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WORK, JOBS AND TECHNICAL CHANGE

("If work is so terrific, why do they have to pay people to do it?" *Tertius*)

("The word 'work' is our most misleading social term. It designates the occupation of those who would be very unhappy without it." JK Galbraith, 1999)

Introduction

The problematique centred on work and technological change has three principal aspects. First, there is an **existential** problem about the importance of socially productive work to the human psyche, quite apart from its conventional role as the means of entitlement to societal goods. If it has existential importance, then the just distribution of work, not only of goods, becomes a social aim and will determine the nature of our critique. This problem is seldom addressed. Of course the issue is not about mere activity: there is little doubt that a life of inactivity is psychologically as well as physically unhealthy. Nor is there any suggestion that work should dominate our lives, "All work and no play makes Jack a dull boy!" The issue is whether some sort of work is necessary for human fulfilment.

Second, there are the immediate concerns connected with structural **unemployment** resulting from the inability of our social institutions to cope with increased productivity as a result of technological change. Here, we have to clarify the meaning of the statistics and then disentangle the technological from the ideological and political forces which also contribute to unemployment.

Third, there are problems concerned with **changing patterns of work** resulting from both the "Information Revolution" and a resurgence of individualist ideology with a concomitant closing down on collective social projects,[1] all within a programme of globalization . William Bridges calls it the second "Job Shift"[2], characterised by telecommuting; job-sharing; increased use of temporary and part-time workers and contracted-out services (including "telework"); and the growing popularity of self-employment and small business. Some of these matters are discussed in the chapter on Information Technology: others are dealt with here.

As we consider the various aspects of the problematique we cannot help anticipating the possible directions of a resolutique. Throughout this study we should keep in mind the ethical question about our right to solve problems of unemployment in our part of the globe and in our generation by the fix of economic growth, at the expense of future generations or other parts of the globe. These are the interrelated questions of social justice and sustainability. Whether looked at from an absolute point of view or from the stance of practical self-interest we must be very concerned about the stability of any system that increases inequality. In a vigorously expanding economy, inequality is accepted as a synchronic display of the stages people hope to pass through,[3] but once the illusion of growth is shattered, this acceptance will be hard to sustain.

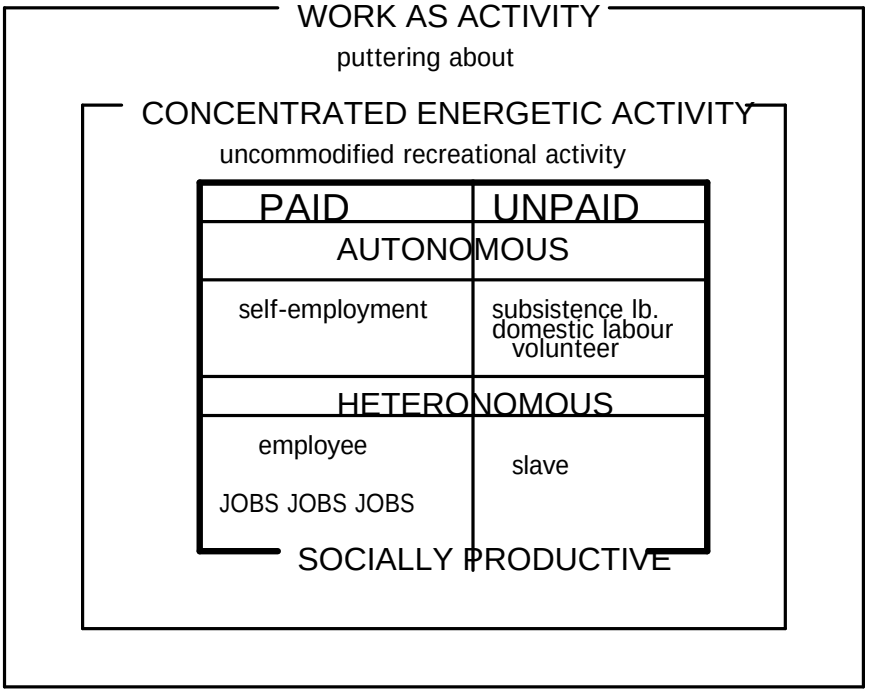
The terminology of work, jobs, employment, labour, toil and so forth is confused. I shall therefore start with a short section in which the key words used in this chapter are defined.

Definitions

The aspect of Work discussed in this chapter is "purposeful and concentrated physical or mental activity for a socially productive end."[4] It comprises the activities within the heavy box on Fig.421. It may be paid or unpaid, self-directed (autonomous) or directed by others

(heteronomous). It may be satisfying and pleasant or it may be unpleasant and tedious in which case we may call it toil, labour or drudgery.[5] According to the English philosopher Bertrand Russell, “Work is of two kinds; first, altering the position of matter at or near the earth’s surface relatively to other such matter; second, telling other people to do so. The first is unpleasant and ill-paid; the second is pleasant and highly paid.” Work may produce a surplus product or it may merely sustain life. Tolstoy referred to the latter as “bread labour”, a term taken up by Gandhi as central to his economic ideas, but Karl Marx called the subsistence labourer *animal laborens* because, like an animal, he did not accumulate. Both the producer of surplus and the reproducer of himself are engaged in social production: the one by adding to social welfare, the other by relieving society from the burden of supporting him. The commodification of sport and recreation, which is the economic concomitant of its technicization, has left very little work outside the social economy. Under “self-employment” I would include worker-owned co-operatives. I have not complicated the figure with “consumption”, even though I recognise that the consumption of commodities both involves the work of selection, transportation etc., and may be considered socially productive because it is necessary for the functioning of the economic system. Nor have I found a place for those who pay to work, namely: students! The limited objective of Fig.421 is to show the relation between jobs and a broader concept of work. There are, of course, many other meanings of work -- “my life work” for example -- which are not included on the diagram. The noun 'work' can mean either the act of working or the product of work, as in "a work of art". In Latin and other languages there is usually a separate word for the product of work. Since there is no such distinction in English, we often appropriate the foreign words e.g. opus, oeuvre. To the Greeks, the works they produced are what gave humans immortality. In a revealing interview, a crane operator at the Toronto Sky Dome construction site - said, "We are not here just for the money [$26/h], we are here to build this thing." When asked if he would come back when it was finished, he said he would brings the kids down, because "It's a memory kind of thing." That’s a very Greek thought![6]

Fig. 421 A Classification of "Work"



A **job** is a social relationship established by an employer with respect to an employee. There are other meanings of the word "job" which I shall not use here e.g., "I have a few jobs to do around the house". A great deal of work is done outside the job environment, but a job nearly always has **some** work content although, as the following anecdote shows, the strength of the correlation varies. In the 1987 negotiations between Canada Post and the Canadian Union of Postal Workers the conciliator referred to the CUPW's "program to create jobs, through increasing paid time during which no work is performed"[7].

I. The existential problem

An understanding of the existential nature of work is directly relevant to our attitude towards technology. Work is an indirect utility in that it produces the goods we need and desire. These benefits can be called 'extrinsic'. The question is whether there is also an intrinsic benefit to the worker in terms of physical and spiritual health. To go further, is it an activity necessary for our well being? Opinion about this is divided, both amongst scholars and amongst lay people. In the following section I shall illustrate the conflict with examples of contrasting opinion in order to help the reader come to some conclusion. The point is that, if work has intrinsic benefit, its replacement by technological devices threatens the psyche.

For the ancient Greeks, toil had no intrinsic merit. They looked back to a Golden Age free of toil and rejoiced in mechanical inventions such as the water-wheel which promised future idleness.

> Spare the arm that turns the mill,
> O millers, and sleep peacefully,
> Let the cock warn you in vain that day is breaking,
> Demeter has imposed upon the water-nymphs the labour of the slaves.
> Behold them leaping merrily over the wheel,
>
> And the axle tree making the heavy stone revolve,
> Let us live the life of our fathers
> Let us rejoice in idleness over the gift the goddess grant us.
> *Antiporos*

The most eloquent modern plea for idleness comes from an unlikely source, Karl Marx's son-in-law Paul Lafargue, in a pamphlet entitled "Le droit à la paresse" (1883).[8]

The Hebrews accepted the need to do work but regarded it as a punishment:

> "Cursed is the ground for thy sake: in toil shalt thou eat of it all the days of thy life ... In the sweat of thy face shalt thou eat bread, till thou return into the ground."

This biblical tradition continues to be preached by the Catholic Church , for example in John Paul II's Encyclical "*Laborem exercens*" (1981).

In contrast to the Greeks, the ancient Hindus embraced work as a sacred duty -- a doctrine revived in the 20th Century by Mohandas K. (Mahatma) Gandhi with his doctrine of "bread labour" – the necessity for each person to work at the provision of his own subsistence for at least an hour a day (hence the picture of him at his spinning wheel). This is precisely the

sort of toil rejected by Mortimer Adler (of Great Books and Great Ideas fame) who expressed the opinion that only work done in leisure had any moral call upon us.[9]

> "Work alone is your privilege, never the fruits thereof. Never let the fruits of action be your motive and never cease to work." (Bhagavad Gita.)

The Romans too, in contrast to the Greeks, considered work necessary for the building of character. The Roman model was adopted in the so-called "public" schools of England where as a boy I had to memorize:

> "Sensim sed propere fluit irremeabilis hora
> Consule ne perdas absque labore diem."
> (Slowly but surely the irrevocable hours slip by,
> Be sure you do not let a day pass without work)

In the nineteenth century, the German philosopher Hegel developed the thesis that work was necessary for self-consciousness. Hegel's discussion of the Lord/Bondsman (or Master/Slave) relationship is frequently referred to in philosophic writing. He argued that the apparent advantage of the Lord was illusory as he depended on the Bondsman for his sense of self. The bondsman, on the other hand, through work, "encounters and helps to shape a material reality and is thereby able to develop his mind and his capabilities. He can develop a strong sense of self from looking at the products of his labour."[10]

At the beginning of the 20th. Century, Randolf Bourne, according to Christopher Lasch[11], felt that "labour might become an end in itself, something that satisfied the individual's need to regard himself as part of a common enterprise."

The case for work as necessary for self-realization is made most convincingly by novelists. Let me quote some of them:

> Without work the vessel of life has no ballast. (Stendahl)
> Without work, all life goes rotten, but when work is soulless, life stifles and dies. (Camus)

In Kurt Vonnegut's *Player Piano* we are introduced to a workless society in which the goods are produced in factories with the lights out. The aimlessness of a society without work is the point of the novel. Primo Levi, in his novel *The Monkey Wrench,* took a similar view but thereby landed in trouble with the Communist Party of which he was a member, because the party line held work to be essentially alienating.

Enough examples have been presented to show the diversity of views. The conflict is to some extent rooted in differences of temperament (Puritans and Contemplatives versus Hedonists) but also depends on just what kind of work is being discussed. Work in a social environment is necessary for human development, but it does not necessarily have to be in the environment of a job: in fact, autonomous work is nearly always more satisfying to the psyche than heteronomous work. On the other hand, collaborative work seems to provide most people with more psychic income than solitary work: it is a pre-condition for **good work** in the sense described by Schumacher, who seems to call for a balance between autonomous and heteronomous work:

> First, to provide necessary and useful goods and services.
> Second, to enable every one of us to use and thereby perfect our gifts like good stewards.
> Third, to do so in service to, and in cooperation with, others, so as to liberate ourselves from our inborn egocentricity.[12]

My own conclusions about good work are consistent with Schumacher's. But while I believe that work, both physical and mental, is necessary for self-realization, even good work can be harmful if practised to excess. As John Ruskin observed, the rich could do with more of it and the poor with less[13].

Contemplatives assert that both my definition of work as directed to socially productive ends and the primacy that Schumacher gives to useful goods and services miss the existential significance of work which, as stressed in the quotation from the Gita given earlier, never lies in the fruits of action[14]. Further insight into the existential status of work is provided by humanistic psychology as discussed in the next section.

Work and the hierarchy of needs

As Julian Huxley pointed out in an essay in 1941, and as humanistic psychologists such as Maslow later confirmed empirically, we have a hierarchy of needs (Fig. 305). Work is the means by which we achieve many of these objectives.

Physiological
food, shelter, rest, exercise
Security
protection from danger, threat and deprivation
Social
belonging, acceptance, friendship, love
Ego
achievement, recognition, status, self-confidence
Self-fulfilment
creativity, realizing potentiality

Fig.305

Physiological

Work provides us with wealth which is an indirect means of satisfying our physiological needs. If we are "prosumers" (producing things we consume) it supplies those needs directly.

The satisfaction of the remaining needs is often referred to as **Psychic Income**. Psychic income from Good Work is high. On the other hand it is obvious that many jobs provide no such income. When this happens, there is alienation. The Industrial Era was characterized by physical distress amongst the working classes; injury, exhaustion, early death. The Post-Industrial Era is characterized by psychic distress; evidence of increasing nervous disease strongly suggests that alienation is growing. The World Health Organization predicts that by 2020 depression will become the number one cause of disability in the developing world.[15]

Security

Work is valuable to society not just as a vehicle for production or as a mechanism for income distribution. Even when it is not linked to production itself, work plays a role in providing society with a measure of stability through the order it imposes on daily life.[16]

Social

The work place has traditionally been an important locus of social activity, not infrequently including dating and mating. Computer assisted "just-in-time" scheduling of part-

time workers, especially in the retail trade, has destroyed the cohesiveness of the work group and removed many of the traditional social benefits of the work place.[17]

Ego or Self-definition

Traditionally, work in a job environment has been the primary mode through which people are ascribed their identities or socialized. According to some observers, this is no longer the case. As often as not their identity now comes through their non-job roles. The rapidity of technological change means that no job is going to last a lifetime. Most new jobs created in Canada, as in the UK, are part-time. So fewer people are going to invest their psychic capital in such an ephemeral instrument as the formal work place, often disparagingly referred to as "my day job". This represents a profound social change. As the World Academy of Arts and Science sees it, there is a growing detachment of "working" (they mean working at a job) from "living"[18].

Work and Entitlement

Work traditionally legitimates our claim on society for goods and services. However, the question of "entitlement" is becoming clouded because of technological change. Work, in the form of brawn power, is no longer the main productive force. Brain power and its technological products now fill that role[19]. This fact challenges an assumption which was absolutely correct at the start of the industrial revolution but has become less and less relevant to high technology business. That is the correlation between work and output. It provided the rational basis for traditional entitlement -- the allocation of societal goods. Modern technology has severed that bond but society refuses to acknowledge it. The *employer* cannot bear to see the fruits of industry go to a person who has no job. Notice that I didn't say to an idle person. Idle persons are very often job-holders: isn't our country's motto "don't work too hard, eh?". On the other hand some people on welfare may work very hard; attending university while bringing up two kids. The *Unions* claim a share of the productivity gains resulting from new technology even if they have contributed nothing to it (unless it is truly the result of workers' suggestions). On the other hand, it can be argued that we all contribute in one way or another, as teachers, parents, consumers etc. and hence are entitled to a "social wage".

Conclusions about the existential meaning of work

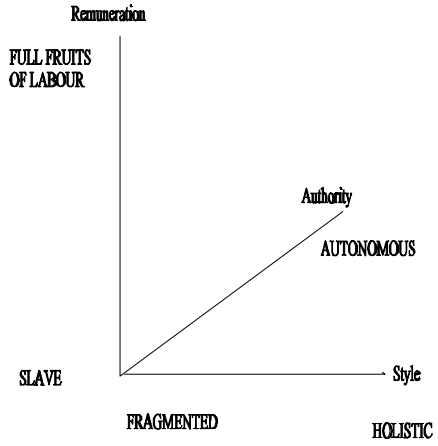
The weight of historical evidence and my own experience indicate that productive work is necessary for a healthy psyche. I believe too that a significant part of this work is beneficially done in a social environment. Since the start of the Industrial Revolution, that has been difficult to achieve outside the context of employment at a job. In Post-Industrial society there is no longer a guarantee that such job opportunities will ever again be universally available. We can struggle to restore the old conditions through job preservation or creation or we can seek an entirely new paradigm for our resolutique. I shall come back to that in a later chapter, but to wrap up this part of the discussion we need to think a little more about the quality of working life -- that which distinguishes "work" from "toil".

> "As the apostle James knew, it is labour that makes love real and love that makes labour meaningful. Alienation, more than anything else, is the dissociation of love and labour, leaving love an empty sentimentality and labour a drudgery. Each time we sacrifice the goodness of self-labour for the perfection of mass production, we lose something of ourselves."[20]

Quality of working life

There are two distinct aspects to job satisfaction: pay and quality of working life. Pay (including benefits) seems without question the most important to the majority. Surveys in both the USA and Canada reveal a high degree of job satisfaction although, to an intellectual, the jobs appear unbelievably dull![21] But, if the job is not remunerated sufficiently to provide for basic human needs, it cannot be satisfactory. The quality of working life depends chiefly on two factors: autonomy and the organizational style of the work. We can therefore map a work situation into a space defined by the three dimensions of remuneration, authority and style.

The most important non-salary matter in people's evaluation of the quality of their jobs is the degree to which they are autonomous (allowed to make their own decisions). Autonomous work lies at the heart of job satisfaction and much of the current discourse about "empowerment" relates directly to this. Part of the feeling that technology is "out of control" is that our work is out of our control. People tend to make a bigger distinction between autonomous work and heteronomous work (that directed by others) than they do between work and leisure. A central complaint about the computerization of work is that "intelligence becomes lodged in the machine" i.e. the computer or microprocessor is loaded by managers with detailed programmed instructions which restrict the autonomy of the operators.[22] This is what distinguishes telework from telecommuting. In telework, the operator, who supplies a work area at no cost to the employer, responds to enquiries or requests with a limited repertoire of phrases or actions which are monitored by the computer system. The call centres reached by 1-800 numbers are nearly all of this type. Heather Menzies devotes a large part of her *Whose Brave New World* to a description of telework cases. Telework makes the worker an extension of the computer (the 'computer's servo-mechanism' in McLuhan's evocative but not very accurate phrase). The great importance of leisure, to which I turn in the next section, is not freedom from work but freedom from heteronomous direction.



The organizational style of the work is important for one aspect of psychic satisfaction. The polarity is between division of labour carried to extremes of fragmentation and the holistic style characteristic of the artist-craftsman. The great gains in productivity achieved since the days of Adam Smith have been the result of the division of labour more than any other factor. But the division of labour has been a major factor in alienation. Trades Union practices forbidding cross-crafting have exacerbated the trend. However, there are encouraging moves to a more holistic, team-based, manufacturing style as Toyotism gains favour over the

Fordist/Taylorist model. There is, of course, an element of co-optation in the Toyotist style: it is not the product of sheer managerial benevolence.

The paradox of Leisure

Jeremy Seabrook, in a book called *The Leisure Society*, asks how it is that everyone is being exhorted to work harder and increase productivity when, at the same time, we are told that the marvels of modern technology are ushering in an age of abundance? Leisure, he says, is something enjoyed by the rich, the retired and the redundant. Isn't there a contradiction here?

Leisure is the discretionary time left over after those activities necessary for the maintenance of life and of competence have been performed (working at a job, travelling back and forth, shopping, studying etc.). Canadians average between 11 and 16 h/wk of time free for leisure and personal care according to Statistics Canada. Leisure time is agreeably occupied with idleness, play or autotelic work (work done for its own sake without expecting material reward). In a healthy society we would maximize leisure with the help of the productivity gains that technology so abundantly supplies. It is fair to say that, in the advanced industrial countries, technology has now made it possible to provide the necessities of life with very little labour. For example, three percent of the population of North America now produce abundant food with a surplus for export. Technology constantly replaces labour. But we encounter an extraordinary paradox. Our economy is so structured that unless the fruits of increased productivity are converted into increased demand, the traditional basis of compensation breaks down. If demand for goods and services does not increase, work time is indeed liberated, but it comes, not in the form of leisure, but of unemployment without financial support and marked by social stigma. (Ironically, one way of increasing demand has been to commodify leisure activities! The "Leisure Industry" is big business.)

When policies of retrenchment and downsizing combined with further technological change produce massive unemployment, panic sets in. There are calls from the political left for labour intensive technology or for government job-creation. And yet, to quote from a recent letter to the Globe and Mail's Report on Business,[23] "Machines that create more jobs (or work) in an environment of falling qualities of life, are an indicator of an .. .insane system.....[L]ess enforced work is not a problem and so it does not have a cure. Our machines were created to give us a higher standard of living - and more free time." I shall take up this subject again in subsequent sections.

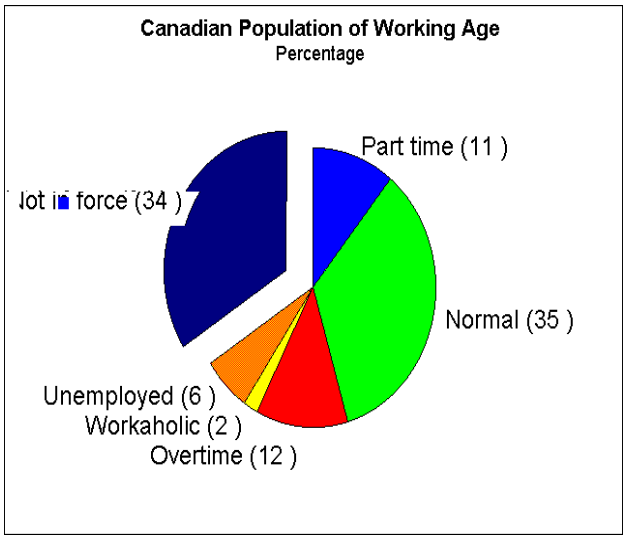
II. Unemployment and its meaning

We turn now to the problem of unemployment. I am going to suggest, like the Globe correspondent I quoted above, that the problem is not lack of forced (heteronomous) work but the inadequacy of the social arrangements within which it is performed and within which the products of that work are distributed. But first we have to understand what the "unemployment statistics" are referring to.

Statistical Unemployment

We have to examine the special meaning given to "employment" and "unemployment" in labour statistics, because statistics vary between countries and have very different meanings for

different people. Statisticians start with a "*population of working age*" which is itself is very arbitrary (commonly set from 15 to 64). Within this population in Canada there is currently a large group (34%) which is "*not in labour force*". This includes many early retirees (both voluntary and involuntary), those who have become completely discouraged, students, handicapped and ill persons, those outside the formal economy including home makers, and the criminal community whether in prison or "working". The *participation rate* is the proportion of the population of working age in the labour force (usually around 65% in Canada; the same in Australia and New Zealand). From 1989 to 1999 there was a 2.7% decline in the Canadian participation rate due to a combination of cyclical and demographic factors.[24] The "*unemployed*" are those in the labour force who are not employed (either full or part time). Because the number only includes those actively looking for work and qualified to claim, the English term "claimant count unemployment" is to be preferred. Since "the unemployed" excludes those "not in labour force", the productive potential of the population is far greater than the potential of a fully employed labour force and, indeed, much of this potential is realized in the "grey" area of the informal economy.



Composition of the population of working age.

The pie chart in Fig. 420 represents the population of working age (PWA) in Canada estimated at 23 million (1996), of whom 8 million are not in the labour force and 1.4 million are unemployed (9.6% of the labour force). Remember that "employment statistics" refer only to those in the labour force. The figures on the pie chart are percentages of the PWA, not of the labour force (which are discussed below).

In terms of hours worked, the employed population is quite heterogeneous. Those working the fewest hours comprise a growing body of part-time workers and a large body of non-viably self-employed. I have assigned about 11% of the PWA (or 17 % of the labour force) to the part time group, although StatsCan have established that 24% of *jobs* are part-time, because many of the job-holders have more than one part-time job and are in fact fully employed[25]. A significant portion of part-timers and the non-viably self-employed, together with a large number of fully employed people earning the basic minimum wage, make up the "working poor". However, two-thirds of the part-time work force may be there by choice, having decided that time devoted to school, family or leisure is of more value to them than extra time spent in employment.[26] The next group comprises those working a "standard working week" of between 35 and 40 hours (59% of the labour force; 35 % of the PWA). Those working over 40 h/wk, i.e., overtime, comprise about 17% of the PWA or 21% of the labour force. By way of contrast, in the USA, according to Schor[27], workers who regularly work

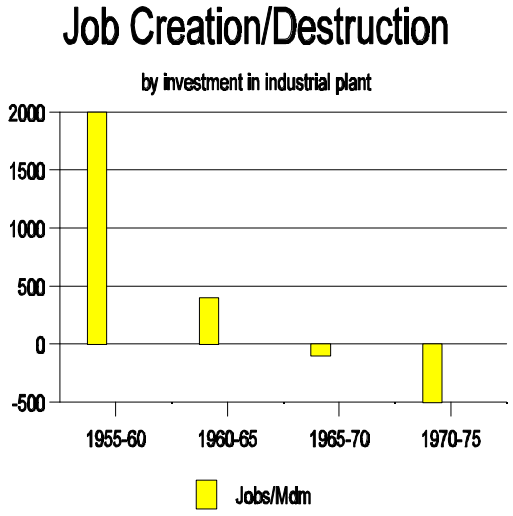
overtime comprise 45% of those employed. The high end is occupied by workaholics (mainly in the executive class) who, according to Naisbitt,[28] work an average of about 55 h/wk in the USA. They represent perhaps 2% of the Canadian PWA or 3% of the labour force.

In addition to these differences in working hours, there is a wide variation in paid vacation time. It follows that something called "The average working week" has very little meaning. The number of hours a person actually works per year is a better measure of activity, and the number of hours worked in a lifetime is the best measure.

Ownwork

A vast amount of the work done in society is not connected with jobs and does not fall into the category of self-employment. Much of this includes Home Work (Fig. 301); other work is done outside the home as a service to friends or charity (Gift Work). These activities comprise what James Robinson has called Ownwork. The amount that this, together with other parts of the grey and black economies[29], contributes to the production of goods and services in Canada has been variously estimated at between 15 and 50% of the total economy. This type of work moves in and out of the formal market economy. The trend lately has been for it to be moved *into* the market economy (and thus counted in GDP) as women took up jobs and used their wages to purchase goods like frozen dinners and services like laundry previously supplied by ownwork. However, the people doing ownwork may or may not be in the labour force; they may not even be in the "population of working age".

UNWAGED HOME WORK
meal preparation
food preservation
garment making and repair
building maintenance
small-scale agriculture
transportation services
educational services
purchasing
coaching
counselling
Fig. 301



Job creation and destruction

Four significant forces determine total employment and the distribution of jobs within the economy: *political ideology, the composition of the demographic pyramid, technological change* and the internationalization (or *globalization*) of trade. Right at the outset of this discussion it is important to note that redistribution of employment (an aspect of "structural change" within the economy) has social implications at least as severe as changes in the total number of employed. This is particularly the case if redistribution involves movement from a standard time or

overtime situation into a part-time position, or into a full time job at the minimum wage (working poor).

Ideology

Several sociological trends having only indirect connection with technology have affected the employment situation in the last few decades. The decision of women to enter the work place as the full equals of men in all occupations has been the most important. This has entailed a transfer of work from the home economy to the market economy and thus created jobs in such industries as fast-food, child care etc. New “labour-saving” technology has been introduced to appeal to this new market. On the other hand, the entry of women into the labour force in large numbers has resulted in more jobs having to be created in order to achieve a given level of official employment. It is not clear which way the balance has been tipped.

A second trend affecting employment has been the trend to downsizing in the name of efficiency. Ease of communication between the centre and the margin brought about by computer technology has apparently been a major factor, but the idea has a life of its own. CEOs in large corporations are now rated on their prowess at job destruction. They compete to see who can have the leanest and meanest organization, or who is most efficient at downsizing (now "right-sizing").

Government leaders campaign under the same banner. The elimination of public service jobs is put into effect on a massive scale at both the Federal and Provincial level. But here is a paradox since governments are at the same time also committed to job creation. We are presented with a riddle. What is the difference between a cake baked in a public oven and one baked in a job creation oven? Answer: the latter has profit frosting.

Professor Yassin Sankar has drawn attention to the contradiction between the cries of management that "people are our most important asset" and the persistent downsizing that they carry out.

> Is it too much to hope that they will eventually realize that this mantra is true? Certainly, the idea is on the verge of being reborn in business books and studies. There, the idea is becoming common that a shortsighted strategy of cutting jobs, casting overboard workers with valuable experience, expertise, knowledge, skills, abilities, insight and a high work ethic is unlikely to achieve corporate goals. Companies that have done so often find that they have lost competitive edge globally.[30]

The temptation to overdo the downsizing is built into the executive reward system in North America; but, fortunately, not all succumb to it. All the Canadian companies that did better than others in their respective industries seems to have bucked the trend to downsizing and grown while they cut costs: I refer to companies such as Magna, Newbridge Networks and the Loblaw companies.

I am including fiscal and monetary policy in the “ideological” category because it is clear from ongoing correspondence in the business press that there is no agreement in these matters but that the views expressed are closely tied to the political stance of the source.

Monetary policy

There is a perception, with good historical foundation, that a low rate of unemployment leads to inflation. Workers feel in a stronger position to bargain for higher wages, employers may bid for workers, and the rate of increase in wages may exceed the rate of increase in productivity and this leads to inflation.

However, this is not an inevitable process, nor does everyone deplore inflation. A decline in inflation creates the expectation of lower prices and hence a delay in consumer spending, and this is "bad for the economy" in the context of the present growth-oriented regime. It also reduces the *feeling* of doing better which comes with higher wages regardless of purchasing power. Economists and political scientists differ amongst themselves on this issue. The Brookings Institution has claimed that zero inflation has permanent unemployment effects. Harry Valentine says the assertion is "pure bunk" and there is no way to reach this kind of conclusion in the economy of any nation which makes high interest payments on its national debt to recipients elsewhere in the world[31]. Nevertheless, Pierre Fortin of the University of Quebec has advocated increasing inflation in order to expand the economy and increase employment. The Governor of the Bank of Canada replied, "What our past experience teaches us is that inflation creates uncertainty and instability - not the conditions of durable growth and job creation."[32] The International Labour Office, in its 1995 World Employment Report, adopts full employment as a strategic goal. Far wiser is the World Academy of Arts and Science which established the goal of a healthy society as "full engagement".

Fiscal policy

There are aspects of current fiscal policy in Canada that act as a disincentive to employment. Several new incentives have been suggested, including the proposal to adjust employers' unemployment insurance premiums according to the frequency of labour turnover.[33] The role of "pay-roll taxes" in "causing unemployment" is hotly debated: they join unemployment insurance, minimum wage laws and "excess" union power in the demonology of the right. I mention these matters only to emphasize that factors other than technology play a role in the employment picture. The reduction of government spending in Canada takes billiions of dollars out of the total demand and creates a "fiscal drag".

Demography

The changing distribution of the population by age groups over time is a phenomenon which strongly affects employment. Each age group makes different economic decisions, to save or to borrow, to purchase houses and durable consumer goods, or to purchase services such as education and geriatric care. David K. Foot has shown that countries like Canada, USA and Australia, which had a significant baby boom followed by a baby bust and a baby echo have a very inconstant demographic structure. This is the result of the booms and busts migrating over time into different age groups with different demands on the economy. Part of the current unemployment problem in Canada, and a major part of the redeployment from industry to service, is attributed by Professor Foot to the exit of the baby boomers from the prime purchasing years.

Technological change

Technical (or technological) change in **products** generally creates jobs by creating new demand. But investment in **process** technology, *other things being equal*, generally displaces jobs. The figure on page 10, plotted from some German data over a twenty year period[34] is illustrative of what may happen in any advanced industrial economy. It shows that while the investment of a million deutschmarks in 1955 created 2000 jobs, the same amount invested in 1970 destroyed 500.

The basic relations between employment and technical change resulting in increased labour productivity are shown in the box. Some of the feedbacks loops are as follows:

Increase in Employment = Function of (Increase in domestic demand and exports **minus** Increase in labour productivity)

This is a nonlinear relationship with positive (self-reinforcing) and negative (self-limiting) feedback loops which make it too complex to compute. The effects of the feedbackloops may be virtuous or vicious.

Compensation through increased demand

If the new process technology increases demand for the product, either through reducing unit costs or through producing a product with superior qualities, this may more than compensate for the displaced jobs, even within the same firm. Automation at Gienow Building Products and the introduction of robots at Standens Ltd. spring factory in Calgary both increased the number of jobs. The modernization of Miramichi Pulp and Paper which began in 1986 actually added 400 workers.

Reduced purchasing power (a vicious circle)

Unemployment, by reducing income and purchasing power, initiates a self-reinforcing feedback loop. We have seen how the only escape from increasing unemployment resulting from increased labour productivity is an increase in demand. The reduction of domestic purchasing power acts in a contrary direction to reduce demand and can only be countered by exports.

Stimulated investment (a virtuous circle)

If productivity increases result in the reinvestment of profits in new technology, the result may be a self-reinforcing virtuous circle of increasing productivity growth. The effect tends to be dampened by leaks to imports.

Technological unemployment now and in the past

There is a fear in some quarters that structural unemployment resulting from technological change may become a permanent feature of the industrialized world. From a theoretical study of the effects of technology one might expect -- indeed, from a certain point of view, hope for -- a gradual reduction in the need for heteronomous work as automation and

cybernation replace labour. This is perfectly exemplified by agriculture which occupied 50% of the Canadian workforce at the beginning of the century and 3% at the end. But, running counter to trends of declining labour requirements in some sectors, we find the growth of entirely new sectors of the economy. The displaced agricultural workers filled the factories. When the horse vanished as a working animal, the automobile industry with its millions of employees more than filled the void. One big question today is whether information technology or biotechnology will fill the void left by a vanishing heavy industry and the employment displaced by productivity gains across the board. Arguments about how to distribute work as a scarce “good” could be rendered meaningless by events. Sixty-five years ago, Oswald Spengler (author of the famous "Decline of the West") wrote, "It is not true that human technics saves labour. For it is an essential characteristic of the personal and modifiable technics of man, in contrast to genus-technics, that every discovery contains the possibility and *necessity* of new discoveries, every fulfilled wish awakens a thousand more, every triumph over Nature incites to yet others." John Naisbitt in *Megatrends 2000* saw the nineties as a period of enormous labour shortage. "In the next decade 14 or 15 million new jobs will be created, [in the USA] not as many as the 20 million created in the 80s. It's a good thing because there are not enough people to fill the anticipated new jobs."

In contrast to Spengler and Naisbitt, all the major thinkers during the last two hundred years seem to have made prophecies about the end of employment within their foreseeable future; and all have been proved wrong. The French Physiocrats predicted it in the 1760s; the Ricardian socialists predicted it in the 1820s; Karl Marx predicted it in the 1860s and Norbert Wiener, the father of cybernetics, predicted it in the 1940s. In every case the loss of jobs brought about by technical change was more than compensated for by the growth in demand for new goods and services in other sectors of the economy.

What is socially important is the opportunity for everyone who is able to do so to engage in *meaningful work -- to participate.* If we lived in a society with obligations as well as rights, I presume that everyone would do their share of necessary toil, either directly or by paying taxes to those willing to do so for reward.

Globalization

The fourth major factor, after ideology, demography and technical change, to which job loss is attributed is the internationalization of trade.[35] The balance between the direct and the compensating effects on jobs of productivity gains is now determined in the international market[36] because that is where we hope for increased demand. However, the purpose of exporting is to import, and imports may destroy domestic jobs so we have another vicious circle. Like technology, globalization both creates and destroys jobs simultaneously. "Technological change in communications and transport technology ...has undoubtedly contributed to the rate at which the economy has become globalized. Even if, in fact, imports are the cause of much unemployment, a minor power such as Canada does not have the option of protectionism - particularly against the US where it is ruled out under the free trade agreement.” We are advised that a move out of old industries and into newer ones and new markets is our only hope.

The supposedly inexorable pressure of globalization is being used by business and government to reverse the post-war gains made by labour in remuneration, job security and benefits.

Income elasticity

A major factor in determining whether displaced workers can be employed elsewhere is their willingness to take a lower wage. This is referred to by the euphemisms "income elasticity" and "flexible wages". Richard Harris observes, in addition, that "A stark form of the 'technological unemployment' hypothesis is that there has been a rising minimum skill level necessary to work with 'smart machines', and that this skill level has taken a sudden jump....Many *poorly skilled individuals are unemployable at any wage except one much lower than what is socially acceptable in Canada.* At the moment I know of no formal statistical evidence for or against this hypothesis." In fact, the hypothesis has been vigorously challenged. James Turk has argued that the higher levels of education demanded by employers may simply reflect the supply of people who have spent longer in school[37].

Wages and benefits

There is considerable debate about the effect of removing the floor from wages (deregulation) on unemployment. Theoretically, it should be possible to starve workers into accepting wages at or below subsistence level and this should encourage employers to use more cheap labour. And yet, possibly because of the education factor, the OECD found no correlation between relatively high levels of employment and the deregulation of wages. To add to the confusion, a contrary conclusion was reached by Francine Blau and Lawrence Kahn of Cornell who found that employment rates for low-skilled workers are relatively lower in countries with compressed earnings distribution (when a floor is established, the earnings distribution is compressed)[38]. Their findings are consistent with the following statement made by the World Academy:

> The puzzle of employment growth in Western Europe differs from that in North America due to policies providing stronger support for job security and wage increases -- which have resulted in faster growth of incomes and slower expansion of job opportunities.

In other words, there is an observed incompatibility between job security and a good wage on the one hand and employment opportunities on the other. The reason is that, while there is an unlimited supply of work to be done, we do not value much of it enough to pay an attractive wage to get it done. We express this as “not being able to afford” the required wages or taxes. It cannot be too strongly emphasized that this is a question of values, not of mechanisms.

Unionized wage scales in Canada are compressed (or “flat”) in marked contrast to the USA, but this is changing. In newer plants payment is based more on skills than on seniority. The disadvantage of flat wage scales is said to be the lack of incentive for technological upgrading amongst those employed and a higher rate of unemployment among the unskilled (no one wants them at that price)[39]. One might expect the last-mentioned factor to encourage technological upgrading amongst the unemployed; I have no data on the subject.

The same arguments apply to benefits as to wages. The cancellation of employee benefits is a “job-creating” proposal now popular in management circles.

III. Patterns of change in the work environment

We come now to the third of the major topics connected with work and technical change: the "job shift" from the Industrial to a post-industrial pattern brought about by increases in productivity and particularly by the introduction of new means of communication and control based on the microprocessor. There are, at the same time, gradual social changes whose origins seem not to be closely linked to technology. I shall mention first of all the apparent decrease in the participation rate as more and more people enter the grey economy (or really drop out!).

Changing patterns of participation

The proportion of people not actively producing any exchange-value (and thus not counted in the GNP) seems to be increasing and this includes what appears to be a large number not producing any use-value either! (See Box)

In past times, many people who are now non-productive would have been engaged in productive activity; certainly the prisoners, the children, and the aged would have been productive. That is also true for those who, in contemporary society, have been early retired. We see here a fundamental irrationality in the capitalist system which allows a *growth in the non-productive* and wasteful classes on the societal scale to coexist with the *ethic of productivity* and efficiency on the scale of each individual production unit. Although the distinction between producers and non-producers becomes somewhat less acute when we figure that paid work accounts for only 9% of the average lifetime, human resources overall are used to considerably less than their potential while many of those who have full-time jobs work unnecessarily long hours. Most of the unemployed are unable to produce except by working for somebody else because they lack the necessary financial resources to establish a workplace, regardless of the demand for their product or service. A high tech workplace in production needs about $250,000 of investment. No longer can a journeyman put his tools in a bag and wander the highways in search of a job. The increasing educational requirements of many of the new jobs seem to be obvious (although there is a tendency to use certification as a filter to eliminate applicants for positions). Only intellectuals carry their tools with them.

Children students
Landlords
Shareholders
Pensioners
Prisoners
Criminals
Invalids & Handicapped
Unemployed
Armed Forces
Featherbedders
Early retired

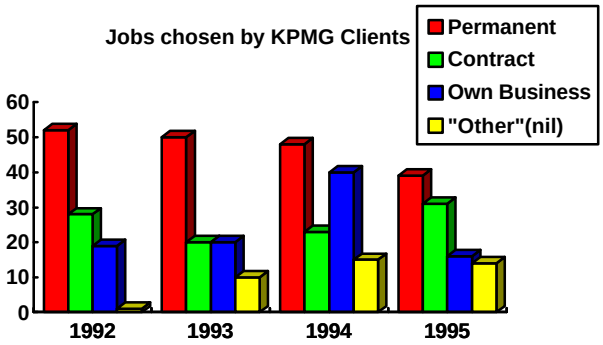
Change in occupations

Three categories of work are emerging[40]

- routine production services
- in person services
- symbolic analytic services comprising:
    - problem solvers
    - problem identifiers
    - strategic brokers between the above categories.

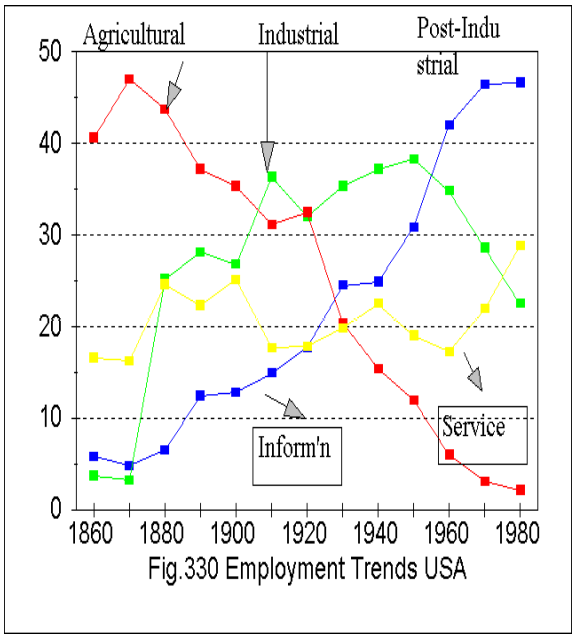
"In a high value enterprise profits derive not from scale and volume but from the continuous discovery of new linkages between solutions and needs." -- this is the rationale for the strategic broker.

The composition of firms is also undergoing a radical change. The large multifunctional corporation is being replaced by a smaller core group (corresponding fairly closely to what J.K. Galbraith identified as "The Technostructure"[41]) surrounded by a circle of task-oriented teams who may have a contractual relationship with the firm. This means a reduction in the number of permanent career jobs. Charles Handy, in a series of books, has drawn the conclusion that most people in business will have to have a "job portfolio" like an investment portfolio.



The above chart clearly shows the reduction in career jobs found for out-of-work clients by a leading placement agency in Calgary[42]. Notable, too, is the increasing number of "other" who were unable to find any job and either "went back to school" or accepted early retirement.

Intersectoral adjustments (structural change)



The long term trend shown in Fig. 330 is dominated by the industrialization of agriculture. But we also see the rise of information services at the expense of heavy industry. Hence we talk about de-industrialization or the move to a post-industrial society. Post industrial society is an information society. Of course heavy industry has not vanished. It has moved to the newly industrializing countries or NICs.

"A clear trend can ... be discerned in the composition of OECD manufacturing employment, with low-technology, low-skill and low-wage jobs being shed and high-technology, high skill and high-wage manufacturing employment continuing to expand."[43] But this expansion

in employment does not take place proportionally because of the concurrent growth in Labour Productivity.[44] Labour Productivity growth in the high technology sector has been higher than other sectors. The authors of the OECD Report on Jobs observe that a prolonged period of learning is needed for the implementation of Information Technology. A rather alarming conclusion which can be drawn from these data is that the Information Revolution has barely begun and that *by far the greatest effects may lie in the future* (the authors, in mentioning this, only describe the expected benefits).

The factors determining rising and falling employment in specific sectors are: productivity growth, income elasticity, and demand (domestic and export). Some indications of what is happening appear on the following table: (LP = labour productivity; IE = Income Elasticity).In consumer electronics and similar sectors, growth in demand and employment depends on the balance between producer learning (which lowers labour content) and consumer "learning" (getting a taste for high income commodities and radically new products).[45] Income elasticity, which means the willingness of the labour force to take a reduction in wages, is a major factor. The counterpart of income elasticity is the willingness of a potential employer to pay. In the realm of personal services people have the choice of investing their own time or hiring someone to do the job. The demand for services is largely a function of age and reference has been made above to David Foot's deduction that the transfer of demand from industy to services is the consequence of the aging of the baby boomers. The growth of the do-it-yourself industry, supplied with special purpose tools, materials and manuals, results in fewer and fewer people willing to pay for work formerly performed by hired tradesmen or odd-job-men.

SECTOR	DEMAND/ PRODUCTION	LP growth	IE	EMPLOYMENT GROWTH
services	high	slow	high	rapid
artisan	low	slow	low	slow
consumer electronics	varies	rapid	high	varies
traditional food & clothing	falling	rapid	?	falling

The polarization of skills

In factories, process innovations involve a shift in emphasis from experience and dexterity to technical knowledge and vigilance.[46] In offices they enhance the capabilities of operators and the technical feasibility of grouping together previously separate tasks. But a meta-study concluded that one cannot simply state that technological change demands higher or lower qualification requirements[47]. Both deskilling and enhanced skilling takes place. James Turk has made the very important point that one cannot understand the skills debate without grasping the political dimension in the definition of skill. "Skill" is being redefined from the product of arduous apprenticeship, typically lasting seven years, to the product of a few weeks training. On the other hand some activities which were regarded as "skilled" when performed by men are not so regarded when performed by women.[48]

There certainly is some skills mismatch. When Siemens Canada recently advertised for 18 technical positions they had 270 applications but only four of these were qualified. The question is whether that is the real problem or a minor affair which could be easily remedied by apprenticeship or training and yet leave the unemployment figures essentially the same.

It is the OECD's opinion that "Supply-side measures by government, firms and individuals to enhance mobility and provide the skills needed to match new demand will be necessary if the adverse effects of technological change are to be averted."[49] This advice runs counter to the prevailing ideology of “less government”.

Polarization of salaries

We are seeing a polarization of salaries with an increase of the farcically overpaid at one end and an increase of the workless underclass and working poor at the other end. The real value of wages in the lowest paid groups of society has been going down since 1991. This pattern has been observed in Canada, the USA and in the United Kingdom. It is not yet the case in continental Europe which has a stronger tradition of social democracy. But because the unions have been broken and wages forced down, the British have a lower unemployment rate than on the continent. (See earlier observations on “Income Elasticity”.) On the other hand they have generally lower skills and less interesting jobs. Poverty is a structural necessity for capitalism as it provides the justification for continued growth. And, as Ivan Illich has pointed out, poverty modernizes itself. Its financial threshold keeps rising because new products are presented as basic necessities even while they remain out of reach of most people. That is why all "wars on poverty” turn into farce.

Galbraith observed that it is an article of faith in our society that the managers of companies will perform well only if richly rewarded and the workers will slack off if they get too much pay. I must point out that even right-wing analysts consider the executive salaries and pensions which are now paid in North America to be grossly over-inflated. This is the product of prestige-competition between CEOs and their friends on the board. Five years ago a typical Canadian chief executive was getting a total compensation package of $389,00 US according to the American consulting firm Towers Perrin.[50] In the USA it is $633,000, in Germany $377,000, in Japan $308,000. The ratio to average factory workers annual pay is 1:130 in Canada which may be compared to the successful Bader Commonwealth ratio set by their charter at 1:7. One must also point out that the salary is not correlated with performance! Even failed executives do well.[51]

Change in class structure (Figure 341)

Ralph Whitehead's analysis of the changing class structure in the USA suggests that the pattern made familiar in advanced industrial society, with its dominant middle class, is changing in post-industrial society. His thesis, shared by many others, is that the middle class is shrinking and that the extremes of wealth and poverty are expanding.

To some extent this is cushioned by social transfers[52]. "Located chiefly in a dozen metropolises and heavily concentrated in lucrative management and professional jobs, the overclass is roughly

the same size as the underclass. Its significance lies not in its numbers, however, but in its immense power throughout American society. The overclass holds the highest level positions in the fields of entertainment, media, marketing, advertising, real estate, finance, and politics."[53] It is crudely stereotyped as the yuppie. The new knowledge workers who are the key to information technology are the bright collar successors of the white collar middle class. The Blue collar are reduced as a result of de-industrialization and a New Collar class of service operator expands. There is, however, a difference in pattern between service sector workers who are concentrated in the highest and lowest paying industries and goods sector workers who are more evenly spread.[54]

Fig.341 After Ralph Whitehead

The increase in wealth and earnings of the rich and the increasing poverty of the poor is a phenomenon observed in Canada as well as the United States. The growth of an underclass without work and with little hope raises alarming thoughts of social disorder. The scenario painted by Thomas Homer-Dixon, professor of political science at the University of Toronto, is of huge cohorts of young unemployed, highly alienated, urbanized men, who are extremely dangerous in any society. "They don't have any stake, any opportunities, and they are ripe for exploitation and doing all kinds of nasty things."[55]

The new heros

A phenomenon that is nearly as striking as the polarization of the workforce is the shift of over-work from the labouring class to the overclass. It seems ironic that the heroic status once accorded the overworker or stakhanovite in socialist countries is now given to the overworked executive in capitalist countries. The technological innovations that have produced all kinds of exciting toys with which to do business (laptop computers, cellular phones, colour graphics) have given a peculiar fascination to the long working day. Jeremy Seabrook[56] claims that the rich have appropriated the mystique of work, leaving only "jobs" (a term that he says "irresistibly attracts the adjective 'odd'") for the working class. The adoption of the work ethic conceals the emptiness of their avocations, which are focused on the making of money, and legitimizes their conspicuous use of leisure.

Conclusion

This chapter has concentrated on the problematique concerning work in the light of technological change. We have observed polarizations and contradictions and it will be the task of the chapter on Resolutique to look for a way out. There is no guarantee that such a way can be found.

ENDNOTES

1.European Manifesto. Translation by Paul Leduc Browne in The Canadian Forum, October 1996, 24-26.

2. He has written a book with that title.

3. Borgmann, Albert (1984) *Technology and the character of contemporary life*. University of Chicago Press.

4.Nelson, Ruben F.W. (1983) *Thinking about the future of work*. Canmore AB: Square One Management Ltd. This report provided a valuable starting point. Ideas were also gleaned from: de Romaña, Alfredo L (1989). "The autonomous economy." *Interculture* v.XXII, nos. 2&3 (Montreal). Trudy Govier, in her unpublished paper read to the Apeiron Society for Practical Philosophy (October 1st, 1996), qualifies the product as "having a value to oneself or others"; I am not denying that effort expended on a product that has value solely to oneself is work, but I do not include it in the present discussion.

5. Hannah Arendt, JK Galbraith, in his speech accepting an Honorary Doctorate at the London School of Economics in 1999, said that one of the greatest accomplishments of the 20th Century was the reduction in the proportion of people engaged in toil. (*Guardian Weekly*, July 8-14, 1999, 11.)

6.The Greeks despised the mechanical arts: their term "banausic", which we also use in a derogatory sense, means proper to a mechanic (from a root meaning furnace).

7. *Globe and Mail* editorial 24 Sep 1987.

8. Lafargue, Paul (1975) *The right to be lazy*. Trans. Charles H. Kerr. Chicago: Charles H. Kerr Publishing Co.

9. Adler, Mortimer J. *A*

10.Govier, Trudy (1997) *Socrates'*

11. Lasch, Christopher (1991). *The true and only heaven: Progress and its critics.* New York: W.W.Norton.

12. Schumacher, E.F. (c.1979) *Good Work*. London: Abacus.

13. Ruskin, John (1860). *Unto this last.*

14. Panikkar, Raimon (1996). "The contemplative mood: a challenge to modernity." In "The Post-Modern Era: Some Signs and Priorities. *Interculture*, v.XXIX, no.1, 36-47. See especially Section 3. "The work duty (The Act versus the Product.)

15. New Scientist, 14 Sept. 1996, p.3

16. Phillips, Thomas F. (1993) The nature of work in a new economy. *Policy Options* (June), v.14, no.5, 14-16. (paraphrasing Robert Heilbroner in *Behind the Veil of Economics*.

17. Heather Menzies, *Whose Brave New World?*, p.70

18. Cleveland, Harvey and Jacobs, Garry (1996). Report of a workshop on "The Future of Work." held in Minneapolis 21 May 1996. (From Internet).

19. The brain power/ brawn power aphorism is Alvin Toffler's.

20. Kohak, Erazim. *Between the Embers and the Stars*, p.119.

21. A survey carried out for the Royal Bank of Canada in 1996 showed that 90% of Canadian workers are satisfied with their jobs. (Margot Gibb-Clark, in *Globe and Mail* 8 Oct. 1996 B12)

22. This topic is thoroughly discussed by Heather Menzies in *Whose Brave New World?: the information highway and the new economy*. Toronto: Between the Lines, 1996.

23. From Dan Parker, Edmonton.

24. Little, Bruce (1999) "Where did all the workers go?" *Globe and Mail*. (July 5 1999).

25. Statscan, 1995 (about 23% of jobs are part-time but some people have more than one) in *Canadian Forum* Jan/Feb 1996 p.48.

26. Kettle, John. *Globe and Mail* 10 May 1996.

27. Vital Speeches of the Day (1 Oct. 1994).

28. Megatrends 2000.

29. Themselves contributing about 10% according to April 1994 estimates.

30. Job cuts undermine society." Globe and Mail, Report on Business, 9 Apr. 1996, B2.

31. Globe and Mail, Report on Business B2, 7 Oct. 1996.

32. Reported by Terence Corcoran "Inflation can't fix unemployment" Globe and Mail 15 Nov. 1996, B2.

33. Betcherman, Gordon (1996) Globe and Mail, 27 April, D2.

34. F. Vester *Ballungsgebiet in der Krise*.

35. Harris, Richard G. (1994). "Who gets the jobs: computers or imports." Policy Options, (Jul.-Aug.), v.15, no.6, 41-45.

36.OECD, 1994, p.131.

37. Turk, James (1995). "The educational implications of 'our Technological Society'." In *Foundations: Society, Challenge and Change.*James V. Rudnick, ed. Toronto: Thompson Educational Publishing Inc., 18-23.

38.Both the OECD and the Cornell reports were summarized by the Economist in a commentary reprinted in the Globe and Mail. 22 Aug96.

39.There is, in addition, a large number of occupations brought into being by the increasing complexity of society. A radically different "New Economics" would aim to eliminate as many of these as possible. David C. Korten names these as potential targets for drastic pruning: tax collectors, managers, regulators, accountants, lawyers, stockbrokers, bankers, middlemen, advertising account executives, marketing specialists etc. (*When Corporations Rule the World*, 1995)

40. Robert Reich "*The Work of Nations*"

41. *The New Industrial State*, 1967.

42. Calgary Herald 11 April 1996, D1

43.OECD Jobs, 1994, p.148

44.OECD op. cit. 150.

45.OECD Jobs, 1994, p.129.

46.OECD, 1988c.

47. Spenner, 1988.

48.Turk, James op.cit.

49.OECD Jobs 1994 p.165

50.G&M 9 Jan 1991 "Social Studies". But Lawrence Bloomberg President of First Marathon got 6.9 million.(G&M 13 Apr, 1994).

51. The President of Dome. James Smith of Domtar where men were being thrown out of work got a special pension of $433,734 a year (G&M 6 Feb 91)

52.Beach, Charles and Slotsve, George. "Are we becoming two societies?" C.D.Howe Institute. (See Globe and Mail "Middle Class Intact" 25 March 1996.)

53. Ralph Whitehead Jr. Utne Reader Jan/Feb 1990 (no.37) p.50-53.

54. Little, Bruce (8 April 1996). "The flip side of flipping hamburgers". Globe and Mail, A5.

55. Quoted by Mark Kingwell from “On the threshold: environmental changes as causes of acute conflict.” International Security (1991). (Saturday Night, Sept. 1995, 43-46).

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