An R&D lab for Utopia? Alternative technology centres in the UK

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Introduction

The aim of this ECPR workshop is to scrutinise how utopian projects might be studied as social science microcosms. Almost akin to laboratory experiments, utopias stress social and political tensions present, yet obscured, in mainstream society, and made more pronounced and observable in intentional communities (Deakin and Tsuk, 2004). This paper explores this possibility for the case of the Alternative Technology (AT) movement, which emerged in the 1970s.

The AT movement sought an R&D lab for utopia. Activists promoted technologies they believed could support their vision for a society ecologically harmonious, socially convivial, and economically steady-state. They did this in different ways. One stream of activity left the urban rat race and sought a rural idyll, where new *intentional communities* would build autonomous housing, use renewable energy and practice organic farming. Another stream of activity followed a different route. Activists tried to create *communities of intent*, in the sense that they sought social movement opportunities and alliances into which their AT projects could be incorporated and advanced. Activists in this second stream engaged in political lobbying, created community projects, worked with trades unions, set up small AT businesses, and became involved in education and research; all tactics that challenged technocratic forms of development and sought technologies open to greater social control.

This paper will concentrate upon the first stream of activity, as practised in the UK, since these intentional communities represent a relatively more bounded attempt at making concrete a utopian vision. The second stream is important, since it contributed awareness in society, but its analysis is beyond the scope of this paper. The paper argues that the politics of utopia – the aims, strategies and success with which a radical vision is pursued - cannot be understood in isolation from the society from which the utopians hoped to escape. Utopias are social innovations. They depict a vision of an alternative society intended to catalyse change. But in so doing, these visions criticise elements of society that trouble the utopians, and their utopia is, therefore, constructed in relation to society. In the next section, the AT vision, and the technological practices therein, are shown to be a critical product of failings perceived in industrial society. This is followed by a comparison between utopias and 'plausible' visions for the future. AT was utopian because it challenged fundamental social trends. Analysis then explores how the same events, trends and resources in

society facilitated and constrained the degree to which AT aspirations were actually met. The history of two intentional communities in the UK are studied. Both were founded as research and demonstration centres for AT lifestyles. The first, Biotechnical Research and Development (BRAD), lasted only briefly. The second, the Centre for Alternative Technology (CAT), exists as a demonstration centre to this day. However, it operates in a different form to the blueprint intended by the founding intentional community.

In short, concrete utopias are built upon social foundations. It is precisely this socially embedded aspect of utopia that permits a 'social science microcosm' function: the generative effect of society for the utopia is what gives utopian lessons their meaning for society; and, importantly, what also sets the limits for any meaning they may have. The lesson drawn from this AT case study is the significance of visions for radical changes to technology in society, and the way they connect with social and economic trends in society.

Social criticism, ecological utopia and the AT movement

The term 'utopia' in its popular, pejorative usage tends to signify hopelessly idealistic and unrealistic goals. A utopian plan implies too giant a leap from the here-and-now, and is unlikely, therefore, to succeed. We should dismiss the utopians and get on with more practical reforms. This was one response to AT visions of the good life, based as they were upon an ecological utopia (Beckerman, 1974; 1995). Critics point out that few of the intentional communities survive, and none in their original form; alternative technology practices have not achieved mass usage, especially under the communal forms of control originally envisaged by activists.

Such criticism is understandable, but unfortunate. It is understandable because utopia comes as a descriptive set of desired social relations, economic practices and technological infrastructures, and it seems reasonable to measure concrete achievements against this blueprint. But such an interpretation is unfortunate because it oversimplifies the roles that utopias can play in social innovation. Perhaps the process of pursuing the blueprint, and the more pragmatic projects that it inspires, can have an influence in society, even if the utopian destination is not reached? Moreover, in offering an alternative to existing social relations, might utopia also act as a social critique? Do utopias provoke critical reflection? It is these roles, as critique and inspiration, which is of interest in this section. The social background to the utopia proves important. Utopias are products of the times in which they are dreamt. As such, they criticise contemporary society in the light of their ideal alternative (Levitas, 1990).

Industrial society in crisis

What is striking about the ecological utopia is how it was posited in urgent opposition to failings perceived in industrial society. As one display at the Centre for Alternative Technology claimed: 'The principal defect of the industrial way of life with its ethos of expansion is that it is not sustainable. It's termination within the lifetime of someone born today is inevitable – unless it continues to be sustained by an entrenched minority at the cost of imposing great suffering on the rest of mankind'

(quoted in *Undercurrents* 19: 12). AT activity was often explained and justified in relation to industrial society.

AT activists of the early 1970s developed their vision in the light of criticisms of industrial society (Weldman, 1994). A number of dystopian trends were perceived to be reaching crisis point in industrial society. Intellectuals worried about an out of control technocracy, which reduced life to the narrow, inescapable criteria of productive efficiency (Marcuse, 1964; Ellul, 1965; Illich, 1973). To the student movement, the war in Vietnam became emblematic of the self-serving aggression meted out by an unaccountable military-industrial complex out of control (Mitcham and Mackey, 1983; Winner, 1977). The New Left accused industrial capitalism of alienating and soul-destroying work (Williams, 1958, Feenberg, 1999). Radical scientists were concerned about hi-tech hazards to workers and society (Ravetz, 1979). The counter-culture criticised the empty consumption of material goods produced by the system. Ecologists were protesting that such profligacy was having serious and toxic consequences for our finite planet (Ward, 1966; Carson, 1960; Meadows et al, 1972). The oil shock of 1973 induced an energy crisis that seemed to anticipate future shortages, and to which many governments responded with an expanded programme of nuclear energy. Anti-nuclear campaigners opposed this and demanded alternatives. Each of these problems overlapped with and reinforced the others, such that overarching themes were identified by critics: centralisation; technocracy; exploitation; destruction. The ecological utopia is understood in this critical context; seeking solutions through decentralisation; participation; cooperation; ecology.

The standard of living in industrial society had never been higher. And yet, to a vocal minority, a serious gap had opened between material prosperity and quality of life. Davis (1981) claims utopias are born of such gaps. Societies cannot simultaneously satisfy all the needs they create, and utopias are one expression of this dissatisfaction: utopia is a 'socially constructed response to an equally socially constructed gap between the needs and wants generated by a particular society and the satisfactions available to and distributed by it' (Levitas, 1990: 181). AT activists imagined an ideal that would bridge three gaps: a gap with the natural world, a gap with peaceful, convivial communities, and a gap with fulfilling work and leisure.

An ecological utopia

The contents of the utopian response were exemplified in publication of *Blueprint for Survival* by The Ecologist magazine in 1972 (Dobson, 1991). The solution to the industrial malaise lay in a 'society made up of decentralized, self-sufficient communities' in which life was conducted in harmony with nature (The Ecologist, 1972: 62). The Ecologist blueprint (endorsed by many eminent scientists) went on to say:

> '*This does not mean that science must in any way be discouraged ... There would be a great demand for scientists and technologists capable of devising the technological infrastructure of a decentralized society. Indeed, with the application of a new set of criteria for judging the economic viability of technological devices, there must open a whole new field of research and development*.'

(The Ecologist, 1972: 67-68)

Around the same time, Fritz Schumacher's *Small is Beautiful* argued for a redeployment of technical know-how in a similar direction (Schumacher, 1973). The AT movement emerged through networks of people keen to make technology their central device for reaching the ecological utopia. As AT advocate George McRobie wrote:

> '*The growing awareness of the damaging effects of our form of industrialization upon people, on the quality of life and the environment, started the process of making us think about alternative technologies: technologies that can express the humane application of knowledge – that are non-violent towards people and natural resources*'
> (McRobie, 1981, p.79)

The AT movement announced its arrival through a side event on 'People's Technology' at the UN Conference on the Human Environment in Stockholm in 1972. The principles behind AT were displayed alongside hardware that matched AT social criteria. Activists knew their ideas demanded deep political, social and economic changes in order to become widespread. Meanwhile, they saw no harm in experimenting and promoting the technologies they believed would prefigure an ecological society (Harper, 1974). The organisers at Stockholm wrote how:

> '*These kinds of technologies can best be developed in production collectives in the countryside. Such collectives have an important function in the preparation for post-revolutionary society. Ways of organising a collective life, fully participatory production, and technologies developed for this way of life, will prove extremely valuable when the time for fundamental change of economic relations has come*'.
> (Harper and Eriksson, 1972)

The soft, gentle features of AT were contrasted and defined in contrast to the hard, brutish technologies perceived in modern industrial society: small scale, not centralised; ecologically sound, not unsound; resource efficient, not materials intense; long-lasting, not throw away; participatory, not technocratic; supply based upon needs, not profits; using production cycles, not lines (Clarke, 1973; Lovins, 1976). Such technologies included wind power, solar heating, biogas, organic food, autonomous housing, wastewater recycling, heat pumps, small hydro-power, and the craft-based engineering of equipment. Practical opportunities would be sought in eco-housing, organic food, renewable energy, and small, co-operatively run, alternative enterprises (Harper and Eriksson, 1972).

Ecological utopias and technology visions

The AT movement emerged in response to technocracy. Ironically, a technocratic faith in the ability of experts to engineer social consensus using cost-benefit analysis, social indicators, systems modelling and other 'intellectual technologies' is itself utopian, in the sense that its absolute achievement is impossible (Wynne, 1975). This observation opens interesting terrain regarding what distinguishes the utopia of the

radicals from the 'plausible' vision of the technocrats. It is here that AT intentional communities offer microcosmic lessons of relevance to the wider social cosmos.

The BRAD and CAT initiatives (later section) reveal how important it is to secure a constituency of material and nonmaterial support around a vision. In this respect, the AT movement was little different to other social groups hoping to build technology futures radically different to the present (such as entrepreneurial industries trying to attract venture capital or political legitimacy). The functions the ecological utopia played in mobilising support was similar to the functions played by other technology visions, like nuclear power, or current excitement about a hydrogen economy. The key difference, however, is the kinds of change agent inspired and recruited in support of each - established, incumbent interests in the latter two, radical activists in the case of AT. This enrolment process is, in turn, dependent upon the degree to which the visions can be interpreted as reinforcing, extending or challenging existing social structures. A challenging vision will attract certain groups, and resources, while a reinforcing vision will attract others. Credibility is built through these processes of recruitment (and which always operate under relations of power).

AT activists knew that the widespread diffusion of technologies like solar power or local organic food would require different infrastructures, economies and social values to those existing in the mainstream. As David Dickson argued:

> '*An alternative technology can therefore only be successfully applied on a large scale once an alternative society has been created. The task of doing this is a political, rather than a technological one … any talk of alternative technology must necessarily be utopian, being in Karl Mannheim's phrase "incongruous with the state of reality within which it occurs"*.'
> (Dickson, 1974: 197, citing Mannheim, 1936)

Other technologies like the internet, the motor car, telephones, production lines, steam ships etc were also 'incongruous with the state of reality' at the time they were being developed. Were they consequently utopian by this definition? If so, then their transition from utopia to ubiquity rested upon facilitating and reciprocating *alignments* between technology development, social values and institutions.

Some technological breakthroughs demand more alignment than others, and the ability to breakthrough depends, in part, upon the way business investments, government policies and social attitudes contribute (consciously or otherwise) to this alignment process. Visions and expectations over the new technology can be important devices for the construction of supportive constituencies to promote these alignments (Geels and Smit, 2000). Expectations raised and contested in the GM food debate, over its promise and/or threat, can be understood from such an enrolment perspective; an attempt to build up constituencies of support and bring about alignments behind one or other visions of GM.

It is expectations of congruity not just with existing practices, but with more fundamental structures that is important. AT questioned the wisdom of unconstrained economic growth and the priorities of industrial society. It was immediately incongruous with government and business. The AT vision of the future contradicted the powerful interests of the present. A utopia breaks bonds fundamental to the

existing order. Plausible technological visions do not. Yet visions, like a hydrogen economy, large offshore wind farms, or community energy, still need to be persuasive, and to recruit, if they are to become plausible. The ecological utopia of the 1970s did not attract mainstream interests, but it nevertheless played a recruiting function, and acted as a banner around which a number of radical activists could rally and create intentional communities in pursuit of the vision.

Utopian inspiration, social innovation and AT experimentation

Utopias envision not-yet-existing relations between people and things. As such they can inspire and orient behaviour, guide action, and open searches for innovative application (Jamison, 2003). The ecological utopia, as presented in the form of manifestos, illustrations, books, exhibitions, magazines, university courses, plans and projects, typically imagined people living communally in autonomous villages or urban terraces. Organic techniques would convert gardens and fields into diverse and productive small-holdings. A biogas generator converts sewage into fertilizer for the gardens and gas for the kitchen stove. Solar panels heat water for showers and washing. A wind turbine generates electricity. A small workshop enables the craft production and repair of tools for this relatively self-sufficient community. People at work, rest and play discuss the post-utopian issues of the day (see Clifford Harper's illustrations in Boyle and Harper, 1976). In true utopian tradition, there was even a novel written in the form of a report back from 'ecotopia' in 1999 (Callenbach, 1977).

How might this ecological utopia have had any practical relevance for industrial society? Peter Hall has argued how, in the context of urban planning, 'visions of utopia do matter. It is difficult to believe that cities would look like they do now without the visionaries' (Hall, 1984: 191). Hall contends, however, that influential utopias succeed because they combine a fresh vision with a keen and advanced sense of trends already emerging in society. Blueprints for Garden Cities, Hall argues, successfully channelled migration from the Victorian cities that was already underway. Other utopias (such as mega-structures) failed 'because they did not connect with the broad movement of technological, economic or social change' (Hall, 1984: 192). Implicit in this success factor is a materialist notion of utopia as blueprint to be constructed. A strong sense of the art of the possible will be necessary when drafting the utopia, because the goal is realisation. This is a strong criterion for success.

A more relaxed goal for utopias need not be physical realisation as such, but simply to inspire enthusiasm for changes in society in the light of the vision (Morrison, 1984: 148). This consciousness raising is a weaker criterion for success, in which it is okay if the vision remains wholly unfulfilled. People interpreting utopia from this perspective are satisfied if it has guided some positive changes in the light of the alternative vision (Morrison, 1984). Of course, Hall's observation remains correct because even on the weaker criterion there must be some opportunity for positive influence. There must be something in the influential component of a utopia that inspires plausible grounds for success if it is to be influential (Levitas, 1990). Utopias become concrete through the way they connect (positively or negatively) with social trends.

As Goodwin points out, tracing this weaker and piecemeal influence can be difficult:

'*Utopias are often written, like allegories, to influence people's ways of thinking, and do not always demand the implementation of the utopian blueprint in toto … They can contribute to the formation of a climate of opinion; later other, more academic, individuals take up their ideas and turn them into theory or into social policy proposals. The search for 'impact' thus encounters the same problems for any 'chain of ideas', and the best that one can do is make suggestive connections between utopian ideas and social changes*.'
(Goodwin, 1984: 70).

Given this difficulty, it is easier to dismiss the entire vision as a wholesale failure – by evaluating the utopia against the blueprint (strong criterion) - than it is to try and trace how some elements influenced social innovation (weaker criterion).[1] The more subtle and partial influences of utopias can be overlooked.

One of the appealing features of AT was that the technological artefacts serving the utopian vision could be acted upon. Whilst the ultimate goal for some might have been the ecologically-rounded lifestyle pictured in ecotopia, it was more prosaic measures of success, like a working solar heating system, that satisfied others and kept everyone occupied in the construction of concrete utopias. A technology focus contained the promise that practical action could be taken. AT activists Brenda and Robert Vale argued how:

'*One live, working experiment, however impractical if it were applied universally, will transmit an idea far better than a shelf full of theoretical reports. Something that can be seen and touched and shown to work to some degree arouses curiosity, and curiosity in turn leads to solutions*.'
(Vale and Vale, 1975, p.18)

An ethos of doing practical things, however imperfectly, and of getting involved pervaded the movement. Whilst some argued over AT principles and appropriateness of scales, others experimented with building their own wind turbines, or creating community projects in home insulation, and others still sought to create centres dedicated to demonstrating a living AT: the R&D labs for utopia. The character of AT was really forged from this amalgam of utopian ideals, critical analysis and practical attitudes. Activists sought progress using the same ecotopian map, but they navigated different regions, followed various routes, and exploited different opportunities along the way. The diverse social movement attempts to build a wider community of intent was mentioned in the introduction. However, it is the construction of intentional communities, which sought ecotopia in the round, that is the focus of this paper. How successful were these concrete utopias; and what lessons do they contain?

[1] Notice how Goodwin implies a direction of influence: some utopian sentiments filter into academic knowledge and thence into society. It has been suggested that the most profound legacy of the AT movement is not any tools for conviviality, nor ecological communities, but a contribution to green knowledge (Jamison, 2002), and advocacy for much deeper public participation in technology development (Winner, 1979). It is the case that academic work in Science, Technology and Society, whose analysis has reinforced arguments for participation in technology, has roots in activist criticism of technocracy (Waks, 1993; Wieber, 1997; Darnovsky, 1991).

From ideas into action: AT intentional communities

A kaleidoscope of initiatives emerged, shifting, interacting, appearing, disappearing. The alternative press carried directories of aspiring communes seeking participants. Many experiments were short-lived, or never even left the drawing boards. Attempts to turn urban terraces into communal homes with cooperative workshops attached. Or moves back-to-the-land and the restoration of farms – though rural self-sufficiency generally proved much tougher, and, ultimately, less complete than anticipated (Giradet, 1978; Wheeler, 1978; Hanson, 1979). As an early participant at the Centre for Alternative Technology wrote:

> '*In these 'gold-rush days' of Alternative Technology, new camps are springing up wherever there is land to mine for renewable energy. While some of the earliest projects lost their populations as the veins of enthusiasm, money and mortgages ran thin, a lot more strikes are coming in to keep the boom in AT going*.'
> (Boulter, 1974: 4)

All these intentions represent a burst of activity from a committed minority whose vision of the future was incongruous with the world around them. Two detailed examples are analysed in the next section. Both have been chosen because they were particularly iconic initiatives, and represent a relatively 'pure' attempt to create a little ecological utopia in 1970s Britain.

Two R&D laboratories for utopia

At an early conference on AT, held in London in 1972, science journalist Robin Clarke[2] put forward his belief that intentional communities were needed to research and develop AT technologies and lifestyles simultaneously. 'Today centres with these aims hardly exist. Plenty of communities have been set up to explore the possibilities of alternative life-styles but most are either parasitic on industrial society or fail because they refuse to do so. The technological side of such communities is largely neglected and the research side ignored' (Clarke, 1972). Like others, his view was inspired by the New Alchemy Institute, an alternative R&D lab created in the US in 1969 (Todd, 1976).

A number of groups around the UK wished to create living examples of AT, with a view to them acting as alternative R&D centres.[3] These communities would research the whole utopian lifestyle: they would develop AT for use in communal, self-sufficient settings. Some initiatives never left the drawing board, finding it difficult to raise funds and secure land. At least two, highly publicised attempts did get started. One was more successful than the other. The first, Biotechnical Research and Development existed for a few years, before imploding under the pressures of poor

[2] Clarke was editor of the Science Journal magazine, and had authored a number of books on science and society issues, he had also been a consultant to UNESCO in Paris. Many AT activists were similarly trained in science and technology.

[3] In addition to BRAD and CAT there was New Age Access near Hexham in the north of England, Eco2000 near Exeter in the South West, and the Urban Centre for Alternative Technology in Bristol (today the Centre for Sustainable Energy).

resources and personal tensions. The second, the Centre for Alternative Technology (CAT) survives to this day, but in a form different to original intentions.

Biotechnical Research and Development (BRAD)

Robin Clarke and others bought a 43 acre hill farm, Eithin y Gaer, in Wales and set about establishing Biotechnical Research and Development (BRAD) in 1973 (see *New Scientist*, 11 January 1973: 66-70). BRAD proved to be a short-lived experiment.

> '*We were certainly not short on theoretical ideas. We were going to turn the place into a research centre to investigate such things as solar heating, wind power, heat pumps, methane generation, composting, highly productive but organic methods of food, and new building techniques. We wanted to devise a lifestyle that would be valid, not for just this generation living off a depleting stock of natural resources, but for generations far into the future*.'
> (Clarke, 1976: 13)

BRAD would put AT principles to the practical test. The project launch was well publicised (e.g. in *New Scientist* magazine). However, there were insufficient resources[4] to realise their experiments; a disagreement within the commune over its continued future as a 'communal research centre' (rather than a commune); and personal tensions. Clarke left (*Undercurrents*, 8: 11). Other members followed, and three years later the 16-strong community had disbanded. They had built a highly insulated 'headquarters' with solar roof to heat water. Clarke moved to Shropshire, from where he continued to chronicle his (increasingly ambivalent) relationship with AT through a column in *New Scientist* magazine. The BRAD farm was sold to an ashram (*Undercurrents* 16: 5).

Philip Brachi, another BRAD member, reported how:

> '*We each entered the commune with a fantasy; not in the sense of mad delusions, but a well worked out scenario of expectations. For a time you project , superimposing your fantasy upon unfolding reality; until the scene diverges dramatically from one's personal script: your wife walks out; the newborn calf dies; the windmill fails to work; your husband sleeps with the woman downstairs; the barley crop rots. Then you either freak out completely, adjust your fantasy, or draw a deep breath and begin to grow up … These are tentative thoughts, for we have barely begun. But the essential message from here seems to be that building a solar roof, one's own house even, is child's play compared with close, honest, open communal living therein*.'
> (*Undercurrents*, 14: 38-39).

After BRAD, he wrote how:

> '*In such a situation the commune's founder, probably by definition the person with the longest-running and most detailed fantasy, is likely to be the first casualty of that disillusion. This happened, and fifteen months into the project*

[4] Philip Brachi from BRAD said group members had each invested an average of £1700 (*Undercurrents*, 14: 38).

we lost our obvious if unofficial leader. Some joined, but more left: a year later we were reduced to just four adults. We spoke and wrote of freedom, but when we had the chance to know it fully, we felt its threat of change, profound, personal, painful at first. Rather than face that growth, sooner or later, on one pretext or another, most took avoiding action. The end was in July 1976.'
(quoted in Lumley-Smith, 1978: 16).

The experience at BRAD contained two lessons for ecological utopias. The first concerned technology development. BRAD revealed just how difficult back yard research into effective small-scale technologies could be for communities with limited resources. Lawrence D. Hills from the Henry Doubleday Research Association, a grassroots organic research centre, in response to BRAD's launch, argued: 'The problem of alternative technology is that there is no alternative to research and hard work to find the technology … alternative technology is easier mapped than made' (letter in *New Scientist*, 18 January 1973). The virtues of gadgets like solar heating and wind turbines were easy to praise, but difficult to realise.

There had been debate within the AT movement over the desirability of always seeking small-scale, community-based production (e.g. Harper, 1976; Elliott, 1978). Some, like at BRAD, and the Bath based group COMTEK, were strongly committed to community technology. John Potter of COMTEK argued 'AT must be made available to the community … it has nothing to do with mass-produced items, but it should be a cooperative do-it-yourself activity' (quoted in *New Scientist*, 31 July 1975: 275). Mass production failed to take into account the alternative lifestyles that activists at BRAD considered part and parcel of AT, and their utopia.[5] Attempts like BRAD, to make the utopia concrete, revealed the limits of technological self-sufficiency in the absence of large-scale technological resources.

The second lesson from BRAD concerned communal living. The personal development required for communal living proved just as demanding as technology development. The ecological utopia had succeeded in inspiring BRAD members towards an ideal lifestyle. With limited material resources, they needed to draw upon remarkable levels of personal commitment and energy even to achieve what they did. But their bold attempt revealed the tensions that arise when members understand a utopia differently, and draw motivation differently. Clarke intended BRAD to be an iconic, ecological way-marker along the post-industrial path. His intention was to engage with the world. He sought this first by disengaging from conventions, standing aside, and demonstrating alternative possibilities. This public element, of engaging via disengagement, made BRAD a utopian project. However, Brachi's comments suggest other members were retreating from industrial society for different purposes. Trying simply to live simply in a personal Arcadia. The demand of technology development upon already limited resources was an unwelcome additional strain. As Philip Brachi explained, the group did not really develop an accommodation between these different aspirations.

[5] In contrast, other AT activists tried to work for social control through political action from within the industrial system (e.g. the Lucas Plan; see Wainwright and Elliott, 1981) and through alternative economic regeneration opportunities (see Mole and Elliott, 1981). These activists questioned the wisdom of rural retreat and small, craft production. They were also confronted with a set of very different, but no less demanding, challenges.

Tensions between public goals and personal motivations were not unique to BRAD. People bring to utopian projects perspectives and attitudes informed by their prior lives in the outside world. In this case, the outside world also continues to linger in terms of the material resources needed to initiate the effort. Material resources proved insufficient to develop self-sustaining technologies and practices; and this put a strain on the different reasons for being in BRAD. The Centre for Alternative Technology experienced similar tensions. CAT resolved these in a way that did not destroy the experiment, but which did pull it away from utopian vision.

The Centre for Alternative Technology

The Centre for Alternative Technology (CAT) was created in 1974 with similar ambitions to BRAD. The volunteers who developed the site, a disused slate quarry near Machynlleth in Wales, sought an ecological lifestyle 'to encourage greater national self-sufficiency by showing less wasteful methods of living' (CAT mimeo, 1976). A tremendous amount of work was needed from volunteers to turn the old quarry into a site fit to demonstrate technologies and the principles of an ecological lifestyle. Gradually, and with effort, grey slate was converted into organic vegetable plots. Renewable energy systems were put in place to power buildings, public exhibitions, and the homes of members living on site. Around 20 staff lived there communally in 1979. Decisions over the running of CAT were taken collectively. Salaries were egalitarian (Newsletter, Autumn 1978).

CAT survives to this day. Since the early years CAT has secured an income stream by charging people to visit (around 65,000 people visit annually, including schools and universities).[6] The emphasis has, however, shifted over the years, towards a different kind of visitor and education centre to the communal self-sufficiency model. There was 'a conflict for those staff living on the site between staging and servicing a demonstration centre on the one hand, and living over-the-shop as a small, fairly closely-knit group of people on the other' (CAT Newsletter October 1976). One low energy demonstration house open to visitors was, for example, also home for a family of four. Members sometimes felt communal living had become a zoo-like feature of the CAT show (Harper, 1995). As CAT evolved, so people lost 'interest in classical communitarian living, and most staff now live off site' (Harper, 1995b: 2). CAT remains a cooperative, but only volunteers and students on residential courses live on site.

The internal drift away from commune was reinforced by a shifting social context. Cultural trends took mainstream society further away from, and not, as the activists had hoped, closer to, the communal ideals of the original green vanguard. Conceived in anticipation of ecotopia, CAT adapted to the revolution that had really taken root in the 1960s, and which deepened and flourished in the 1980s: the consumer revolution. A move to the political right, within an increasingly materialistic consumer society, committed to market-oriented policies rather than collective planning. CAT had to make its message relevant to this new context.[7] Current CAT Director, Paul Allen,

[6] CAT benefits from curious tourists drawn to the nearby Snowdonia National Park (*Parc Cenedlaethol Eryrl*) and the coastline of this part of Wales.

[7] One of its most successful ventures in recent years has been an on-line sales service and shopping catalogue for green products.

argues: 'Self-sufficiency is dead, not because it's not green – but because it's not replicable! We now need to explore the most effective means of reducing our environmental footprints. Dropping out to build a better world has given way to the challenge of developing ideas, tools and technologies which will inspire, inform and enable mainstream society to join the process of sustainable development' (quoted in Harper, 1995: 47). In addition to displays, and a bookshop and information centre, CAT has developed residential courses and its educational function has deepened (e.g. courses in eco-construction, renewable energy, organic growing, composting toilets). CAT has adapted in order to maintain a distinctive, committed yet relevant position.

CAT continues to display many alternative technologies. As with BRAD, however, an initial ambition to develop community technology has proved difficult to realise. Pragmatism and adaptability proved necessary from the outset. Manufacturers generally donated equipment for display (e.g. solar panels, wind turbines, wood burning stoves, building materials). Initially, this was thanks to the establishment contacts of one of the founder members (Morgan-Grenville, 2001; Harper, 1995). Over 60 companies were persuaded to donate money, materials and products crucial to the creation of CAT. This backing, whilst allowing volunteers to create a living exhibition centre, sat awkwardly with the intent to research and demonstrate a self-sufficient alternative to industrial society.

Experimentation with equipment donated by manufacturers provided some research opportunities, but was not ideal (Newsletter, Autumn 1978). An early newsletter was clear about the intent 'once the educational side of our work is under way, we will move on to the next aim – that of establishing facilities for more detailed research and development on the site itself' (CAT Newsletter, October 1976). Technical Director Bob Todd noted, 'Having used a lot of commercially available AT hardware, one can see the very real difficulties involved, particularly for the small one-person or co-op manufacturing enterprise getting into this field without either a straight forward "bread & butter" product to carry the AT side initially or some sort of grant or support association to do the same' (Todd, 1979: 2).

Unfortunately, CAT found it challenging, as an unconventional research organisation, to attract resources from conventional research funding bodies, but not impossible. Funding was secured for testing and demonstration programmes (e.g. government grants, European Commission programmes, industrial sponsorship). Whilst this facilitated some development activity, [8] it also required working within the aims of the funding bodies. Other grants, such as educational funds, also helped with modifications that would permit technology demonstration. In retrospective, Roger Kelly, a former Director at CAT, considered:

> '*We often try to pinpoint exactly where we stand on the spectrum between the grassroots research scientist who is trying to come up with radical new ideas at the one extreme and commercial exploitation at the other where something's found a market and is in mass production. We're somewhere in between that extreme but further towards the research end. Generally speaking what happens is that we have things on display here and we're*

[8] E.g. an inter-seasonal heat store, a power connection between its renewable energy supply and the electricity grid, a roof made from photovoltaic panels, organic growing techniques, composting toilets, and ecological architecture and construction.

working with things that have gone through the R&D stage, the prototype stage and they're in the early days of trying to find markets. What tends to happen is that we get donated or sold at heavy discount technologies or ideas at that stage of development and then we work with them, experiment with them, find out the problems and in many ways solve other people's problems for them'
(quoted in Harper, 1995: 17)

This was a necessary position. Making utopia concrete clearly required strategies for dealing with this resource issue. CAT had partially solved this through visitor fees, but this proved insufficient for moving beyond demonstration. Initial hopes to really take grassroots control of technological innovation remain unfulfilled. The demonstration, promotion and diffusion of existing, greener technologies and practices proved sufficiently demanding, and just as important.

Nevertheless, the experience of tinkering with exhibits, and developing AT in this way, served many members in their work after CAT. CAT provided a scarce training ground for practically-oriented engineers and technicians dissenting from mainstream industrial careers (e.g. see *Quarry News*, Winter 1983/84). The expertise they developed in running site demonstrations, such as renewable energy, allowed CAT members to contribute to the environmental professions that emerged over the course of the 1990s[9] (Harper, 1995). Some have pursued these careers whilst remaining committed to the locality. As such, CAT has seeded a wider, but much looser, intentional community, in which networks of people drawn to CAT support a variety of green initiatives promoting sustainable economic regeneration in the region.

Even a relative success like CAT illustrates how difficult can be the intentional community route to ecotopia. The original ecological utopia was not made concrete. Instead, a well-known and influential AT demonstration centre evolved through the hard work of members in interaction with opportunities present in society. On the occasion of its 25th anniversary, leading figures from the UK environment movement acknowledged CAT's role. Comments by Paul Ekins, Director of Forum for the Future, were typical of the compliments:

'*When CAT was set up, the technologies it was promoting were way off the radar of mainstream development. Now it looks as if many of them will form the backbone of the next industrial revolution we desperately need in order to make economic development environmentally sustainable, as CAT said they would. Being a pioneer may be exciting, but it is dangerous and very hard work. CAT has survived the dangers, put in the hard work and, with many other pioneers, helped to bring these technologies to where they are today, on the threshold of take-off*.'
(quoted in CAT, 2000: 17)

The term 'alternative technology' is rarely used today. An environmental profession has emerged. We have seen a slight greening of some business, the rise of environmental consultancies, an expanding portfolio of environmental policies, a

[9] Bob Todd, for example, was one of the founding members of the British Wind Energy Association. Other former members now work in the renewable energy industry, as developers and technicians.

growth in official environmental institutions, and a bifurcation between respectable NGOs and radical direct action groups, (Jamison, 2002). There are grassroots initiatives that pursue goals reminiscent of AT aspirations, but rarely as a radical package for the self-sufficient, small-scale, communal utopia that originally inspired the movement. Projects in community renewable energy, local organic food economies, and eco-housing may be less strident in their radical rhetoric than AT, and consequently appear less utopian. But their goals for boosting the local economy, raising community participation, and meeting social and economic needs simultaneously occupy similar terrain to AT, though from a more restrained standpoint.

Conclusion

This study into AT as the R&D lab for utopia has tried to draw out the lessons this experience might provide for the study of technology visions in society. The basis of lesson-drawing has rested upon the way the AT vision was prompted by failings perceived in industrial society, and how the BRAD and CAT intentional communities were embedded in society. The attempts to create AT R&D labs expressed in acute form the importance of visions, in rallying support for alternative technological practices, and resources, in the material development of those practices.

The ecological utopia inspired some people to strive for its realisation through intentional communities. When it came to individual projects, the experience of BRAD illustrated how people invest in intentional communities with motivations and perspectives informed by their experience in society. It was the mundane, yet difficult, task of securing material resources that shaped the community, determined which goals were reached, and how successfully. CAT made necessary adaptations that took it away from the original blueprint, and down a no less interesting route. Communal living proved too demanding under the circumstances. People changed, moved on, others joined. This experience suggests people can invest and commit to a common vision with different motivations, or focus on specific elements, and with a variety of expectations. As they engage and progress a vision toward a more concrete realisation, so expectations shift and the vision itself may be revised and adapted.

Ambitions for specific technology development had also to be adapted to circumstances. One needed levels of resources, skills, hardware and time that are rarely available within a single committed group. Connections made with equipment suppliers and funding bodies proved the best way of modifying technology through demonstration. Events, trends and resources deriving from society are found, in this case, to have shaped the degree to which alternative technological practices were actually met. To the AT movement's credit, there was an element of mutual shaping going on. CAT was not adapting blindly to its social context. It was doing so in order to survive and remain sufficiently relevant to inform and influence society. Activists' efforts are considered to have inflected trends unfolding in society, injecting a degree of environmental concern into those trends.

The utopian alternative (of an ecological society) offered, through its derivation out of critique, opportunity for debate and activism in industrial society. Activists criticised the underlying technocratic assumptions in much technology development, they

illustrated how technology is not value-neutral, argued that options do exist in innovation, and put forward alternative, environmental and social criteria for deciding the most 'efficient' path forwards (Winner, 1979). As the radical intent of AT diminished, so activists tended to refocus their activity into more discrete, specialist areas like renewable energy, housing, education, political lobbying on fuel poverty, and helping nurture the emerging environmental professions. At this level, the legacy of the AT movement has been to open up technology development to wider selection criteria.

Today, men and women from large corporations and government ministries are meeting in conferences, exchanging reports, and conducting studies that chart possible pathways to a future in which a large proportion of our energy will come from renewable resources. Thirty years ago, this vision was promoted solely by AT advocates and a handful of specialist researchers. The Energy White Paper published by UK government in 2003 is very different to the official policy response to the energy 'crisis' of the 1970s[10] - indeed, it has more in common with the 1977 Alternative Energy Strategy proposed by the 'utopians' at the Centre for Alternative Technology (CAT, 1977 cf. DTI, 2003). Renewable energy, which was utopian in an earlier social context, now has significant strategic relevance for society. However, a common interest in the widespread use of renewable energy technologies masks some important points of detail. The AT vision positioned renewable technology development in a frame that derived from its critique of industrial society: small-scale technologies under communal control. Now that industrial society is beginning to turn to renewable energy technologies, it is picturing them from within its industrial frame of reference, and developing its vision accordingly: large-scale technologies delivering power to liberalised energy markets. In both cases, the vision and expectations are bound by the perceptions of advocates rooted in their present. The AT case study suggests that the politics of any vision, utopian or otherwise, must be understood in relation to the society it hopes either to escape or transform.

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[10] The official response then was to accelerate the opening of North Sea oil reserves and expand the nuclear power programme.

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