchal patterns of domination. In fact, women computer workers are already concentrated in the low status processing jobs, as opposed to creative areas like systems analysis, for instance. This is not a convivial technology. It is constructed by men, for men - toys for the boys.

It's not only patriarchal politics that's relevant here. The powerful multinational economic interests which promote 'information technologies' sustain their enterprises through the brutal repression of a Third World workforce. This is not a convivial economy. What is more, technology transfer is locking hitherto autonomous cultures into a slavish dependency on the affluent West as Third World people are persuaded to imitate our expensive fetishes. Australia itself, seems to be conned in this respect, and it is not only an economic lock-in, our personal autonomy is threatened by the increased potential for surveillance that goes with such devices. I understand, for example, that software imported into Australia carries a condition of purchase, which allows United States' customs officers to enter a premises at any time in order to ascertain how such material is being used...I won't go further into the vexed question of surveillance, since we've heard a lot about it today, but let me just say that whether it occurs via the banking system or government link-ups, state control of this technology is not an answer to preserving our privacy and autonomy.

Then you've noticed how everyday activities like shopping and banking have begun to lose their human face as the new 'communications technology' sets up new barriers - glass screens, and more often a veritable brick wall - between clerk and client. A less tangible social boundary which is deadly to conviviality is also becoming ingrained in our thinking - the division between the computer-literate technocrats, presumed to be 'productive', versus the humanists on the other side of the cost-benefit analysis. Finally, there are the hackers, those gentle, reticent souls, who have given up on human interaction altogether. Seduction by the machine is less anxiety-making...

Addressing the principle of sustainability, at least some of us agree that Western economics is organised around the production of 'waste' as much as 'profit'. Our over-consumption of resources is such that we now use one glass of diesel to produce one glass of milk. 'Computers save trees' people say, but I wonder when I see the amount of paper churned out. Again, it is claimed, 'Computers are clean', a sunrise industry. There may be no smokestacks in Silicon Valley, but the toxic fumes are there, oozing past the decorative regulatory vents on the buildings. Meanwhile, drinking water contamination by leaks from underground chemical storage tanks is a constant health hazard now in California. Similarly, heavy metal residues from Silicon Valley are finding their way into the ecosystem via sewerage sludge. Don't tell me this is a non-polluting, environmentally sustainable technology.

Or, let's take the human dimension of sustainability. Can you honestly justify wearing a digital watch whose manufacture may have caused a Sri Lankan or Korean woman on the

microchip assembly line to go blind? How many people have to lose their sight before we question our need for this technology? Take the failing health of our own VDU operators - radiation effects on the human nervous system, reproductive risks? What about our continuing epidemic of RSI? Where do you stand on these things - denial or fantasy? It all means turnover for the health industry, doesn't it? A boost to the GNP...

Finally, it's obvious that the computing profession is profoundly implicated in that single greatest threat to sustainability of life on earth, the ever present possibility of nuclear annihilation. The military and strategic applications of this technology have already been examined this afternoon, so let me simply sum up my argument in this way: On the question of computing and social responsibility, the educators of computer professionals have some very profound questions to ask themselves.

## BOOK REVIEW

**WHAT WENT WRONG? - CASE HISTORIES OF PROCESS PLANT DISASTERS**  
**BY PROF. TREVOR A. KLETZ**  
 (Gulf Publishing, Texas, 1985.)

The 200 pages of this hardback are compiled from tragedies, expensive blunders and near misses. As Prof. Kletz says, a high price has been paid for the information in the book. Most incidents are very simple, no esoteric knowledge or detailed study was required to prevent them - only a knowledge of what has happened before.

There are six intended uses for the book:

- A basis for improvements at your plant
- Topics for safety meetings
- An introduction to literature on process safety and loss prevention
- Training staff - examples of not following good practise
- Teaching students - illustrations of scientific principles
- A nasty message to people who have allowed one of the incidents to happen - the book should be open at the appropriate page

A glossary of US and UK terms is included.

The sections are well organised, the writing and diagrams clear and straightforward. Solutions are set up, the HAZOP procedure is outlined. Possibilities of accidents in existing and proposed plant can be discovered using HAZOP.

The dozens of topics reflect the full range of hazards associated with the processing of material: maintenance and isolation, hazard identification and removal, vessel entry, start-up, new tools, human error, labelling storage tanks, overflow, overpressure, suck-in, explosions, stacks, liquid leaks, flammable gas leaks, pipe and vessel failure, hazards of common materials, tanks, trucks and cars, static electricity, operating methods, reverse flow and other unforeseen deviations, the HAZOP method...

Kletz is a regular contributor to *The Chemical Engineer*. If you find the book read the dedication too.

And if you still think 'it can't happen' to you: page 176 deals with the driver who, wearing rubber-soled shoes and helping an attendant fill his car with petrol, set fire to his auto. A spark was caused when the driver replaced the petrol cap, because he had charged himself with static electricity - by taking off his pullover!!!!

In case this sounds like too much dry reading, the cartoon below is reprinted from the book

Linda Grannas

### The tea tasted funny ...

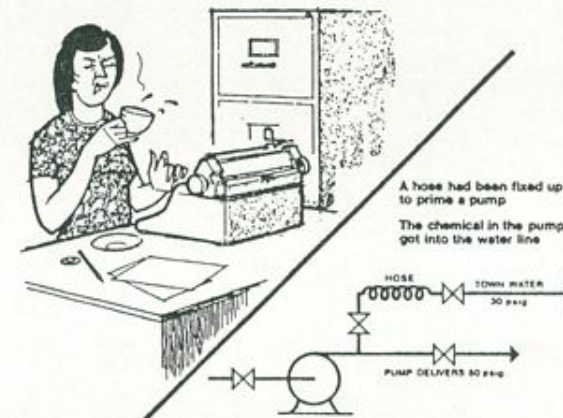


Figure 18.3. Never connect town water to process equipment.

## DEVELOPING ECOLOGICAL DISASTER A SUCCESS!

Community Aid Abroad's global environmental conference was a success. Not only in terms of packing the hall for a whole weekend with 140 enthralled and enthusiastic participants who all had a good time! But the attendees and the speakers learnt a lot, gave a lot and cross-fertilised for some definite outcomes. Third World aid and environmental networks were formed, and government lobbying to the Senate Select Committee on the Environmental Implications of Developmental Assistance has begun.