Self-sufficiency and the future of work

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ALTERNATIVE TECHNOLOGY GROUP

ALTERNATIVE TECHNOLOGY

SELF - SUFFICIENCY

AND THE

FUTURE OF WORK

PETER READ

ATG 6

BACKGROUND

Late in 1976, the Faculty of Technology at the Open University took the imaginative step of funding two full-time research workers, to work in the area of Alternative Technology and to begin a research group (the Alternative Technology Group), which would act as a focus for the research interests of a number of the teaching staff. This was the first attempt in Britain to mount a formal research effort in this field and an early task was to define alternative technology and to consider the methodological problems of carrying out research in the field. In a Paper (1) which reviewed the alternative technology movement which has evolved in the United Kingdom, the author identified five "motivating concepts". These were:

A a concern that resource shortages impose a constraint on social development in response to which economic growth should be voluntarily limited;

B an environmental concern with man's stewardship of the natural ecology;

C a concern that technological change is leading Society towards a state which is so complex as to be beyond the wit of man to control;

D a concern that the social conflict and alienation of people from one another attributable to the relationships of industrial production would be so intensified in the future as to lead to an unacceptable disruption of political institutions;

E Practical Utopianism: a concern to decentralise Society into "small is beautiful" units of organisation.

Of these, A (in part) and E are distinct, in that they prescribe a remedy, as well as diagnosing a complaint. In further discussion, and by reference to the theory of economic growth, (2)(3) it was suggested that the complaint at A is illusory and that, on its own, resource shortage is unlikely to bring about an ending of economic growth (though this is not say that it could not interact with other factors, especially D, to have such effect). Furthermore, it did not (as regards the remedy proposed) seem to lie easily with the other motivating concepts in that it seems to be inherently negative whilst the others could easily be represented as tending towards an improvement in the quality of life. It thus seemed more consistent to be concerned with alternative growth rather than zero growth (4) i.e. a growth of social welfare, which could be consistent with a reduction in the consumption of material resources, and it is to that less contradictory framework that the A.T.G. has addressed its work. The implication of an increase of welfare is that it is a direction in which informed people will voluntarily choose to move, and the objective of research has therefore been to find out how, in terms both of technical knowledge and of social organisation, to enable people more easily to make choices which would tend towards the practical utopianism of E.

* I am indebted here to Nigel Cross for clarifying my original terminology.
TECHNOLOGICAL CHOICE AND RESEARCH DESIGN

To the economist, and the conventional wisdom which regulates the social decision process, technology is no more than a constraint on economic activity and the purpose of technical research can be no more than to push back the frontiers of what is possible. Thus, production is a function of inputs such as labour, capital, land, energy, etc., and consumption is a function of income, wealth and personal tastes, where in each case the functional relationship is a constraint imposed by the technology available. The Boeing 747 makes it possible to produce more tourism; mass car and boat ownership increases tourism through consumers' activity.*

Either way round, in that best of all possible worlds which the economist assures us is provided by the market mechanism, it must be beneficial to extend the range of what is possible - the 747 and the Cortina must be better than the DC3 and the Model T.

But technology affects much more than the efficiency with which the resources available can be transformed into the goods and services which are aggregated into G.N.P. Dickson(5) emphasises the ideological nature of the conventional wisdom that the development of industrial society has been a unique progression of technological advances which have followed inevitably from the sequential progress of scientific knowledge. For him, technology is not neutral but is used to serve the power and control purposes of the political establishment. Concorde, as a bribe to gain French support for British entry to the E.E.C., may seem an obvious example, but Dickson is concerned far more with ways in which the division and organisation of work, and the related capital investment and technological advances which it embodies, have served the class interests of the rich and the powerful. Though one may feel that his analysis places insufficient emphasis on the political and other social processes involved in the development of industrial society, nevertheless Dickson's basic message, that technological choices have a normative content, seems incontrovertible.

Accordingly, technological research cannot be regarded as an abstract enabling activity; an approach to the concerns of the A.T. movement which leads simply to a technical fix within the framework of mass industrialisation - say the generation of concentrated energy beamed to earth from space satellites - gives us no hope that the problems will not simply re-emerge in a different form. The same research can lead to improved techniques of birth control or to the doubtful ethics of hormone treatment for sex offenders. Albert Einstein wished he had remained a locksmith and Ted Taylor, who later came to the view(6) that "the worst invention in physics history was also the most fascinating" earlier justified his work on sophisticated nuclear weapons by saying "a way to avoid war is to make the world really afraid of it".** Taylor's experience is typical: whatever the motives in entering a particular field of research, one becomes hooked by the excitement of the hunt after knowledge.

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* Which side of the national income statistics this mass mobility appears on depends on who owns the capital assets involved, but does not greatly alter the impact of mass access on the coastlines of the Mediterranean - or, for that matter, Lake Taupo. (Lake Taupo is a tourist attraction in New Zealand)

** Of course we must not be woolly minded: the neutral nuclear deterrent has almost certainly been important in avoiding a third global conflict, but that does not mean that the world has been, or is, or is felt to be, a safer place.
Thus, responsible technological research needs to be concerned not only with abstract enabling but with what is being enabled, and how, and meaningful research into alternative technology accordingly needs to be concerned both with relevant new technical knowledge and with how it is to be applied in an alternative social context. The normative concern of the A.T.G. is therefore both with developing technical knowledge relevant to the needs of small scale, spatially dispersed, substantially self-sufficient and economically self-organised communities, and with finding out how such communities can develop within the framework of late industrial society. We see this as a response to the concerns about the future of industrial society, of which the theme of this conference is an expression. We see such communities as being in harmony with an environment which is theirs to enjoy and theirs to pass on to their children and children's children. When another handful of toilet paper is seen as the loss of a tree in which your children climb, rather than trees in parts of the globe you have never seen, then you are more careful about using it; one does not foul one's own nest nor consume one's own seed corn.
WORK, SELF-EXPLOITATION, AND ECONOMIC GROWTH

If the last hundred years or so has seen the concentration of population in cities, any concern to reverse the trend must address itself to the principal reason for the migration, that is people's hopes or expectations of finding better work. Thus, if A.T. is to do more than enable a privileged way of life for those who are fortunate enough to be able to do without income from employment, or to work at home, usually in some professional or creative capacity, it is necessary for it to be concerned with how to decentralise productive work, taking account of the social functions of employment.

Sen(7) distinguishes three aspects of employment:

(i) The income aspect - employment gives an income to the employed;

(ii) the production aspect - employment yields an output;

(iii) the recognition aspect - employment gives a person the recognition of being engaged in something worth his while.

The conventional wisdom devotes great attention to the first two of these, largely because they can be quantified and maximised to provide both a measure of performance and an objective for management (both in the firm, at the micro level, and at the macro level of government). Even though Adam Smith's pin factory could work just as productively if co-operatively organised and if the simple manipulative jobs were regularly rotated, additional management and participative effort would be involved.

Such possibilities have a place in the conventional wisdom only to the extent that the enhanced job satisfaction is reflected in sufficiently increased productivity to pay for such organisational overheads. Thus the division of management labour from shopfloor labour, and the vesting of control in the hands of the suppliers of capital, ensures that the objective worth of work is measured by its wage - the labourer is worthy of his hire and no more. With the increasing complexity and inter-relatedness of industrial processes making it ever more difficult for the worker to understand the purpose of what he is doing, the recognition aspect also becomes subjectively experienced in cash terms, indistinguishable from the income aspect. With traditional forms of skill increasingly at a discount as they are replaced by the bureaucratically rationalised processes that deploy conveniently adaptable semi-skills, social recognition and personal self-esteem thus become experienced simply in terms of the pay packet. With status and income convergent into this single objective for personal fulfilment, the aggregate of wages (and other factor costs) - i.e. the Gross Domestic Product of the national income statistics - provides the unquestioned objective function of Society, which thereby becomes committed to growth for growth's sake.

With this mental framework of socially sanctioned greed, it seems efficient not only to get as much as possible but also to give as little, and certain welfare losses arise which have been analysed, by analogy with the famous Prisoners' Dilemma, in a game theoretical framework(6).

If each of two prisoners have the option of keeping silence or splitting on his mate, then for each the four possibilities are:
(a) a long prison term if he is convicted after pleading not guilty;
(b) a shorter prison term if he pleads guilty while implicating the other;
(c) getting let off if they both plead not guilty and keep quiet;
(d) getting a reward if he implicates the other whilst the other pleads not guilty.

Thus, each acting singly can gain an advantage by splitting on the other, whatever the other does, thus leading to the inferior outcome (b) even though outcome (c) would be available if each could be assured that the other would act co-operatively. Translating these alternatives into:

(a) working hard when everybody else idles;
(b) idling when everybody else does;
(c) working hard when everybody else does;
(d) idling when everybody else works hard;

then, whatever others do, it is best for each individual decision-taker to act anti-socially and the inferior solution (b) is reached when (c) is possible. At the institutional level a parallel case can be drawn between a trade union:

(a) making a non-inflationary claim when others are making big claims;
(b) making a big claim in line with everyone else;
(c) making a modest claim in line with everyone else;
(d) making a big claim when others are making a modest claim.

Again, however, the other trade unions may behave, the individual trade union has an incentive to make a big claim and the socially inferior inflationary solution (b) is reached even tough (c) is possible. Of course, in each case, the individually superior solution (a) is not available simultaneously for everyone.

The reason why these rational maximising exercises do not lead to the economists' best of all possible worlds, is that they are non-zero sum games in which co-operative behaviour generates a bonus in terms of reduced prison terms, higher productivity, or lower inflation, whereas the market analysis is a zero sum game concerned with the allocation of a fixed optimal output determined by the available technology.
Thus, the effect of simplifying personal and social objectives, in accordance with the conventional economic wisdom, to pure income maximisation is not only alienation from the content of work as has been widely noted, but also a torpidity towards its process on the part of the individual and inflationary pressures through collective action. For the latter, the only effective instrument of policy is a reduction of demand (either directly or through monetary mechanisms) which exacerbates the problems of structural unemployment. Whether or not these effects lead to the social disruption mentioned at D in the first section of this Paper, it seems clear that the monetisation of the recognition aspect of work leads to a loss of welfare in terms of job satisfaction and of lowered efficiency, through the loss of potential gains from co-operative behaviour.*

* That co-operative work sometimes seems strikingly inefficient in productive terms does not gainsay this since welfare may be increased (e.g. by greater conviviality, peer group esteem, etc.) even though material productivity is reduced.
ALTERNATIVE WORK AND ALTERNATIVE PRODUCTION

One solution to the problem of excessive social preoccupation with income, and with material production, lies, paradoxically, in turning the productive process from one of painful toil to one of pleasurable involvement. If work is seen partly as an end in itself it ceases to be a pure cost: no longer does one simply exchange toil for the means of exchange in order to purchase goods, measuring one's worth in terms of the rate at which one can do this, and judging Society by the gross aggregate of the rate at which its members do it. Rational maximising man operates differently within a framework where his work has positive value to himself, as we know from the kind of commitment exhibited by the professional classes and the self-employed. That this difference can be multiplied when the recognition of his work by the local community feeds back in direct practical and shared well-being is evident from the release of energy exhibited by all sorts of people towards voluntary and charitable causes.

It comes naturally to children to play at work and it is pleasurable to them:

(a) because they do it in a social context of approval;

(b) because they leave off and start doing something else when they feel like it.

In the bleak wasteland of conventional specialised labour, one does not leave off doing what one does for money until one finds it so painful that it is only just worth it for the marginal amount of wages one gets for that last hour of productive effort. However, the pursuit of a single activity to such a point of misery emerges as the production aspect of income maximisation in which the recognition aspect of work, both objective and subjective, becomes measured by the amount one is paid for it. If the objective is to maximise welfare within an alterable social context, then productive efficiency can be balanced against other outputs from the work activity, such as job satisfaction and workplace conviviality, not instrumentally for greater productivity as in the pin factory example mentioned above, but as joint components of a pleasanter way to live. By working directly for the needs of the local community, the activity is validated in a practical way rather than the abstract instrument of cash income.

So, alternative work involves both despecialisation and communitarian scale. Within this framework the individual may expect to work in a variety of ways, both within a given work week or work year, or over a given working life: so much time in food production; so much on the provision and upkeep of shelter; so much on individual craft work; so much in a local health centre; so much in an electronics workshop; so much in research and development, perhaps working on his pet scheme in the context of a peer group concerned to relate such research to the social context; and so much getting the knowledge needed to enable him to participate in the next thing he might want to do. Clearly, as in Daniel Bell's other post industrial society the institutions of research and learning are going to be a key feature (and the decentralisation of these presents a major problem).
From the organisation of work collectively on the communitarian scale* the individual can expect to replace the social prestige of otherwise meaningless material accumulation with the rewards of collective approval, conviviality, and involvement. By the multiplicity of small communities, and of roles that result from participative decision-taking, can the supply of what Hirsch(9) calls "positional goods" be multiplied, thus sidestepping - in terms of welfare - what he has identified as a social limit to the current path of purely materialist growth. Within the framework of small scale technologies undertaken by self-organised work groups to meet the perceived needs of the local community, it need not be the case that greater output leads to greater reward.

Enough is as good as a feast for most of the time, and when a feast is wanted, then a little more work can be done for it. Because the workers are involved with the output of work, not alienated from it, there is a natural organic and voluntary limit to material production so that growth for growth's sake is not only objectively meaningless but becomes subjectively experienced as meaningless. And, as implied above, (at the end of the second section) the problem of externalities generated by conventional reliance on market mechanisms is also absorbed back into the information base on which social decisions are taken.

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* Collectiveness on the small communitarian scale is, of course, something quite different from the large scale bureaucratised "collectives" serving the statist ends of the East European and Chinese political party apparatus, conceived basically in emulation of the large scale industrialisation of West Europe and North America. In particular, from its bottom upwards, grass roots oriented, decision-making process, it permits a great diversity of social environment (e.g. in the spectrum of individual craftwork/collective teamwork, inter alia). Vide the concept of planning for diversity advanced in reference 19.
Thus it appears possible that the practical utopianism at E in Section 1 above potentially provides a response, through an alternative direction of technological change (C), to the concerns regarding resource depletion, environmental spoliation and work alienation at A, B, D. However, this utopian scenario faces the twin problems of how to get started and how to remain viable. The latter seems prior since it is futile to worry about how to get started unless one has some expectation of keeping going.

The conventional wisdom has it that economies of scale are so overwhelming that small scale community-based enterprises will be unable to compete with big business. As regards the question of technical economy this supposition is highly questionable, although detailed information of production scale against cost relationships is not generally available. Boyle\(^{(11)}\) notes a wide range of products from beer and bread making, through metal casting, bicycle assembly, the textile and clothing industries, footwear manufacture, and book printing, where the minimum efficient scale is quite small or the cost of departing from it is not great. Others will occur which are typically the province of the small firm such as electronic and scientific assembly, precision work, component manufacture, furniture making, and so forth. Thus, it might seem that the enabling function of research into A.T. could simply be to investigate and publicise techniques which would extend the product range over which small firms (and hence communitarian enterprises) might successfully compete. However, this is to neglect the social context which provides the explanation why so many of these activities - all those indeed which do not rely on a high degree of innovation, an area in which larger firms are outstandingly ineffective\(^{(12)}\) - are, in fact, dominated by large firms. The answer here lies in the institutional effectiveness of large enterprises in terms of their ability to borrow cheaply, advertise extensively and otherwise manage markets, procure advantageously, and, by vertical and horizontal integration, subsidise their various operations so as to maintain security for, and stimulate loyalty from, their managerial workforce, thereby creating the monolithic stability which leads to the conventional unquestioning acceptance of large scale in industry (even by those who are dissatisfied by the inequities of income, wealth, and power which follow from the class relationships of the mixed economy).

A programme of simply technical research might enable a few people somewhere to start a few small firms which might or might not embody the social objectives of Alternative Technology. However, it does not seem to be the most effective kind of research for advancing the normative objectives that have been referred to, or for responding to the current concerns about the future of industrial society. Boyle goes on to discuss the external social conditions for the viability of co-operatively organised community scale industry\(^*\) including, particularly, the selection of products which (following Stein\(^{(13)}\)) he argues, should be related to the needs of local consumers and take the form either of tailored products or basic commodities. By tailored products are meant items which meet a specific and localised need which it is not worth the while of big firms to cater for. By basic commodities are meant items on which big firms substantially add to their costs by elaborate measures to create artificial product differentiation, e.g. soap

\* The A.T.G. enjoys the benefit of working alongside the OU's Co-operatives Research Unit, which conducts an important programme of research into the internal organisational problems of co-operative working.
powder. Community enterprises producing in these fields can achieve a stable market on the one hand because of the direct relationship with customers which tailored production gives rise to, and on the other by undercutting the larger producers through the avoidance of marketing overheads. In both cases an important factor is to establish consumer loyalty by maximising visibility and connection with the local community.

Turning to the question of how to get started: how do we get from where we are to where we want to be? It is perhaps one of the principal weaknesses of the Marxian analysis of social transformation based as it is upon the revolutionary event, that this question is not properly addressed. In the Critique of the Gotha Programme, he writes:

"What we have to deal with here is a communist society, not as it has developed on its own foundations, but on the contrary, just as it emerges from a capitalist society; which is thus in every respect, economically, morally, and intellectually, still stamped with the birthmark of the old society from whose womb it emerges. .......

But these effects are inevitable in the first phase of communist society as it is when it has just emerged after prolonged birth pangs from capitalist society ......

In a higher phase of communist society, after the enslaving subordination of the individual to the division of labour, and therewith also the antithesis between mental and physical labour has vanished; after labour has become not only a means of life but life's prime want; after the productive forces have also increased with the all-round development of the individual, and all the springs of co-operative wealth flow more abundantly - only then can the narrow horizon of bourgeois rights be crossed in its entirety and society inscribe in its banners: from each according to his ability to each according to his need!"

Sixty years after the October revolution we are still waiting for Soviet Society to get rid of the birthmarks of the old Tsarist Society, and not only, one might remark, as regards its ways of dealing with internal dissent.

It is, of course, completely contrary to the A.T. concept of decentralised political power that Society should in any way be forced into the utopian scenario that has been outlined earlier. Indeed, it is only by virtue of voluntary decisions that such a development can be validated as alternative growth: if people do not voluntarily adopt the communitarian alternative, there is no evidence that they are better off under it. The "economic, moral and intellectual birthmarks" must be sloughed off before industrial society withers away, through the involvement of people in alternativist activities which find natural growth points in the interstices of the now-existing Society.
Accordingly, it is not envisaged that it would be possible or desirable for the whole of Society's economic activity to be organised on communitarian lines, at least for a very long time. For instance, whilst much illness and ill-health can be avoided by a more wholesome lifestyle, and while much medical activity could more beneficially be directed at either preventative medicine or a more reconciled and comfortable departure from life (all of which could be facilitated by decentralised and communitarian medical services better integrated with the social services) nevertheless, there seems no prospect that the treatment of acute conditions can take place away from specialised centres and nor is it part of alternativism to suggest it should be. Again, whilst much electric power may be desirably generated in a decentralised way, by the use of wind power for instance - both because it is a renewable resource and because it enables people to be directly involved in meeting the bulk of their demands and thereby to be that much more in control of their economic environment - nevertheless, some centralised production, using wave or hydro power, is equally renewable and can provide a security of supply which, whilst inessential for most purposes within the community, is nevertheless an important component of material comfort. As another example, whilst the bulk of a community's needs for such metals as steel and aluminium might eventually be met with localised recycling facilities, possibly embodying sophisticated programmes for the analysis of scrap and its re-alloying, nevertheless make up quantities of these materials (to allow for corrosion, wear and unavoidable degredation in use) would doubtless continue to show economies of scale in production at locations close to resources of raw materials and concentrated energy.

In addition, and on the supply side of the labour market, there will doubtless always be some who would prefer to sell their labour simply and without the involvement that results from participation in its organisation, whilst others - particularly perhaps in the more sophisticated service sectors - will resist involvements which detract from their freedom to commit themselves wholly to some rewarding form of specialisation. However, there are important qualitative differences from the conventional scenario, both in lifestyle and in the distribution of power within Society, when the bulk of economic activities is located within the local community in small scale units under the control of the people who are directly involved both in the production and the consumption of its output. Thus the emergence of a Society based on A.T. is seen as a purposive development that takes advantage of the favourable possibilities that arise in various ways from the problems inherent in the present stage of industrial evolution.
To emphasise that the A.T. view of the future cannot be imposed, and to assert that it will emerge as a purposive response, does not say much about how such a purpose can be helped to realisation. In order to investigate this question, the research activity of the A.T.G. has been to create and study situations in which the related activities of self-sufficiency and alternative production can be put into practice. Whilst the scenario that has been outlined would involve these activities in complementing each other within the framework of an alternative communitarian lifestyle, it does not seem practical at the present time to put them together in this way, and the research accordingly treats the two activities separately. In each case, it is necessary to study the activity in a real context: there is no way in which social experiments can be set up in the laboratory and the raw material for such studies - a particular essay in self-sufficiency or a specific alternative production venture - is so idiosyncratic as to preclude any serious possibility of "control" experiments: indeed, it is difficult to see what might constitute a control. Thus, the methodological framework is that of a participant observation or action-research - depending on whether the situation under study is one which the researcher initiated or in an ongoing one to which he needs to gain access. (15) In describing the various projects mentioned below from the particular perspective of their research interest, it will be kept in mind that, as implicit in the methodology, none of the projects was initiated as a pure research project, but rather represents the interaction of those involved, each basing their actions on personal motivations which they, as individuals, bring to the projects. In either case, since we are looking for a development which emerges naturally from the present and expected state of industrial society, it is natural to build on developments which contain these activities in embryo. In the case of self-sufficiency studies this can be fairly directly located in the alternativist movement of the 1960's, with its carry over of agrarian community and its concern with organic cultivation and husbandry. In other words, there is here an existing institutional model ready for further development and study. In the case of alternative production, the institutional model, presented by the radical work co-operative, is very much less well developed and the essence of the research is to investigate ways of increasing its viability and stability.
1 Domestic-scale self-sufficiency studies\(^{(16, 17)}\)

This work is carried out by Robert and Brenda Vale on a 0.7 Ha smallholding in East Anglia, where they occupy a nineteenth century agricultural cottage with three bedrooms upstairs and day accommodation below. They are concerned basically with energy and food sufficiency. As regards energy, they have converted their cottage to low energy demand by carefully detailed insulation measures and plan to meet most of their remaining energy needs from renewable sources (solar, wind power, and wood). As regards food, the objective is to demonstrate practically the theoretical possibilities of producing a yield per hectare higher than the national average by organic methods involving high livestock stocking levels, and intensive gardening techniques. It is expected to demonstrate how, with a more uniformly disseminated population, it would be possible for each family to feed itself off its own share of the land available in the U.K. Careful monitoring of all produce and of all inputs (including labour inputs) is carried out to enable a detailed picture to be built up of the costs and benefits of self-sufficiency at the domestic scale. It has been found that a rich and varied diet is available within this framework, which is not applied in so rigidly a doctrinaire a way as to prevent the purchase of such things as tea or coffee, although most of the external exchanges of food that occur do so by way of gift exchanges of produce within the local informal community. This work has already produced a wealth of detailed practical information which is not only valuable in itself, and as a data base for a dispersed version of the A.T. utopia - separate family dwellings each in its own smallholding, clustered around village style social and production facilities - but also for comparative purposes with more collective possibilities.

2 The Redfield Community\(^{(18)}\)

The first stage of this work has involved the author with investigating the problems arising from setting up a community in a rurban* location. The setting is a very large (30 bedrooms) late Victorian house set close to the small town of Winslow in about 18 acres of mixed woodland pasture, and kitchen garden, with very extensive stabling and outbuilding. About 20 adults plus 18 children are involved. Thus, the ratio of land to people is broadly in line with the previous example. The author participated as secretary of the Housing Co-operative which was formed to carry out the project, and thus experienced at first hand the practical difficulties which face people who contemplate such an undertaking. A particular feature of the project was to evolve a financial and legal structure in which the members could participate as equals, despite variations of financial circumstances (though there is no dominant stakeholder), which would enable them to move in and out of the community reasonably conveniently, and that was sufficiently acceptable to the financial institutions to make it possible to borrow on

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* Rurban is a neologism invented by Dr. Alice Coleman\(^{(19)}\) to mean land on the fringes of urban and rural land use which, for one reason or another, falls into decay and becomes wasted. In this case, planning permission for the redevelopment of the grounds of this property would not have been obtainable, but it is difficult to conceive of an alternative use for the property which would have resulted in its grounds being restored from their present level of decay.
reasonable terms the balance of what was needed to complete the purchase. These concerns reflect
the underlying objective of developing a replicable framework for setting up such communities and
of identifying the institutional blockages to such developments. Significant amongst these turned
out to be the lending policies of the Building Societies which are geared to single owner occupation
rather than collective ownership. In the present case, however, these policies did not, in
themselves, prove insuperable, since a building society was found which was prepared to advance
long term finance on the basis that the house be divided into separate (mortgageable) units, an
arrangement which was provided for within the community's legal and financial framework.
However, the Building Regulations would have made such a conversion prohibitively expensive so
that the community is left with paying of a relatively short term loan from a clearing bank which
does not qualify for tax relief under the Government's option mortgage scheme. It is, of
course, not suggested that the Building Regulations are inappropriate in the case of accommodation
marketed to conventional consumers. But it is a different situation in a community where the
building is known collectively and information about its defects can be kept in mind. Specific
relaxations of the Regulations could be recorded and put right in the event of foreclosure of
the mortgage and realisation of the property to conventional purchasers, but no framework
exists for facilitating such a procedure and the potential of a communitarian housing project
for making sensible use of larger houses, old hospitals, etc., as cheap living accommodation is
accordingly lost. In addition, planning restrictions as regards the mixed use of land
constitute an important impediment to the community's wish to develop a sustainable life style
on its own property; its present outline planning permission will enable it to run a small
study centre on the property, devoted to propagating members' alternativist commitment, but it
remains to be seen how flexible this arrangement can be in practice.

The second stage of the project will be concerned with carrying on self-sufficiency activities
organised on a community basis. As regards food, the objective is to obtain information which
can be compared with the Vales' results with a view to establishing the effects of scale on the
costs and benefits of self-sufficient lifestyles. It is hoped that it will prove possible for
part of the youth training project described below to be carried on at Redfield, therefore
making an important contribution to the quality of the trainees' experience of alternativism,
as well as to the viability both of the training programme and of the Redfield project (where it
is the objective that some members of the community should eventually be able to support
themselves economically by working in the community setting).

The Rainbow Community

Setting up this project was largely an activity of Godfrey Boyle and Martin Lockett. It has
involved the renovation of insulation of 24 railwaymen's cottages in Milton Keynes, by the New
City's Development Corporation, and they are leased to a Tenants' Co-operative. Knowledge has
been acquired of the problems of mobilising a public corporation to carry out a project of this
kind and of negotiating a satisfactory agreement with them. In this more urban setting, the
amount of land available is much reduced (about 1 acre of cultivable land) so that the prospects
of self-sufficiency in food are much less. On the other hand, the community is located very
close to the New Bradwell Workspace project (see below) and this situation provides the prospect
of enabling some members to adopt a lifestyle which integrates their participation in
alternative production with their communitarian domestic arrangements nearby, including car
sharing(20) and eating together (though on a less frequent basis than at Redfield).
The Simpson Brook Proposal

This proposal emerged as the branchchild of Neil Hickson and Don Ritson, senior officials in the Milton Keynes Development Corporation, as an entry to a competition organised by the Letchworth Garden City Corporation, to commemorate Ebenezer Howard's centenary. Like that pioneer, they describe a way of making a new planning idea work in terms of money, cash flow, and return on investment (rather than by the drawing of a pattern to be imposed on posterity). The strategy involves selling or renting land at agricultural prices with small spaced out building plots sold at residential prices with some sort of incorporated body - a sort of tiny garden city company - controlled by the prospective occupants exercising broad overall power, without the need for detailed planning regulations on account of the community of interest of the people involved. They have in mind that such a community would develop by a process of natural accretion rather than according to a predetermined model, thus taking advantage of the lessons which can be learned about the way unplanned communities have developed elsewhere. Although the Development Corporation have overriding planning powers, the proposal is at present stuck whilst consideration is being given as to whether to exercise these powers against the objections of the planning authority which are based on the grounds that the proposed piece of land is designated for recreational use in the structural plan. In practice, the piece of land concerned is very difficult of access owing to the disposition of nearby roadworks and one of the arguments for the scheme has been that it is unsuitable for any other use. However, the Chairman of the Development Corporation has thrown the scheme in the melting pot by proposing a much larger version, involving one or two kilometre square grid units of the Corporation's future development being allocated to a similar proposal. It may seem difficult to envisage the institutional arrangements for providing effective occupier participation in a scheme of this size, and the advantages of beginning with a smaller scheme may yet result in Simpson Brook - or something like it on a different site - going ahead as a pilot project. Either way round, the A.T.G. expects to participate in the scheme, especially by way of demonstrating the advantages of alternative technology (particularly vernacular techniques such as mud pack) for self-builders.

These four projects, then, as they overcome their initial difficulties, provide the framework for a study of the self-sufficiency concept in a variety of communitarian settings, and for comparative studies with self-sufficiency on the domestic scale. In the case of alternative production studies, the work has had to start a stage further back, since the alternativist movement of the 1960's did not leave a strong model in this area from which to build. Lessons can be learned both from historical examples like the Owenite experiment in Britain or the Utopian Communities of 19th Century North America, such as the Shakers and from present day examples overseas like the Mondragon movement in Northern Spain. However, work collectives in the U.K. have only recently begun to establish an economic base for themselves and even then mainly in the service area of food distribution and retailing. From this basis the most appropriate institutional form that has emerged in the variety of worker co-operative which Paton has categorised as the alternative or radical co-operative, that is to say, not borne of a "giving away" gesture by a paternalist proprietor, nor defensively by employees in the face of a plant closure, but setting up from scratch with a membership committed to democratic decision-taking and also to alternative styles of life.
However, the weakness of this institutional form presented a clear need to participate in the creation of an institutional framework which would enable the embryo to become more viable. For this the necessary resource base has presented itself most prominently in the form of official programmes for dealing with unemployment, which have become known generally as Job Creation Programmes, but which increasingly are being formulated in terms of training opportunities and second chance educational entries, especially for the non-achieving school leaver. It is appropriate to use these programmes in this way if the view can be taken that Society is faced with increasing structural unemployment (whether or not aggravated by the problems of counteracting inflation mentioned above). In that case, no amount of retraining will increase the number of conventional jobs available and can serve only to increase the effectiveness with which non-achievers can compete with low-achievers, thus reducing the number of unemployables at the expense of a higher level of short and medium term unemployment. Accordingly it then becomes desirable on policy grounds to create alternative work as well as from the normative considerations motivating the research.

As regards the question of unemployment, the recent London Conference on Technical Choice and the Future of Work(29) showed some divergence on the size of the expected job gap, but even the most optimistic view foresaw continuing unemployment well over the million mark into the mid-1990's. In fact, published forecasts based on the long range extrapolation of properly articulated econometric models are very few - certainly the British Treasury maintains a discreet silence. The Cambridge Economic Policy Group(29) have run their model through to 1990, when they foresee over four million unemployed on a continuation of present policies. Possible resources include a massive development of disguised unemployment, or alternatively, the adoption of a policy either of drastic devaluation (to generate export-led growth and employment) or import protection (to generate import substitution led growth). Neither of these policy developments seems likely.

One approach to this problem is to treat employment creation as a dominant factor in social decision-taking. Elliott(30) has made a preliminary survey of the consequences of this approach in relation to the energy supply problem. He demonstrates that a programme of alternative energy sources would lead to substantially greater employment as compared with the supply of energy through a nuclear programme. Effectively, it results in a larger number of disseminated jobs, less high skilled and less highly paid than the nuclear option and, as such, represents a sophisticated form of disguised unemployment, that is to say, the provision of the same economic value by more people than are needed, who must correspondingly be paid a lower average wage. However, this does not preclude the possibility that the alternative energy investment may be the product of alternative work as, for instance, in California where the insulation programme stimulated by Governor Brown's measures is mainly being carried out by a

* Incorrectly reported in the New Scientist dated 23rd November, 1978, as being organised by the British Association - it was, in fact, organised jointly by them and the Intermediate Technology Development Group, the technology transfer group inspired by the late E.F. Schumacher and supported by the O.D.M.
large number of small co-operatives. In that kind of situation, the possibility exists that
the welfare experienced by the relatively low paid insulation co-operators will exceed that of
the highly paid alienated labour in the conventional nuclear power work environment, in which
case we have an example of alternative growth rather than disguised unemployment.

The first A.T.G. project which attempted to make use of job creation support in this way was the
Milkwood Co-operative. This was a preliminary exercise to investigate the problems of
introducing the idea of co-operative working to the kind of young people whom job creation
programmes cater for. A very limited alternativist dimension was provided through the main
product line, which was a form of resource recycling, in this case the renovation of damaged
timber pallets. Three members of the A.T.G., including the author, were involved in the
management committee of this enterprise, which had a supervisory rather than an executive role.
After a period of successful trading in 1977, the enterprise entered an unsettled period, mainly
due to problems with recruiting adequate administrative management. Eventually, a few months
after the ending of job creation support, the enterprise folded, mainly on account of the illness
of a key worker.

The main lessons learned were that administrative management needs to be recruited early enough
to be involved in the planning of a project of this kind and that conflicting objectives as
regards training and viability need to be satisfactorily reconciled.

Emerging from the Milkwood experience, a need was seen for a Community Co-operative Agency to
provide a management service to small radical co-operatives. This was because it is unlikely
that all the necessary skills would be found in a single personality and because such
co-operatives cannot afford the excessive overheads implied by the recruitment of a management
team. A feasibility study has commenced for a project of this kind, sponsored mainly by the
Department of Industry under a scheme to promote collaboration between small firms, but with
substantial support from the Milton Keynes Development Corporation and the part-time
provision of a worker by the University.

The second project involving job creation support is currently in the planning stage and will
take the form of a training workshop. This is a workplace in which the young trainees are paid
an allowance by the Government's Manpower Services Commission and the supervisory staff draw
their salaries from the same source. Products may be sold, but must not be in competition
with ordinary traders and manufacturers. The expected scale is about 25 trainees and 5 adult
staff who will constitute themselves into a co-operative. Various fabricating skills will be
taught in a workshop to be provided through the M.K.D.C. together with life and social skill
training, to help young people under the transition from school to work. In addition, the
trainees will benefit by example and participation in the problems of co-operative working faced
by the supervisory staff. Apart from various money-making product lines, which are needed to
pay overheads and maintain viability, it is intended that the workshop should act as a test bed
for evaluating alternative production technologies that have been developed at the University,
but in a less cloistered environment than the laboratory, and for making pre-production samples,
needed for creating a market and for familiarising workpeople (some of whom it is hoped would be
ex-trainees) with the production process. As mentioned above, it is hoped that the trainees
would spend some of their time at Redfield acquiring outdoor skills such as horticulture,
animal husbandry, forestry and building repair. Apart from these practical skills, the objective is, of course, to introduce the self-help philosophy of alternative technology to the disadvantages stratum of society which can most benefit from it.

A further project which helps provide the infrastructure for enabling an expansion of alternative production in and around Milton Keynes, is a co-operative workshop project, New Bradwell Workspace, based on converting an old school located conveniently close to the Rainbow Community. About ten small workshops will be provided at, initially, subsidised rents within a legal framework which locates control in a co-operative of the occupying firms.

These developments constitute the institutional structure which the A.T.G. has been instrumental in setting up in the local community as a basis for alternative production. It is, of course, envisaged that work done inside the University will also find a role, that is to provide the sort of research underpinning which University Engineering Departments conventionally provide for industry at large. Many viable small scale alternatives can, of course, be undertaken without any research underpinning and it is to these areas, like wholefood distribution, that radical work collectives have so far been restricted. For this reason, there is a tendency to expect that small scale alternative production must inevitably rely on known technology (or even "low" or primitive technology, as opposed to high or advanced technology). This expectation is enhanced both by confusion with the concept of "low impact" (i.e. environmentally benign) technology and by the alternativist concern to de-mystify technology, which might be mistaken to imply a rejection of technology that is difficult to understand rather than a concern to educate its users.

However, because advances in knowledge have, in the era of industrial concentration and growth, generally been stimulated by large scale capital intensive developments, it does not follow that advances in knowledge must always be towards high technology in that sense. As society adapts to an alternative growth path, the stimulus to research provided by small and skill intensive developments may be expected to be equally demanding intellectually, particularly as regard is paid to environmental and resource depletion constraints. The A.T.G. has so far undertaken research in two areas, one of which falls in Stein's category mentioned above (13) of tailored products, and the other into his category of basic commodity.

The tailored product project* is a response to the particular problem of personal transportation presented by the outdated planning approach at Milton Keynes, which was designed at the culmination of the growth philosophy in the expectation of the multi-car family becoming the norm. Consequently, there is a massive provision of roads and roundabouts with housing isolated at the centre of kilometre square grid blocks protected from expected traffic noise by landscaped banks of earth. In reality, with local wages rather low, most families cannot afford even one reliable car and mother is left with distances of a mile or more to walk her

This represents an extension of Stein's terminology, which he related to products tailored to meet an individual's needs, into a product tailored to meet the needs of a community. The economic reality, i.e. a product demanded in too small volume to be worth producing by industrialised techniques, remains the same in this wider usage.
children to school and then to get to the shops, perhaps in some quite different direction. A cycle path network is also provided for recreational purposes, but the undulating countryside makes it difficult for normally unfit mothers to use them, especially when carrying a load. The response to this is a power-assisted tricycle equipped with a motor cycle battery and a small electric motor, which drives only when the pedals are being turned. It is anticipated that, because the vehicle will not go without the pedals being turned, it will not be regarded as a motorised vehicle, with consequential costs of insurance, tax, and safety equipment. Details of this research were presented at a conference on pedal power organised by the A.T.G. in conjunction with the University's New Town Study Unit in December, 1978.

The basic commodity project involves paper, where research is being conducted into community-scaled paper recycling by a research student who had previous experience in the field as a researcher for Friends of the Earth. Here, the objective is to develop existing technology to a point where a small scale plant can make an effective contribution to Milton Keynes' needs for paper products on the basis of locally collected waste paper, thereby saving substantial distribution costs of the conventional supplier. Eventually, it is envisaged that this work can develop into a viable waste strategy for the New City.
CONCLUSION

This Paper has reviewed the nature of alternative technology and analysed the problem of designing a research programme in this field. In each of the main areas of activity, self-sufficiency studies and alternative production studies, there clearly remains a very substantial body of work to be done. But the objective must be to bring them together in order to enable a proper evaluation and demonstration of the practical utopianism of alternative technology to take place. The proximity of New Bradwell Workspace to the Rainbow Community, and the possibility of carrying out some training workshop activity at Redfield, both provide instances of the fortuitous avoidance of the planning barriers which would normally present themselves to an attempt to set up an integrated facility. Given the powers of the Development Corporation, Simpson Brook may provide an even more exciting precedent. However, it remains the case that planning legislation and planning philosophy, with its determined separation of land uses and highly conventional expectations regarding construction methods and aesthetic aspects, remains a daunting barrier to the more widespread adoption of ideas which provide one response to the central conservationist concern of this Congress. The idea of experimental planning is bedevilled by the legitimate concern of planners for the possible objections of neighbours not involved in the experiment. Here it seems must be a place for the kind of planning philosophy developed in my previous, joint Paper (reference 21), that is to say, to provide a framework which will enable like-minded people to group together and carry on those activities which they wish without impinging on the peaceful enjoyment of others of a different mind in a different community of similarly differently minded people in a different place.
REFERENCES

1. P.L. Read: Contradictions within the Alternative Technology Concept, (draft).