GOALS, PROCESSES AND INDICATORS OF

FOOD, HEALTH AND ENERGY DEVELOPMENT

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1. On Indicators in general

Nothing is an unmitigated good, this also applies to indicators in general and social indicators in particular. Before any attempt is made to develop concrete indicators in any field it might be worth considering the following general points, based on theory and practice with indicators.

First: it is generally obvious who are most interested in indicators. Precise information about the population, including information about their minimum basic requirements (sometimes erroneously referred to as "minimum basic needs") would be useful for governmental and inter-governmental bureau-crats in providing concrete pictures of what has to be produced, distributed and eventually consumed. To the extent that these goods or services are to be distributed through the market such information will be equally useful to the capitalist because this can provide him with a concrete image not so much of need as of demand. He would, however, differ from the bureaucrat in being at least equally concerned about purchasing power, neither assuming that everybody can purchase up to the minimum level of basic requirements, nor, indeed, assuming that people in general will be satisfied with that and will not go beyond. The bureaucrat of some political persuasion might be interested in maximum (ceiling) in addition to minimum (floor) standards; the capitalist would be sceptical about such limits, but also perhaps see it as an indication of potential demand that he could try to meet through his production capacity.

In addition to this, however, the intellectual/researcher would also be interested in indicators. Whereas the other two will try to administer citizens/ clients and/or manipulate customers/clients the intellectual/researcher would be more interested in ways of conceiving of a population that could facilitate both data collection and theory formation; his major concerns qua intellectual/ researcher. Individuals would be represented by needs-sets, societies by a number of other parameters, all of them measurable and subject to be marshalled into propositions ,and the propositions into theories. Since these three elites operating in governments, corporations and universities, etc. respectively are today highly interconnected,what is intended as a conceptual tool can, hence, easily become a tool of administrative and commercial manipulation, and vice versa. Whether this is good or bad is for people to decide; what is certain is that it is not unproblematic. In fact, it is so problematic that one might even venture the hypothesis that one good indicator of how much a population can be manipulated would be the number of indicators operationally available and instru-mentally used by a country's BCI-complex (bureaucrats, capitalists, intellectuals). The more indicators available,the more lamentable the situation,given the as-sumption that they can be used as mentioned above.

Second reflection: does this mean that the total exercise of developing indicators should rather be abandoned lest a battery of indicators becomes a tool of administrative/commercial manipulation ? Not necessarily, but it may very well be that indicators are most useful in their first phase, the R & D phase of research and development. In this phase indicators can serve an extremely important heuristic function as a tool of clarification. The question "how do you measure that?" may be too blunt and even naively positivistic, but it may also have a very sobering impact on a confused discussion. If the question is reworded slightly by insisting less on measurement and more on clarification and preciseness, it tends to bring out how shallow and unfruitful (not necessarily the same thing) much social thinking, and consequently also social practice tend to be. Thus, "how would one know whether a society is socialist or not in relatively precise terms" is a totally legitimate question to insert in a debate about socialism, and if no reasonably clear answer can be given there would be some justification for believing that the problem has not been thought through. To ask for indicators, whether of goals or processes, is like switching on a floodlight in a half dark room: it becomes very clear even to the untrained eye what is in the room, but it also becomes too clear – the light is sometimes too sharp. Nuances and connotations tend to disappear, things may become clear but also flat. Nevertheless it usually pays off if not pressed too far. From this, however, it does not follow that indicators should necessarily be practised in the sense of building an institution around each indicator concerned with the growth of its value (and sub-institutions around all sub-indicators) – among other reasons because lists of indicators tend to segment a complex reality that should be approached in a more holistic manner, and because they tend, singly if not necessarily combined, to be somewhat flat and without connotations. Thus, asking "what is the precise goal of development" in such fields as food, health, energy is a question that could very well be translated into a search for indicators as a tool of conceptual clarification and also of goal setting. But from this it does not follow clearly what type of organization one would like to see to implement the goals.

Third reflection: indicators should be not only of the people, but also as much as possible for and by the people, not only for and by the three elites mentioned above. That indicators should be of (about) people is not so much a matter of dispute: it is generally accepted that indicators about societal characteristics might reveal very little about how the people fare in that society. The same applies to aggregated people indicators, for instance in the form of averages or other measures of central tendency: such measures can effectively conceal both under-consumption bordering on misery at the bottom, and overconsumption at the top.

Hence indicators <u>of</u> the people might usefully focus on the situation of
those most in need, such as the bottom 10 % (but not the bottom 1 %, this
would be unfair as all societies known seem to have a fringe of almost
uneradicable misery). This point can be disputed, however: it is too arbitrary.

Most important in this connection are the possibilities of indicators
<u>for</u> the people and <u>by</u> the people. An indicator is for the people to the
extent that it is understandable, not only in the sense that it can be
understood but in the sense that it can be acted on, dialogued with, serve
as a basis for creativity. As a rule of thumb one might lay down as a cri-
terion that nothing should be referred to as an indicator if it cannot be
understood fully by a normal adult person in that society after a couple
of minutes explanation - if this fails to communicate the indicator should
perhaps rather be seen as a tool of elite dominance. Thus, one problem about
the"gross national product"and related measures is not merely what it fails
to report, but also that it is meaningless to practically speaking everybody
except a very small elite themselves in severe doubt about the usefulness
of such measures (given this it is rather strange that the measure
enjoys such a wide circulation; it must serve strong interests).

As to indicators <u>by</u> the people: the point here would be indicators
that people themselves could develop - perhaps after having received some
ideas from "experts" - improve upon, discuss, make use of. The naive question
suggested for GPID Dialogues on development in order to reflect on indicators,
"How do we know whether we are moving in the right or wrong direction", might
elicit such ideas. An answer such as "by observing whether people are smi-
ling and laughing when they walk in the streets" is probably a much better
answer than most of what has come out of the whole social indicator movement -
this one was offered by a woman in a developing country. A somewhat weaker
position would be to insist that even if people have not developed the in-
dicators themselves they should at least be able to use them themselves to
monitor their own situation. The family thermometer, the use of weight and
height relative to age from birth on through infancy into childhood as an
indicator of how the children are growing might serve as good examples. But
they are only good to the extent that people are not only permitted but
even encouraged to reflect on them, to debate them among themselves and with
experts so that this goes beyond a purely ritualistic performance. In such
debates one should not necessarily have people learn and internalize expert
interpretation; they may also add their own interpretations from which the

experts possibly might learn something. One factor impeding such dialogues is privatization: with individual households becoming increasingly self-sufficient where means of consumption are concerned mothers (and it is usually they who are monitoring the family situation) will tend to dialogue less among themselves and more with instruments or experts. Nevertheless such indicators as simple tables for calory counting and protein measurement may be useful, precisely because they can be monitored at home.

Fourth reflection: A distinction should be made between goal-indicators and process-indicators; not quite the same as indicators of ends and indicators of means. The goal indicators will tell us something about where we stand relative to the goal. The process indicators should tell us something about where we are moving. Development is the realization of goals, but that is not necessarily the same as unfolding of processes – the processes may move in the wrong direction or be only very vaguely and weakly related to the goals. Thus, one definition, as good as any, would be development is the steering of processes towards goals – the goals being partly in terms of human growth, partly in terms of social growth; both categories to be specified later. Goals are more normative, processes are more descriptive; the former are our ideas and ideals, the latter is what is really happening in the empirical world, to be watched critically. Of course, among all the processes that could be observed one would single out those that are held to be particularly relevant. If the concern is with health one might study, as a process, the availability of reasonably clean water, for instance in the form of wine or tea (microbes having been killed through fermentation and boiling). But availability of fresh water is not in and by itself the same as health; it can only be related to it, usually in a complex way.

Fifth reflection: Indicators are not necessarily quantitative, or, to be technically more precise:one should not necessarily ask for interval or ratio scale measurements; ordinal scale measurement may be sufficient. For that matter even a simple dichotomy may be enough: for most people the dichotomy ill/healthy or hungry/satisfied would be what they use when they report about their state of affairs. At the aggregate level one can of course calculate the percentage of people who are healthy and/or satisfied and obtain interval scale measurement, even ratio scale measurement this way – aggregate statistics is the great way of obtaining that. The danger, of course, is that in the transition from individual level to aggregate level important information may be lost. Also, if indicators are to be not only of the people but also to a large extent for and by the people one should try more to operate on the level at which people themselves operate,

and that is usually not refined quantitative measurement. In addition to
this: judgements of the type that can come out of a question like "do you
think the next year will be better, worse or about the same as this year"
are rather important and meaningful. It is only a three point ordinal scale,
a trichotomy, but it gives much information about perceptions of security,
both at the individual and aggregate levels. If, in addition, one assumes
that mechanisms of self-fulfilling prophesy will be operating it may come
closer to an objective indicator. In short, one should keep the image of
indicators very open so that it covers all levels of measurement; an extended
concept of "indicator",that is. For those who might think that this is a too
open and imprecise concept it might be well to reflect on the ethymological
basis of indicator ;from index, the finger used to pointing at something. That
finger,or a road sign for that matter, serves as an indicator even if no
distance (to Roma) is written on it. It may be objected that there is a hidden
quantity in the angle the finger or road sign makes with the meridian, but
this is a fake argument because there are usually not 360 roads available,
often only 2 at a place where the road sign is put. Of two alternatives the
road sign tells us which is a good one and which is the bad one, provided the
goal is to be in Roma.

Coming out of all this is a reflection that in a sense comes as a
ripe fruit: the important point of indicator formation is not refined measure-
ment, nor necessarily a high level of reliability (both in the sense of intra-
subjectivity and inter-subjectivity, that measurements can be replicated by
the same person and by different persons), but validity. Debates clarifying
whether the indicator suggested really reflects the goal or the process one
is interested in are much more important than any formal criteria that the indi-
cator could satisfy. For that reason one should also see indicator formation
as a process, the goal of which is to help clarify the goals and processes of
development. Just as there are goal-indicators and process-indicators there
are indicator-goals and indicator-processes ! - all of this is intertwined
in a most complicated web of relationships with no clear beginning and no
clear end; nor does it have to be.

2. On Goal indicators in general

There will certainly never be any consensus on goals for human and social development; the goals will themselves be in a process, sometimes slow, almost static, sometimes abrupt and discontinuous. In the post-war period there have been such discontinuous changes in the goal setting, if not in the processes themselves, to some extent away from the primacy given to economic growth and towards a tendency to give to human growth and social growth a more central position in the theory and practice of development. In retrospect it looks as if the Cocoyoc Declaration of 1974 was one of the first formulations in the UN system of a fairly comprehensive nature but there are, of course, many others – for instance the Arusha Declaration of 1967. It is interesting to note that "development" figures among the priority areas for the United Nations University as "human and social development programme". The present paper, an outcome of that programme, is in that tradition.

Here is the general formulation of goals of development that will be used in the following :

HUMAN DEVELOPMENT
= sustainable satisfaction and development of basic human needs so as to facilitate, or at least not impede, the human development of others.(neither under- nor over-consumption of "satisfiers")

(1) Security needs (negation:violence)
– for survival

(2) Welfare needs (negation:misery)
– for food, clothes, shelter, health care,schooling,"comfort",transportation/communication;for energy,etc.

(3) Identity needs (negation:alienation)
– for closeness to self and others, society,culture & nature

(4) Freedom needs (negation:repression)
– for the possibility of choice, and for a conscious choice

SOCIAL DEVELOPMENT
= a man-made environment compatible with human development

(5) Production
– in a broad sense (formal,informal; goals, services) with priority of production for the satisfaction of basic human needs.

(6) Distribution
– so that priority is given to those most in need,building social justice and increasing equality among nations, classes, races, sex, age and ethnic groups.

(7) Nature
– maintaining and building ecological equilibria,so as to prevent depletion and pollution,on a sustainable basis.

(8) Structure
– building, through participation, self-reliance at the local, national and regional levels, thereby also preventing that development is at the expense of others today or in the future (synchronic and diachronic solidarity) – such "development" being called exploitation.

(9) Culture
– doing all this in a way compatible with those aspects of the endogenous culture that are compatible with the above.

One might try a formulation in one sentence : <u>the goal of development is</u> <u>adequate, including sustainable, satisfaction and development of basic human</u> <u>needs – material and non-material – with priority to those most in need in a way</u> <u>consistent with ecological balance, self-reliance and the self-reliance of others</u>, <u>and endogenous culture</u>. Of such formulations there are many in the international literature and fora; their usefulness will always have to be tested – in practice, but also in theory. Thus, how do the formulations stand up when contrasted with a more specific area, such as food ? health ? energy ? – just to pick three areas of needs and needs-satisfiers. And how do they stand up when the indicator-question is asked – not necessarily "how do you know whether we are moving in the right or wrong direction ?"

One point should be emphasized : the goal of development is not <u>one</u> of these points; it is the total package. There is a totality, a <u>holisis</u> to develop-ment only partly captured in such formulas as those given. No doubt other formulas could give equally good or better glimpses of the same type of intuition.

When "human development" has been defined here in terms of basic human needs it is in order to arrive at a minimum "least common denominator" definition. It is not the intention to specify what a "fully mature" human being is. The formulation does not identify a point, but a region, a wide range for more specific conceptualizations of "human development". This is linked to the view of basic human needs as <u>necessary</u> <u>conditions</u>, as that which one cannot do without. That this varies from place to place, through time, between classes and other groups and from one person to another (and through the life-cycle of a person) goes without saying. And this is even more true for the "satisfiers", that which satisfies needs. Nonetheless, we have postulated four broad classes of needs – security, welfare, identity and freedom needs, assuming that societies and people everywhere try to come to grips, one way or the other, with something within these broad fields.

In the definition we have also emphasized the solidary nature of human and social development : it is incompatible with growth at the expense of others (that should be referred to as exploitation). More positively formulated : a person humanly developed will also help building human development in others; a society socially developed will also help building social development in others.

3. On Process indicators in general

We then move on, trying to identify _real_ world processes, as opposed to what we have been considering above, _ideal_ world goals. In saying "real world" we of course do not imply in any way that these processes cannot be steered in an effort to make them productive, not counter-productive, in terms of the goals. What we are saying is only that they come out of the world itself as we look at it, that we have a more or less well founded intuition that they are relevant for the goals, that the relationship between processes and goals is never a very direct one.

The point here is not only that causal connections may be weak,but also that the relationship is not a one-one relationship. Imagine that we have M processes and N goals. The relationships may be displayed in a matrix with M rows and N columns, and in this matrix it will never be so simple that one process is relevant for only one goal. One process may be relevant for several goals; one goal may be steered more or less by several processes. But having said that it is of course obvious that the way we analytically look at the world there will be a tendency to single out one, maximum two processes as particularly important for a given goal.

Why should we have indicators of processes ? It should be noted that in a sense the word "indicator" is not quite correct in this connection as that word should mainly be used to refer to goals and their realization as has been done in the preceding section. But these processes are assumed to be so closely related to goals that indicators of the processes also to some extent are, however weak, indicators of the goals. Great care should be exercised, however, lest processes are confused with goals,and process-indicators with goal-indicators. Nor should processes be identified with means : means would be deliberate, voluntaristic actions (which stretched out in time become processes); here we are dealing with processes in a more general sense. In fact, it is probably fair to say that all processes will be a mixture of automatic and voluntaristic components.

General processes can be specified, such as the spread of a _generally technocratic mode of production_, including the fields of food, health and energy; the spread of the _bourgeois way of life_ (non-manual work, material comfort) _as the mode of consumption_; and the general dissemination of _Western social cosmology_ as the image of the world. It is more useful, however, to discuss these processes in the concrete context of food, health and energy.

4. Goal indicators of the Food, Health and Energy aspects

a) Food

Let me try for the "field of food", knowing in advance that this is a misleading formulation. The whole idea of a holistic approach to development is precisely that there is no such thing as the "field of food", taken in isolation. It is not a sector; it may be said to be an aspect of the development problématique, however. And that problématique now requires of us that we run through the whole gamut of goals of development to identify the food aspect of each one of them. At the same time we should try to be precise, using the indicator-question as a heuristic.

GOAL-INDICATORS; FOOD ASPECT

(1) <u>Security</u>   – meaning the probability that one will not die from starvation, whether that starvation is brought about by misguided production, wrong distribution, ecological imbalances,lack of self-reliance (including dependency on those who can make use of "food as a weapon"). Basically this is a question of sustainability, over time, eg. over seasonal variations.The measure would use malnutrition as diagnosis.

(2) <u>Welfare</u>   – meaning quantitatively and qualitatively adequate food consumption, at the individual level. There is a <u>subjective</u> approach, the individual human being's own judgment, and an <u>objective</u> approach, a "scientific" approach which in turn, would split into Western ethno-science and non-Western(apology for this expression) ethno-sciences. The following is a suggestion of possibilities:

	Quantitative	Qualitative
Subjective approach	a feeling of a full stomach;no hunger pain	eating something that tastes good
Objective approach Western	adequate amount calories,proteins,vitamins,etc. life expectancies,body weight,proportions	adequate balance, harmony
Objective approach non-Western	adequate amount relative to need	adequate balance yin/yang, cold/hot,etc.

Nothing less than the complete set of suggestions should be even considered.
To disregard the individual's own judgment is professional arrogance; to
disregard non-Western approaches is Western arrogance and parochialism.Both are
wide-spread.

(3) <u>Identity</u>   – meaning whether the production and consumption of food
engenders contact with self, others, society, culture and na-
ture and not something remote and external. Again there is
a distinction between subjective and objective indicators.

(4) <u>Freedom</u>   – meaning the possibility of choice,and consciousness about
the consequences of the choice,both with regard to production
and consumption of the food – including the possibility of
choosing (but as an act of free will) status quo in production
and consumption.

(5) <u>Production</u>   – meaning whether factors/inputs in necessary and sufficient
quantity and quality are used for producing foodstuffs to
bring about (1), (2), (3) and (4).

(6) <u>Distribution</u> – meaning whether the level of satisfaction from participation
in consumption <u>and</u> production for those at the bottom in terms
of (1), (2), (3) and (4) is increasing, and more particularly
so that discrepancies in satisfaction level for the total
population and between groups are decreasing. The floor has to
be raised; the ceiling may have to be lowered. Important
special case:equality of sexes in food production.

(7) <u>Nature</u>   – meaning that the level of maturity of the eco-system, both in
terms of diversity and homeostasis, is increasing or at least
not decreasing as a result of food production/consumption –
as a necessary condition for securing the food basis for fu-
ture generations.

(8) <u>Structure</u>   – meaning that food-related needs to a large extent are satis-
fied on a local basis and that there is a potential for local
adequacy – even in cities – in times of crises (food autarchy
when necessary) – including seasonal variations–thereby decrea-
sing the possibility of using food as a weapon.

(9) <u>Culture</u>   meaning that the food system used strengthens the viable cul-
tural patterns and is not a vehicle of penetration of another
culture expressing other values and tastes, and engendering
other relations to others and to nature (unless, of course,
this is the outcome of a conscious, participatory choice).

    <u>The totality of this, then, is the goal of food development.</u> The indicators
will tell us where we stand at a given place, at a given point in time. However,
the ultimate unit of development in this perspective is the individual human being
as only individuals can sense deprivation and satisfaction of needs. For that
reason great care should be exercised with aggregate indicators, avoiding not only
averages, but also indicators based on dispersion measures, including Gini indices.
The best way of reflecting the situation of the individual is to have aggregate
indicators reflect the level of those at the bottom – as already mentioned.

b) <u>Health</u>

Let us try for the "field of health", knowing in advance that this is a misleading formulation. The whole idea of a holistic approach to development is precisely that there is no such thing as the "field of health", taken in isolation. It is not a "sector";it may be said to be an <u>aspect</u> of the development problématique, however. And that problématique now requires of us that we run through the whole gamut of goals of development to identify the health aspect of each one of them. At the same time we should try to be precise, using the indicator-question as a heuristic.

<div align="center">GOAL-INDICATORS; HEALTH ASPECT</div>

(1) <u>Security</u>   – meaning the probability that one will not die from a disease prematurely,whether that premature death is brought about by misguided health care,wrong distribution,ecological imbalances,lack of self-reliance(including dependence on those who can make use of "health as a weapon"by withholding health inputs).Fundamentally,this is a question of <u>sustainability of basic negative health</u>(in the sense of absence of <u>lethal disease</u>)over time,eg.across natural and social hazards (violence).The obvious measure would be mortality based.

(2) <u>Welfare</u>   – meaning a state of somatic and mental well-being,"health" at the individual level.There is a subjective approach,the individual's own judgment,and an objective approach,a "scientific" approach which in turn would split into Western ethno-science and non-Western (apology for this expression)ethno-sciences.In addition there is a distinction between negative health(absence of morbidity)and positive health(eg. capacity for love and creative work – not to be trivialized as capacity for sex and for performance in a job).The following is a suggestion of possibilities:

	Negative health	Positive health
Subjective approach	No pain,no suffering	A sense of vitality
Objective approach Western	Symptom free	?
Objective approach non-Western	Symptom free	Balance, harmony elements,liquids, yin/yang

A major aspect of this table is the presumed absence of indicators of positive health in the Western approach.Nothing less than the complete set of suggestions should be even considered. To disregard the individual's own judgment is professional arrogance; to disregard non-Western approaches is Western arrogance.Both are widespread.

(3) <u>Identity</u>   —   meaning that the production and consumption of health inputs by self, by others, by professionals — in the Western and in the non-Western sense — (Ayurvedic, acupuncture, shaman) will engender contact with self, others, society, culture, nature and not be something remote and external. Again there is a distinction between subjective and objective indicators.

(4) <u>Freedom</u>   —   meaning the possibility of choice, and consciousness about the consequences of choice, both with regard to production and consumption of health inputs — inviting people to design their own health cycles (under some "mild guidance"),eg. entirely Western, entirely non-Western or mixed.

(5) <u>Production</u>   —   meaning whether factors/inputs in necessary and sufficient quantity and quality are used for producing health inputs to bring about (1),(2), (3) and (4).

(6) <u>Distribution</u>   —   meaning whether the level of satisfaction from participation in consumption <u>and</u> production for those at the bottom in terms of (1), (2), (3) and (4) is increasing, and more particularly so that discrepancies in satisfaction level for the total population and between groups are decreasing.The floor has to be raised;the ceiling may have to be lowered.Important special case: equality of sexes in health matters.

(7) <u>Nature</u>   —   meaning that forms of co-existence with nature are found more conducive to human health. This probably involves much deeper (not higher) levels of insight in nature's ways than known today when our approach to vectors of disease is only "seek and destroy" combined with inoculation,and our own approach to earthquakes and hurricanes/tsunamis is even less than that.

(8) <u>Structure</u>   —   meaning that health-related needs to a large extent are satisfied on a local basis and that there is a potential for local adequacy in times of crises (health autarchy when necessary) — thereby decreasing the possibility of using health as a weapon.

(9) <u>Culture</u>   —   meaning that the health system used strengthens the viable cultural patterns and is not a vehicle of dominance of another culture,expressing other values and tastes, and engendering other relations to others and to nature (unless, of course, this is the outcome of a conscious,participatory choice).

    <u>The totality of this, then, is the goal of health development</u>. The indicators will tell us where we stand at a given place, at a given point in time. However, the ultimate unit of development in this perspective is the individual human being as only individuals can sense deprivation and satisfaction of needs. For that reason great care should be exercised with aggregate indicators, avoiding not only averages, but also indicators based on dispersion measures, including Gini indices. The best way of reflecting the situation of the individual is to have aggregate indicators reflect the level of those at the bottom — as already mentioned.

c) Energy

Let us try for the field of "energy", knowing in advance that this is a
misleading formulation. The whole idea of a holistic approach to development
is precisely that there is no such thing as "the field of energy" taken in
isolation. It is not a "sector"; it may be said to be an aspect of the deve-
lopment problématique,however.And that problématique now requires of us that
we run through the whole gamut of goals of development to identify the
energy aspect of each one of them. At the same time we should try to be
precise, using the indicator question as a heuristic.

Maybe it should be added to this, from the very beginning, that this nine-
fold approach to energy is not conceived of here as a value position. It is
well known that the conventional position is based on technological feasi-
bility (and here the border lines are pushed further and further out due to
scientific research)combined with commercial feasibility(is it "competitive");
and that some concerns for ecological factors have been added to this short
list. The claim here is that the list of concerns has to be much longer, and
that those who curtail the list of concerns ending up with such small lists
as just mentioned should be seen as bad intellectuals and not merely as
propagators of certain value positions. The proof of the bad quality of their
work is in the human energy predicament.

GOAL-INDICATORS; ENERGY ASPECT

(1) Security – meaning the probability that there will be a sustainable energy
supply at least at a minimum level,across seasonal variations
and international conjunctures.Thus,it means independence of
those who can make use of"energy as a weapon",by having regio-
nally,nationally,locally – to some extent even down to the indi-
vidual household – an invulnerable minimum energy supply.How-
ever in the field of energy security means more than this.It
also means that energy cycles are constructed in such a way
that massive destruction cannot be caused through breakdowns
along the cycles, such as explosions in nuclear reactors,with
consequent fallout. Such considerations certainly also apply
to more classical energy cycles; the many deaths suffered by
miners in coal mines are examples of basic insecurity in energy
production.

In this connection the cynical comparison – a comparison
that can only be made by people with a very low level of
empathy with workers – of possible victims from nuclear
catastrophies versus coal-mining should be strongly rejected.
One of the conclusions to be derived from such data should be
to make coal mines more secure, not morally bankrupt comparisons.
Furthermore, energy cycles should be constructed in such a
way that they do not invite sabotage or terrorism, nor attract
missiles and attack in general because there are nodes on
the energy cycles that when knocked out could cause major
breakdowns in the total social system. In short, <u>security is
seen here basically as a question of invulnerability to in-
ternal and external forces</u>.

(2) <u>Welfare</u>   – meaning in this case that the minimum energy supply for the
satisfaction of basic material needs is guaranteed on a sus-
tainable basis. There are energy inputs for the production
of food, for housing (although the heating factor can be con-
siderably reduced through insulation, without reducing the
"material comfort"), for the production of health and educa-
tion inputs, for transport and communication and, indeed, for
the creation of labour saving devices that can liberate human
beings from work that is unnecessarily heavy, degrading, dirty
and/or boring. In other words, it is fully recognized that
there is a need for "comfort" – just as it is recognized that
this need <u>can</u> be oversatisfied and <u>is</u> oversatisfied in over-
developed countries by eliminating many kinds of manual
work, substituting for energy stored in human beings other
forms of energy. Such considerations will have to enter the
entire thinking about energy. If energy cycles (from extrac-
tion of energy resources to conversion of energy down through
distribution to its end use) are constructed in such a way
that along the cycle people develop "civilization diseases"
(tumors, cardio-vascular diseases, mental disorder) in ways
that can be shown to be related to the energy cycle then ob-
viously something has gone wrong. Failure to include such
considerations in thinking about energy is tantamount to in-
tellectual dishonesty. In short, the basic leading question
in connection with energy cycles would be whether they are
sufficient to satisfy basic human needs for the entire popu-
lation, and do not counteract basic human needs for some or
even most. Thinking about energy should start from this point,
not from technological feasibility and/or commercial validity
and/or administrative convenience – the typical considerations
of researchers, capitalists and bureaucrats.
If we now make a distinction between energy for basic needs
and energy for non-basic wants (some of which are rather
extravagant – military races, space expeditions, electric
toothbrushes) on the one hand, and on the other hand a dis-
tinction between soft and hard energy cycles we arrive at the
following table :

	Energy for basic needs	Energy for non-basic wants
soft energy cycles	──→	
hard energy cycles		──→

Any energy budget should be disaggregated in such a way that is is shown clearly how much is used   for basic needs and how much for extravagant wants.Moreover, a society's capacity for generating energy the soft and the hard ways should be examined, and the general hypothesis would be that soft energy cycles by and large would be sufficient to cover our basic needs - that the demand for hard energy cycles is tied to extravagant wants; among them also a, possibly aggressive, export policy. This is not the same as saying that all energy should derive from soft energy cycles and should only be for basic needs - this is not an argument fcr a bare minimum, frugal world. It is essentially an argument in favour of seeing clearly where we stand, what the energy situation is. And it may one day be important : one day a World Energy Authority might have to come into being to distribute energy resources equitably.One way in which a fair distribution could be obtained would be by asking whether the end use is for basic needs or for extravagant wants and give considerably lower priority to the latter. Any authority with a regulatory function of that type would lead to a reduction of energy conversion in high income countries and an increase in low income countries. It should also be noted that among the "soft energy cycles" are nature's own cycles, the cycles that supply by far most of our energy. Many of the arguments in favour of soft energy cycles are arguments in favour of " helping nature a little bit", building on two major miracles surrounding us : the inflow of inexhaustable solar energy and photosynthesis.

(3) <u>Identity</u>

- meaning that the conversion and end - use of energy inputs by self, by others, by professionals - with soft cycles and also in the hard cycles - would engender <u>contact</u> with self, others, society, culture, nature and not be something remote and external. Above all, it should be entirely comprehensible ;energy cycles should be transparent, understandable so that citizens know what is going on, can act upon it in order to forestall bad   , onesided policies, and also know how to react in crisis, when the system breaks down.

(4) <u>Freedom</u>

- meaning the possibility of choice, of having a grid of energy cycles to choose from, some soft, some hard, and to be in a position to compose one's own energy cycle profile at the household, local, national, regional level. As usual freedom means the freedom to do that which does not reduce the freedom of others - that already puts severe constraints on the possibility of opting for hard energy cycles. It should also be noted that by using hard energy technologies one cannot have both security and freedom : if the most vulnerable points in a hard technology energy cycle are to be adequately"protected" against sabotage, terrorism, enemy attack, explosions, the result is likely to be a police state. The battles over which energy path to be chosen already indicate the close linkage between hard energy cycles and threats to civil liberties.

(5) <u>Production</u>   -   meaning whether factors/inputs in necessary and suffi-
cient quantity and quality are used for producing energy
inputs so as to bring about (1), (2), (3) and (4). In
this connection special attention should be paid to the
energy used to "produce" energy, often a substantial pro-
portion of the energy output. Thus, total and honest
budgets for energy conversion cycles have to be made.

(6) <u>Distribution</u>   -   meaning whether the level of satisfaction from using
energy for those at the bottom of society, in terms of
(1), (2), (3) and (4) is increasing, and more particularly
so that discrepancies in satisfaction level for the total
population and between groups are decreasing. The floor
has to be raised; the ceiling in energy conversion has
to be lowered - in order to bring about a higher level of
equality and social justice in energy end-use.
Special attention has to be paid to the energy losses ,as
very heavy expenses incurred when hard energy cycles
are operating over long distances.

(7) <u>Nature</u>   -   meaning that energy cycles are not constructed in such a
way that energy resources are destroyed because they are
non-renewable, or in such a way that wastes from energy
"production" and consumption may be toxic. More particularly
it means that nature's diversity and homeostatic mecha-
nisms are not impaired by energy cycles. And even more
particularly, more directly related to the energy aspect:
it means that the quality of the energy, the syntropy
(= negentropy) is maintained.

(8) <u>Structure</u>   -   meaning that energy demands to a large extent are satisfied
on a local basis and that there is a potential for local
adequacy in times of crisis (energy autarchy when neces-
sary) - thereby decreasing the possibility of using energy
as a weapon. It should be noted that a highly centralized
energy supply system will make villages and isolated
households highly vulnerable to decisions at the centre:
the centre might simply threaten to cut off the energy
supply if the periphery becomes recalcitrant.

(9) <u>Culture</u>   -   meaning that the energy system used strengthens the viable
cultural patterns and is not a vehicle of dominance of
another culture, expressing other values and tastes and
engendering other relations to others and to nature (un-
less, of course, this is the outcome of a conscious,
participatory choice).

    <u>The totality of this, then, is the goal of energy development</u>. The indica-
tors will tell us where we stand at a given place, at a given point in time.
However, the ultimate unit of development in this perspective is the individual
human being as only individuals can sense deprivation and satisfaction of needs.
For that reason great care should be exercised with aggregate indicators, avoi-
ding not only averages, but also indicators based on dispersion measures, inclu-
ding Gini indices. The best way of reflecting the situation of the individual is
to have aggregate indicators reflect the level of those at the bottom - as
already mentioned.

Indicators such as these can be discussed, and to a large extent, monitored locally. They can be used to reflect differences in geographical space, in social space (eg. class and sex) and over time. In the last case the indicators will mirror processes towards or away from the goal(s). These are then indicators of goal-processes, which are not the same as indicators of processes in the more general sense, including the processes that goals (meaning the goal-setting) will undergo in social theory and practice. These will be treated, to some extent, in the next section.

Finally, a remark about hierarchies and priorities. The goal of development in general, and in this particular field has been split into 9 aspects. No doubt that raises the question of which aspects are more important, which are less important. Many people might feel that among the goals for sure nos.(1)and(2) are very important, the others less - what really matters is to be able to satisfy no. (1) and no. (2) adequately.

Since this is exactly the view the present paper is directed against some arguments should be mentioned.

First, the tendency to detach some goals from the totality and give them preferential considerations is a very important aspect of the anti-holistic, segmented approach. It should be pointed out, also, how this particular approach would render itself to administrative manipulation. Human beings become entities whose security and welfare have to be taken care of, regardless of how. Such considerations as the need to be challenged, the need to be a subject and not merely an object of administrative procedures, the need for human togetherness are left out of the picture; just to give some examples.

Second, it is readily conceded that at any given point in space and time human beings will set their priorities. Something will appear as more important than something else. But these priorities are not necessarily always in the direction of (1) and (2) above; human beings are known to lay down their lives for such things as identity (for instance the right to talk their own language) and freedom. What therefore should be eagerly protested is any tendency to try to establish universal hierarchies, valid at all points in time and space. It is for people themselves to decide what their priorities are. The best general position would be to see these aspects of the goal of development as roughly equal in significance, and search for those policies that do not exclude any aspect but open for richer development patterns.

5. Process indicators of the Food, Health and Energy aspects

   a) Food

        In order to identify important processes the point of departure will
be the list of goals under social development in the preceding section :
production, distribution, nature, structure and culture. We cannot repeat
directly the four classes of basic needs as indicators as those will be
goal indicators in the direct sense. Concretely, then, what kind of processes
can we identify under these 5 headings for social development ?

        As to production : taking into account the general level
of economic and technical development of the country,or the local setting,the
process to be watched would be the priority balances in connection with pro-
duction. More particularly, what is the priority given to production for basic
needs versus production for non-basic ones; or formulated differently : the
priorities given to products for mass consumption versus products for consumption
by a limited group of people, such as luxury goods ? This is not the same as
the priorities given to agricultural versus industrial production, but related
to it. Inside the agricultural production, however, the process to be watched
would be production of staple food versus cash crop production. And having
said that the point about the weak and often complex relationship between pro-
cesses and goals can be formulated more strongly. Quite clearly there may be
cases where industrial farming of cash crops for exports may ,in fact,contribute
to the food development of the population, but only in a narrow sense. Seen
from the point of view of the total array of goals of food development this
would at most be geared towards goal aspect no. (2).Even no. (1) would be in
a tenuous position given the fragility of international trade. The point to be
made, however, is to avoid dogmatic, absolutist stands when it comes to rela-
tionship between procceses and goals. The processes mentioned should be watched,
facile conclusions should be avoided.

        As to distribution: among the key processes to be watched would be the
level of social justice and equality in the distribution of access to food
inputs; one of the basic ones being access to pure water. Is this access corre-
lated with class, urban/rural dimensions, ethnic belongingness, age and sex
groups ? What is the level of dispersion in access (in equality) for the popu-
lation as a whole and how is it changing, increasing or decreasing ? It should
be noted that this is not the same as distribution as a goal : here we are
only talking about access to inputs, which is not the same as consumption (thus,
for several reasons the inputs may not be made use of, because of differential
acquisitive power, because of tastes and habits, and so on). Another process
to be watched in this connection, although it also has a complicated relation-
ship to the goals, would be stratification of satisfiers; to what extent do

different classes and groupings of the population in general tend to consume different types of food inputs ? Are these differences increasing or decreasing ? If they are increasing one prediction might be that the less privileged group will sooner or later imitate the consumption habits of the more privileged groups and that this would put them in an even more disadvantaged position than before. Moreover, is nutrition science used to make special food for the poor that the rich - including nutritionists - would not eat ?

As to nature: one key process to be watched will have to do with the reduction of variety of food inputs grown and cultivated, particularly of crops (but also for instance of fish). The higher the variety, in general the higher the level of invulnerability of this part of the eco-system on which humankind so much depends. It should be noted that this type of variety is not the same as processed variety : there is no denial that raw materials for food processing are increasingly being processed in an astounding variety of ways, but that is away from nature, not in nature; and it may also be that the variety is spurious, that it actually may be a decrease in variety of food consumption because of the impact artificial compounds may have in the processing (I would actually assume that researchers know relatively little about these matters, that the distinction natural/artificial is one in which we have very little insight). Closely related to this approach would be a study of what happens to the production inputs : adequate soil and good water for irrigation, are these inputs that are generally being destroyed or are they being generated through the production process ? What is the relationship between dams for hydraulic control and the quantity and quality of such inputs ? In other words, the entire food cycle up to, but not including its effects on human beings (that is under goals) should be studied in order to arrive at an understanding of where this part of the eco-system is moving; and there are, no doubt, other ways of getting into the food cycle than the two ways suggested here.

As to structure: the basic aspect to be studied here would be the general structure of the food cycles. If they are tentatively divided into two, the micro-cycles that by definition are local, the consumption of food grown and distributed locally; and the macro-cycles that go beyond the micro-cycles, potentiallly world encompassing, the process to watch would be how the balance between micro- and macro-cycles is changing in various parts of the world. If the movement is towards micro-cycles one may talk of increased self-provisioning; obviously in general it is away from micro-cycles and hence towards decreased self-provisioning. In an other type of structural terminology this would mean a movement away from beta structures and towards alpha structures. Is the function of "food technology" to provide inputs for macro-cycles ? And the basic question: is the control over productive assets - land, water, power, seeds, credit, technology - local, national or international ?

A key point in this connection, and it applies to both macro- and micro-cycles, would be a study of who controls the food surplus; is it controlled by the people who grow it, or by national/global B,C,I-complexes ? The simplest definition of food surplus would then be to say that it is what is left over after consumption by those who grow it, seeds for the next crop and reasonable reserves are discounted (which does not mean that it is based on self-provision, it only means that that which is needed for the growers to reproduce themselves is discounted). It is well known that the food surplus in many places in the world and in periods of the annual cycle is negative; hence hunger.

As to culture: one might here study what happens to the variety of food inputs in fact available to the population in various parts of the world, is the variety decreasing or increasing ? It might be increasing in a period where local foods and imported foods coexist side by side, but then be decreasing when the former is squeezed out by the latter and local food production is used for raw material that goes into globally standardized food production, and no longer for local crops. Variety in this connection is a quantitative aspect; the corresponding qualitative aspect would be the balance between food inputs that are in the local culture and those that are alien. Again, the thesis is not necessarily that a change away from local food-stuffs necessarily will lead to alienation : people may also have been changing their criteria for identity and identify more with what is foreign than what is local in culture. All of this would be at the end of the food cycle, towards consumption : there are also cultural aspects at the beginning of the food cycle that can be summarized in the term "technology". To what extent can one talk about a technology standardization, meaning that knowledge and skills and tools that were used traditionally locally are being displaced by knowledge and skills and tools coming from the outside ? Is the traditional technology able to survive side by side or is it gradually squeezed into the background and forgotten ? This obviously also ties in with the general question of social justice : to what extent is traditional technology used by women for staple food and subsistence in general, and the foreign technology by men for cash crop and participation in macro-cycles?

There is one aspect in this connection that merits particular attention, it relates to culture, but it should be seen as a process in its own right : the process of goal-setting. No doubt the goals are changing, not only with the dislocation from an emphasis on micro-cycles towards the macro-cycles, but also with new trends in culture in general and this part of political culture in particular. Key persons in this connection would be not only the people running agri-business, but also the bureaucrats in governmental and intergovernmental organizations concerned with food and all the intellectuals/researchers working for either. In short, the goal setting of the B, C, I-complex

on top of the alpha structure is no doubt in a process; it would be important
to know the nature of that process not so much in terms of what conditions
it, but merely in terms of a good description. Thus, to what extent has
the goal-setting been narrowing over time, focussing on a decreasing number
of aspects of any more holistic image for the goal of food development; to
what extent would it be possible today, in recent years, to talk about some
kind of trend in the opposite direction ? As an example : there is probably
an increased concern with food self-reliance in recent years, as there is with
energy self-reliance.

b) Health

Before the effort to identify processes some reflection on the special character of health as a good, even a need,is needed. Thus, it differs fundamentally from the need for food or the need for energy, for instance. Human beings will consume food and energy available and after some time will need new inputs for their needs to be satisfied. Only in some idealized society such as the Viking, Christian or Muslim paradises are these satisfiers built into the environment in such a way that there is no longer any concern (in the Christian case the "bodies"are ethereal, and hence in no need for food or energy). Not so for the case of health. One could imagine human beings not only <u>born</u> healthy (because of the adequacy, given a reasonably healthy mother, of intra-uterine life); but also <u>kept</u> healthy simply by living in a healthy environment. What that means we probably do not know. It certainly means adequate supply of food (and energy); and in general adequate exchanges with the environment to maintain body equilibria. The environment should also be harmless, causing neither accident nor infection - which we transform to read : the man-nature system should be harmful to neither. Recently this has been seen as meaning that nature has to be tamed, its sharp edges and sudden fits engineered away so that man can do exactly what he wants because dangers are fenced off and vectors of dangerous diseases have been "sought and destroyed".

More recently, however, "new" (meaning old) views go in another direction. "Co-existence with nature" would be the slogan, leading, possibly, to an inquiry into the factors that make for longevity in some "nature people", high morbidity/mortality in others. Obviously these are matters of which we know little, not necessarily because it is complicated - it may be very simple, too simple for us to comprehend. Thus, some people can co-exist with poisonous snakes; most would fence them off or "seek and destroy". Could one co-exist with bacteria, virus, etc. ? Could one know better conditions under which they are stirred out of their usual slumber, eg., what it is that conditions the short and long cycles in the epidemies ? Or would it be as for the sharp edges, the cliffs and precipes : rather than fencing them off how could even small children learn to respect them ? How do our measures to make nature less precarious in fact make her more precarious - because the tactics work, but the strategy is utterly unsound ? And so on, and so forth: how do we co-exist better ?

In short, we assume that a state of man-nature co-existence can be imagined in which health would not be a problem; health simply <u>is</u>, like other characteristics of the human being (such as two legs, ability to communicate). As opposed to the food/energy satisfaction analogue there is no need

to invoke transcendental images to make it meaningful. Seen in this way the
usual cyclical model of need-awareness, -satisfaction, - satiation and new
need-awareness breaks down. The focus would be more on maintaining the equilibria
that keep human beings healthy, and then engage in repair work, human-centered
and/or nature-centered (or elsewhere) if things break down. If "things break
down" very often the cyclical model becomes relevant and health-provision or
health care becomes more like food care. Since these are patterns people are
accustomed to from other fields,awareness of health deficit,followed by some
form of health care (health satisfier) till a stage of health satiation is ob-
tained,and thenwaiting time for new deficit awareness starts running will fit
nicely into the way of life. This cycle is seen as normal rather than seeing a
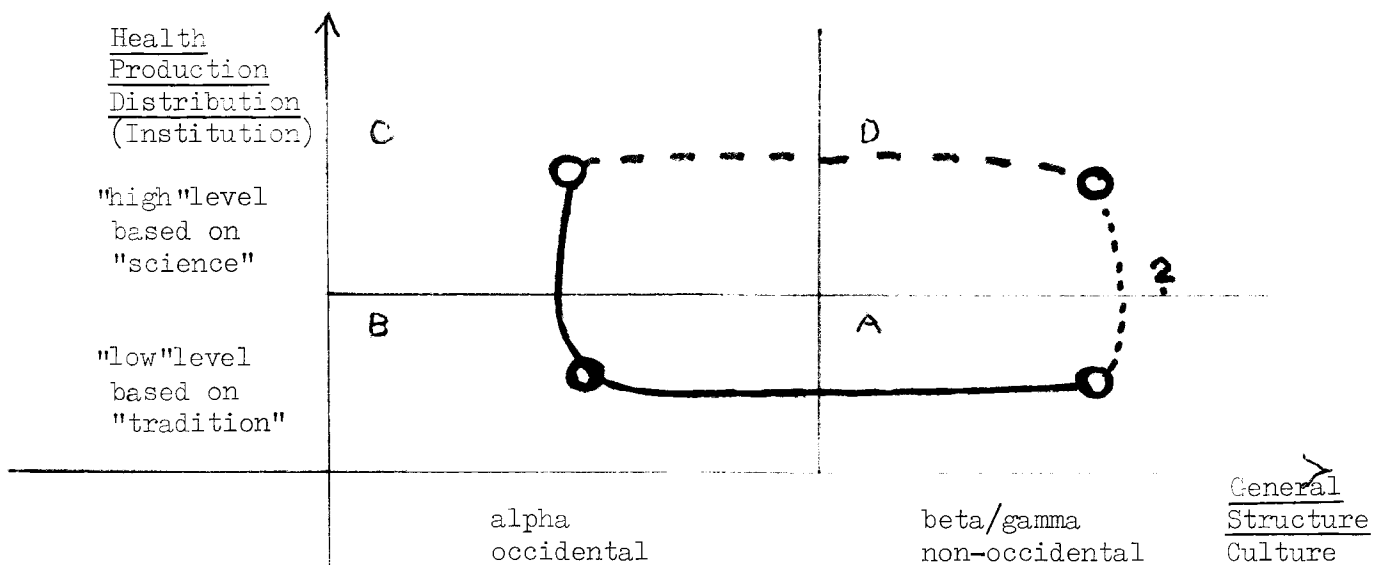general state of good health as normal. In fact, it may be dangerous "always"to
be well !

This, then, leads to two questions : what could cause a breakdown
of co-existence with nature; and what is the organization of the health care
mentioned above ? In terms of our gross classes of variables we shall attempt to
answer the first question by reference to structure and culture; and the second
by reference to production and distribution.

That man-made structures and cultures interfere with or can interfere
with man-nature symbiotic patterns in a way detrimental to either,is obvious.
Elsewhere we have argued at some length that structure and culture should account
for at least a substantial proportion of the variance where mental disorder is
concerned; the same probably applies to the other "civilization diseases", such
as tumors and cardiovascular diseases. The simplest, brutally crude, way of
reasoning might be about as follows. First, the distinction between what is "hard"
on nature and what is "soft" on nature - meaning by that both human nature and
non-human nature - for both structure and culture. Second, an identification of
what this means in concrete terms for structure and culture. For structure:a
large-scale vertical organization, headed by state/corporation/research institu-
tions engaged in industrial transformation of nature and human beings (an alpha
structure) versus small-scale more horizontal institutions with much softer
technologies (a beta structure). For culture:an occidental orientation legiti-
mizing man-over-man competition and struggle, and man-over-nature attitudes versus
several non-occidental orientations with more emphasis on harmony and restraint.
Combine them, and the conclusion would be that the alpha structure combined with
an occidental orientation would be hardest on nature, hence most likely to cause
the type of disequilibria that in turn would be detrimental to health. In more

easily recognizable terms : the combination of stress and pollutants are products of the interface between alpha structures and occidental orientations ; diseases produced by or related to such combinations should be most prevalent in regions dominated by such structures and cultures (which by now means far more than the classical "West"). It should be noted that this combination is still regarded as "modernization", and until recently was identified with "development"; both in its structural and cultural/attitudinal aspects.

On the other hand, then, is the emergence of a special <u>institution</u> for health care, This should not necessarily be identified with Western medicine; acupuncture, ayurvedic traditions, shaman practices etc. equally much belong here. Any institution is there to produce something, "goods" or "services" as it is expressed in economistic parlance; and the questions raised would be what kind of structure (alpha or beta) the institution has - particularly whether it is large-scale or small-scale; how efficient it is in providing health inputs and in distributing them. Again, it should be noted that institutionalization particularly large-scale, with provision of health care "for all" would be very much part of current thinking about "development" - the emphasis on "for all" pointing in social democratic or socialist directions.

Let us now combine these two perspectives to formulate some ideas more clearly :

<u>Health</u>
<u>Production</u>
<u>Distribution</u>
<u>(Institution)</u>

"high" level
based on
"science"

"low" level
based on
"tradition"

C   D

B   A   2

alpha   beta/gamma   <u>General</u>
occidental   non-occidental   <u>Structure</u>
                                 <u>Culture</u>

One could now imagine a process starting in A. There is a "state of nature" because man-made structure and culture are both soft, and there is no or very low level institutionalization of health care. No romanticism should be encouraged about state A : in some cases it works (the legendary peoples in the Caucasus?); in some, perhaps most, it does not work, as witnessed by tropical diseases.

With "modernization" or rather occidentalization, first in the
colonial period, then much more effectively, in the neo-colonial period
structure and culture both change, pattern of co-existence with nature (if they
existed) break down, but the level and kind of institutionalized (as opposed to
structurally built-in) health care remains the same. By this we not only mean
that it remains low level and soft relative to the surroundings, but that it
is geared to the diseases of phase A, not phase B. "Civilization diseases" appear,
particularly in those areas most hit by occidentalization, viz., capitals and
other urban centres of the most "developed" of the developing countries. In
these areas it also hits the upper classes and power elites - including the
bureaucrats, the capitalists and the researchers/intellectuals - and since they
have command over the system, including the health sub-system, they will tend
to divert resources for health care in their own direction.With this the transition
into phase C will already have begun, but if we presuppose scarce resources for
the expensive "modern" (meaning Western) medicine the safe prediction would be
that these resources will above all be at the disposal of the rich and privileged,
internationally as well as intranationally. The others are left to "traditional"
devices against "modern" diseases. Result: class struggle over health resources.

This leaves us, then, with the population of a country distributed
among three alternatives. There will be those who still lead a"natural" life in
remote, more "traditional" settings, with a minimum of health inputs, often healthy,
victims when hit by "natural" or "civilization" diseases. There will be those -
very many in low income countries - who are exposed to all the hardships of
modern life but with none or very little of its amenities, eg. access to modern
health care for any type of disease. And there will be those leading Western
type lives, including access to Western type medicine. Obviously, the morbidity/
mortality or general health picture of the three groups would be very different -
lumping them all together in nation disaggregated statistics would not seem very
meaningful. They are actually three different health systems,although phase B
is a non-health rather than health system.

What, then, with phase D ? It would combine a nature not disturbed
by Western structure and culture with Western medicine. It is quite clear what this
might mean : self-provisioning of health care and soft institutionalization, and
then a back-up system of Western medicine on a referral basis, eg. with a fleet
of helicopters to overcome geographical obstacles. Add "equally accessible to all"
and it becomes an attractive system, in a sense combining the best of both
worlds, or any number of worlds if we had more insight into health care (insight
meaning not merely knowledge, but also the skills and tools that would make it
possible to practice). And in a later stage one might also think in terms of

a return to phase A at a higher level : a structure/culture in themselves pro-
viders of health because they induce the right symbiosis with nature, and a soft
type of institutionalization, like grossly improved versions of acupuncture/herbal
medicine for "repair work". The structural approach and access to services combined!

If we now want to look at process-indicators the image just given
provides us with some ideas as to where to look. More precisely :

As to health production - what are the priorities ? Given the three systems just
described, or some similar distinctions, how much of available resources,in terms
of capital, capital goods, health manpower at various levels, research of various
types and general health organization is given to which system ? What are the trends?

As to health distribution - in addition to watching the distribution of access to
health facilities of various kinds in terms of social justice and equality (not
the same as real terms social justice and equality) one would pay attention to
tendencies to develop stratified types of health provision, with one kind of health
care for the rich and powerful, quite another type for others. Again, this does
not relate in an unambiguous manner to social justice and equality as access to
capital intensive health care may be a curse in disguise, and being limited to
correspondingly inexpensive varieties may be a blessing.

As to nature - one key process to be watched will have to do with the extent to
which, in very general terms, the man-nature system becomes less symbiotic. It is
of course a question of pollutants (which one day may be shown to be more or less
co-extensional with the set of "artificial" compounds?) and depletion of health
resources in nature, such as medicinal herbs, (is the variety being increasingly
reduced, or at best forgotten?) and also of recreation areas. When saying pollu-
tion/depletion it is because this has been the trend recently; the processes to be
watched would of course include tendencies in the opposite direction. In this connec-
tion the extent to which natural equilibria are built or are being reinforced so
as to maintain the state of nature that would be conducive to human health should
be monitored. However, the symbiosis depends even more on the human factor: to what
extent do humans change polluting/depleting habits; to what extent do they manage
to develop new patterns of co-existence with nature less detrimental to either ?

As to structure - the basic aspects to be studied here would be not only the extent
to which the structure itself is health generative/destructive, but the general
structure of the health cycle. If they are tentatively divided into two, the micro-
cycles that by definition are local, the relation to self, to others and to local
more or less professionals as health providers; and the macro-cycles that go far
beyond the micro-cycles, potentially world encompassing, passing through the
laboratories of the transnational pharmaceutical companies, the medical faculties

with hospitals of world renown to which people (who can afford it) are flown
in from all over the world. The process to watch would be how the balance
between micro- and macro-cycles is changing in various parts of the world.
If the movement is towards micro-cycles one may talk of increased self-provi-
sioning; obviously, in general, it is away from micro-cycles and hence towards
decreased self-provisioning. In an other type of structural terminology this
would mean a movement away from beta structures and towards alpha structures;
away from local towards national and international control over productive assets.
A key point in this connection, and it applies to both macro- and micro-cycles,
would be a study of who controls what might be called a health surplus. Is it
the healthy person himself/herself, putting it into love and work?Is it the local
community that organizes it into efforts to build a stronger, a better community?
Or - is it the national government that diverts the health surplus into building
a strong army, possibly for aggression internally or externally ? It is well
known that the health surplus in many parts of the world is negative - there is
not enough strength for production (work) and reproduction (love, in a broad sense).
But the problem should be raised; it is meaningful for health as it certainly
is for food and for energy to mention two other examples.

As to culture - one might here study the variety of health inputs available to
people around the world; is it increasing or decreasing ? Is there an increasing
standardization going on in the world as a whole, an increase in variety when
local and Western medicine live side by side, then a decrease when the former is
squeezed out by the latter and local health production is only used as something
to study and even spy upon, in order to transform it into a Western form through
technological transformation ? Variety in this connection would be a quantitative
aspect; the corresponding qualitative aspect would be the balance between health
inputs that are in the local culture and those that are alien. Again, the thesis
is not necessarily that a change from local health inputs would lead to alienation:
people may also have been changing their criteria for identity and identify more
with what is foreign than what is local in culture. All of this would be at the
end of the health cycle, towards consumption: there are also cultural aspects
at the beginning of the health cycle, at the production end, in the form of
standardization of knowledge and skills and tools. And here there is a question
of social justice alluded to in the general introductory remarks to processes
of health : to what extent are the less privileged treated to one type of health
inputs and the more privileged to another - the privileged often engaging in
praise of the traditional, but not so often practising it ? If it is so good
for the poor it should also be good for the rich - but to what extent do the
rich live up to that ? (this is also a distributional point).

There is one aspect in this connection that merits particular attention. It relates to culture but it should also be seen as a process in its own right : the process of goal-setting. No doubt the goals are changing, not only with the dislocation from an emphasis on micro-cycles towards the macro-cycle, but also with new trends in culture in general, and this part of political culture in particular. Key persons in this connection would be not only the people running health business, but also the bureaucrats in governmental and inter-governmental organizations concerned with health and all the intellectuals working for either. In short, the goal-setting of the B, C, I-complex on top of the alpha structure is no doubt in a process; it would be important to know the nature of this process not so much in terms of what conditions it as merely in terms of a good description. Thus, to what extent has the goal-setting been narrowing over time, focussing on a decreasing number of aspects of any more holistic image of the goal for health development; to what extent would it be possible today, in recent years, to talk about some kind of trend in the opposite direction ? As an example, there is probably an increased concern with health self-reliance in recent years, as there is with food and energy self-reliance.

c) Energy

In order to identify important processes the point of departure
will be the list of goals under social development in the preceding section :
production, distribution, nature, structure and culture. We cannot repeat
directly the four classes of basic needs as indicators as those will be
goal indicators in the direct sense. Concretely, then, what kind of processes
can we identify under these 5 headings for social development ?

As to production : the basic point to watch will be the priority
balances given to energy inputs for basic needs and energy inputs for other
purposes. There should not be any dogmatic, absolutist stand in this connec-
tion. Obviously, some hard energy production for non-basic needs, for instance
for export, might pay back in the form of trickling down effects that could
ultimately benefit people in general and raise their level of basic needs
satisfaction. It is not obvious that energy for industry is inferior from a
basic needs point of view to energy for agriculture. But what is called for
is the disaggregation already mentioned, particularly watching for tendencies
for the absolute energy level allocated directly to basic needs satisfaction
to decrease. That it will decrease relatively speaking with industrialization
and "modernization" goes almost without saying; the question is whether it
also decreases in absolute terms. In this connection disaggregation of the
production patterns, roughly speaking into soft and hard cycles (a dichotomy
that easily breaks down when exposed to the complexities of the real world),
is also recommended - watching the absolute and relative levels of energy
conversion secured through the two types of path . In short, those processes
mentioned should be watched, facile conclusions should be avoided.

As to distribution : among the key processes to be watched would
be the level of social justice and equality in the distribution of access to
energy inputs. Is this access correlated with class, urban/rural dimensions,
ethnic belongingness, age and sex groups ? What is the level of dispersion
in access for the population as a whole and how is it changing, increasing or
decreasing ? This may be a question phrased in terms of whether electricity
is reaching the villages or not, and also of whether solar, wind and biomass
based energy cycles are reaching the cities. Another process to be watched in
this connection, although it also has a complicated relationship to the goals,
would be stratification of satisfiers; to what extent the different classes
and groupings of the population in general tend to use   different types of
energy inputs ? Could it be that the hard cycles are for the upper and middle
classes and the soft cycles for the lower classes and the periphery ? But if

the upper and middle classes are full of praise of soft energy paths why, then, do they not practise what they preach ? If it is so good for the poor, should it not also be good for the rich ?

- As to nature : the point has actually been made above, it was a question of watching whether energy cycles are constructed in such a way that the variety is reduced, homeostasis impaired, by taxing non-renewable resources and polluting one way or the other what remains. There is a high level of sensitivity to this problem so much data already exists, although there is total disagreement as to how large remaining energy resources are. It may well be that a switch of attention from quantity of energy resources to quality of energy resources might bring in new and fruitful perspectives in this type of debate.
As to structure : the basic aspect to be studied here would be the general structure of the energy cycles. If they are tentatively divided into two, the micro-cycles that by definition are local, the conversion of energy sources available and distributed locally; and the macro-cycles that go beyond the micro-cycles, potentially world-encompassing, the process to watch would be how the balance between micro and macro-cycles is changing in various parts of the world. If the movement is towards micro-cycles one may talk of increased self-provisioning; obviously in general it is away from micro-cycles and hence towards decreased self-provisioning.In an other type of structural terminology this would mean a movement away from beta-structures and towards alpha-structures. Is the function of "energy technology" to provide inputs for macro-cycles; and the basic power question : is the control of a productive asset - land, credit, technology - local, national or international ?

A key point in this connection, and it applies to both macro- and micro-cycles, would be a study of who controls the energy surplus; is it controlled by the people who make it, or by national/global B,C,I-complexes ? The simplest definition of energy surplus would then be to say that it is what is left over after local end-use for basic needs, all over the society - which does not mean that it is necessarily based on self-provision, it only means that that which is needed for the people to reproduce themselves is discounted. It is well known that the energy surplus in many places in the world and in periods of the annual cycle is negative - that does not make the concept less fruitful. The basic hypothesis here would be that those with ultimate power in the society will try to set up energy cycles in such a way that they have full control centrally over the energy surplus and can use it for what they see as the promotion of national goals. Soft energy cycles would be rejected or given very low priority, not only because they are seen as producing little energy, but also because the surplus is not so easily controlled but likely to be spent

locally. Hard energy cycles will be preferred. Incidentally, it should be
noted that the micro/macro distinction is not the same as the soft/hard dis-
tinction : one could very well imagine hard energy cycles at a local level,
for instance in a major city, and there might also be some ways in which soft
energy cycles could be coupled together so as to constitute a macro-cycle.

     As to culture : one might here study what happens to the variety
of energy inputs in fact available to the population in various parts of the
world, is the variety decreasing or increasing ? It might be increasing in a
period where local energy conversion and "modern" energy conversion coexist side
by side (some electricity, kerosene, together with women and children collecting
small pieces of wood over large territories), but then be decreasing when the
former is squeezed out by the latter. Variety in this connection is a quanti-
tative aspect; the corresponding qualitative aspect would be the balance between
energy inputs that are in the local culture and those that are alien. Again,
the thesis is not necessarily that a change away from local energy inputs neces-
sarily will lead to alienation : people may also have been changing their cri-
teria for identity and identify more with what is foreign than what is local in
culture. All of this should be at the end of the energy cycle, towards end-
use : there are also cultural aspects at the beginning of the energy cycle
that can be summarized in the term called "technology". To what extent can one
talk about a technology standardization, meaning that knowledge and skills and
tools that traditionally were used locally are being displayed by knowledge and
skill and tools coming from the outside ? Is the traditional technology able to
survive side by side or is it gradually squeezed into the background and for-
gotten ? This,obviously,also ties in with the general question of social jus-
tice : to what extent is traditional technology used by marginal groups, inclu-
ding women, for subsistence,and the foreign technology by men for production for
the market, and participation in macro-cycles in general ?

     There is one aspect in this connection that merits particular atten-
tion, it relates to culture, it should be seen as a process in its own right :
the process of goal-setting. No doubt the goals are changing, not only with the
dislocation from an emphasis on micro-cycles towards the macro-cycles, but also
with new trends in culture in general and political culture in particular. Key
persons in this connection will be not only the people running energy business,
but also the bureaucrats in governmental and intergovernmental organizations
concerned with energy and all the intellectuals/researchers working for either
and for themselves. In short, the goal-setting of the B,C,I-complex on top of
the alpha structures is no doubt in a process; it will be important to know
the nature of that process, not only   in terms of what conditions it, but

also   in terms of a good description. Thus, <u>to what extent has the goal-setting</u> <u>been narrowing over time, focussing on a decreasing number of aspects of any</u> <u>more holistic image for the goal of energy development; to what extent would it</u> <u>be possible today, in recent years, to talk about some kind of trend in the</u> <u>opposite direction ?</u> As an example : there is for sure an increased concern with energy self-reliance in recent years, as there is with food self-reliance.

More particularly, in connection with energy-cycles, questions are probably increasingly being asked, even by people in the hard core of the hard energy cycles. Some of them are :

(i)   are we accepting as legitimate the rising energy demands of the North, or do we have to disaggregate energy demands into what is needed for the satisfaction of basic <u>needs</u> everywhere and have a critical look at the energy <u>demands</u> in excess of that ?

(ii)   are we accepting that energy is a commodity to be traded, with the obvious and well-known problems that entails, or should we also consider the possibility of seeing every resource as a common patrimony of humankind, at least in part to be distributed according to need and to the most needy, and not only according to demand ?

(iii)   are we accepting that energy technologies had to be made in such a capital-,research- and even energy - intensive way as today, or do we have to encourage not only the use of non-conventional sources of energy but also local,small-scale modes of production all over the world ? Do we accept the efforts by B,C,I-complexes to co-opt new forms of energy technologies and usage patterns ?

(iv)   do we have to limit our thinking on energy to technical, economic and ecological concerns, or do we also have to look into, for instance, a political concern such as the need to be autonomous, not dependent on energy supplies from others ? What is the meaning of regional, national and even local self-reliance in the framework of energy policy ?

(v)   in short, what kind of social and political infrastructure will be related to what kind of energy policy and energy system ?

* * *

Finally, one remark about indicators, relating to the first section. The indicator we are looking for is not whether planners/decision-makers would have data on all/most/some of this at their disposal, but whether <u>people</u> have it. This is partly a question of consciousness and knowledge among people, partly a question of their mobilization and organization to get the data and the insight. In very many cases this will lead to confrontation, to political fights. Data may reveal trends away from goals and processes that in the longer run may be detrimental. They may also reveal the vested interests of some groups at the expense of others.
Hence, what is worth discussing would be how data for democratic, participatory indicator-formation could be produced and made generally available. And that discussion, which is a political more than a technical discussion, has not yet even started; the assumption being that indicators should strengthen the strong rather than the weak. Our assumption is the opposite.

6. Some concluding remarks

The preceding sections are all steered by a vision of development as a process whereby"people satisfy their needs, material and non-material, in a self-reliant manner - individually, locally, nationally, regionally". This formulation opens for a wide variety of options, it is not dogmatic. Thus, it is compatible with some kind of decentralized capitalism as well as with decentralized socialism. But it is incompatible with high levels of centralization that transform people into clients of an état-providence and customers of (trans-national) corporations. And this is where the present approach differs from the dominant approach today : well-defined, specific research aimed at solving well-defined,specific problems.

In its most simplistic, and also egocentric, version this dominant paradigm has as its nucleus a figure something like this :
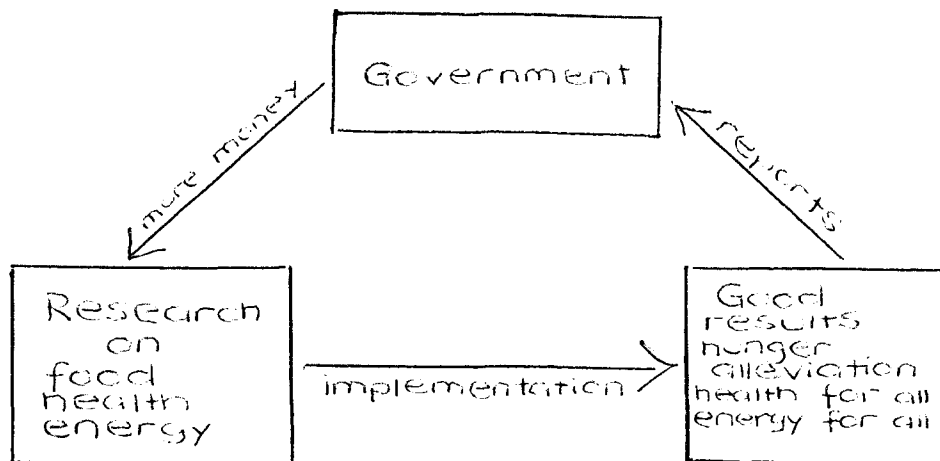
Of course, the world is not that simple except, possibly, in the eyes of researchers with a positivistic, natural science type training. It is easily seen where the first error is located: there is no reflection on how the implementation takes place. More concretely, who are the actors who can use research findings and "implement" them ? Certainly not people in general except as clients and customers - but then they are consuming, not implementing. The actors capable of implementing research findings have to be adequate to the findings;they have somehow to be of the same kind. As research delivers insight in an abstracted and generalized form actors capable of implementing the insight have to operate at the same levels : in a narrow, segmented manner,

and relating to vast numbers of people, in the same way. Both the state
and the corporation do this, through specialized (sub-)ministries and (sub-)
branches - catering to vast numbers and varieties of people. Hence they
are the likely actors; they will pick up the results whether or not there
is an institutional link between the research on the one hand and the state
and corporation on the other. Usually they will pay for what they get, how-
ever - one way or the other.

Hence, a more realistic picture :
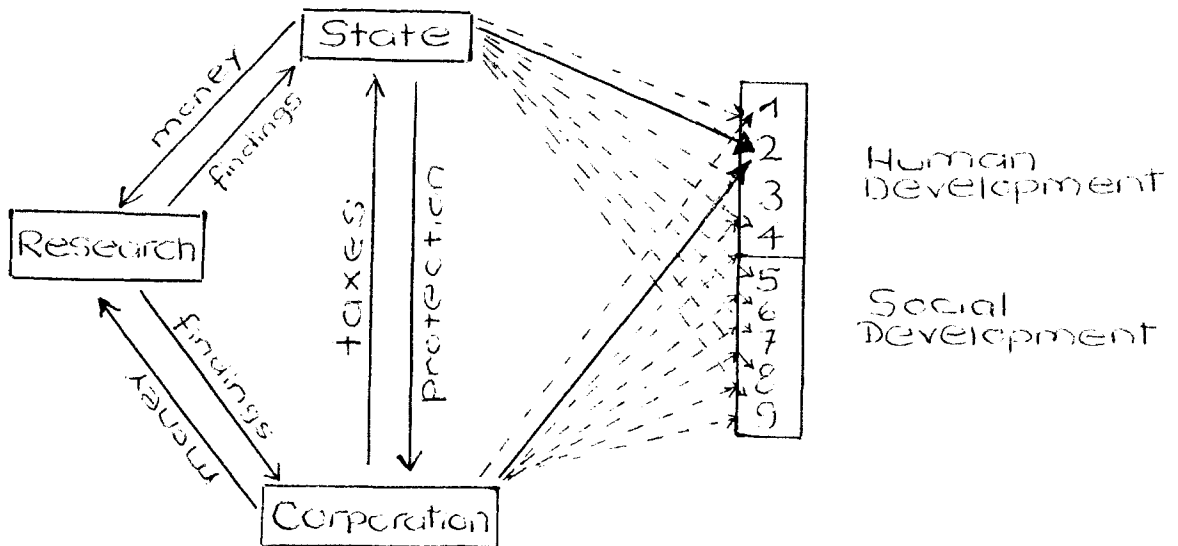
With the state - research - corporation triangle there is no problem - the
problems are with people. Using the nine dimensions defining human and social
development for our purpose a picture is given here - highly polarized ! -
where the state and the corporation are seen as capable of satisfying some
material needs - for food, health, energy - but likely to mess up all the
rest in the way they are bringing about that satisfaction. There is no
denial that state and corporation may do other things aimed at rectifying
maldevelopment - such as an environmental agency trying to limit or undo
the harm of the energy agency. The only certain outcome of mess and counter-
mess is that the triangle to the left in the figure will grow, contributing
to a top-heavy society and further transformation of people into clients
and customers - with their creativity stifled - "satisfied",but apathetic
observers, not participants.

We let this do as an indication of the negative reason for the approach
advocated in this paper : the dominant paradigm has what has just been
described as its inevitable consequence, at best combined with some short-
term sectorial gains, at worst not even that, but simply an unmitigated dis-
aster. And yet this is not an all-out argument against the triangle - only
a plea for a softening of the dominant approach with all the considerations
mentioned in the preceding sections.

4. On the growth of B, C, I-complexes and human and social maldevelopment

To many what has been said in the preceding pages sounds strange, not so much because of any profound disagreement as because of a feeling that this is much too complicated, and unnecessarily complicated. There is a much simpler approach : through research on well selected problems and a massive implementation of the research findings according to well tested procedures. The model is something like this :

Figure 1. The naive point of departure
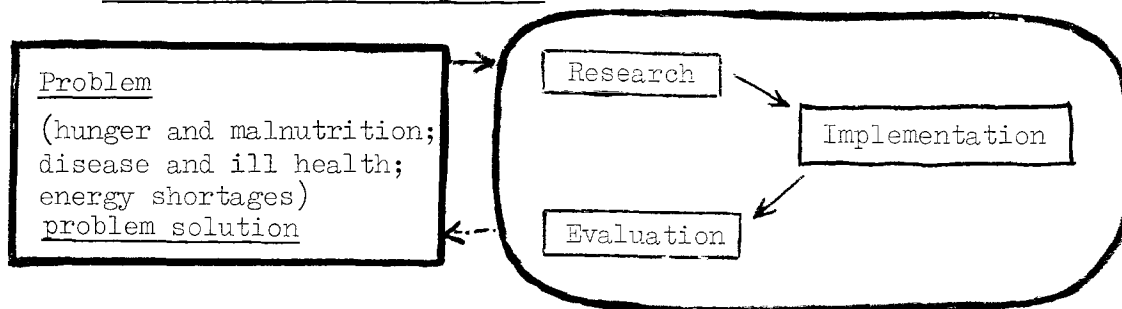
(⟶ can be read as "leads to", "contributes to"; —·—·⟶ stands for the opposite)

There is a problem, it is researched upon, as a result there is implementation towards problem solution, this is gratefully evaluated by a people/establishment mix (the mix depending on how democratic the society is); as a result more funds will be given to research and the cycle goes on until the problem is solved, or disappears from the problem agenda for other reasons. Available research capacity is then allocated to the next problem on the agenda. The model works not only at the national level; within the jurisdiction of one government, but also at the intergovernmental level, eg., by using the capacity of the UN system for problem identification and research.

Nobody will deny some validity to this model, under conditions that are not well understood. Nor is it by any means clear what an acceptable range of alternative models would look like. The model has to be criticized constructively, like all other models. The following are some angles of critique.

(1) Problem identification. Which problems are identified and how obviously depend on who does the identification and what is the structure of the system (the system in Figure 1) that handles the process. It is naive to believe that the system can identify any problem and accept it as a bona fide problem. In general, a good guide here is probably to assume that the system will only identify problems seen as soluable without changing the system for problem-identification and -solution; and will tend to identify problems in a way that will not only threaten but even enhance the system. Thus, to anticipate the argument below a little : a system

with strong, powerful bureaucrat (B), corporate (C) and intellectual/research (I) components will tend to define the energy problématique in such a way that B,C and I come out of the process strengthened – eg. by recommending and implementing nuclear energy programs, or solar parks.

(2) The research component. The research considered in this connection is carried out in accordance with Western canons of analytic inquiry (Aristotle, Descartes), characterized by

– a subdivision of reality into units and variables amenable to the construction of falsifiable hypotheses that can be nested together in a theoretical framework;

– an effort to establish propositions, "invariances" "laws" – tenable across large intervals in time, space and social space. These two characteristics can be referred to as the inclination towards abstraction and generalization respectively. Suggestive autonyms would be holism and particularization – pointing to some non-western traditions, the other half of the brain according to some recent (analytic) thinking about brain processes. Other word-pairs would be analytic/ nomothetic vs. synthetic/idiographic. The visions of reality in general and problems in particular engendered by these two different research orientations will differ greatly, but will not necessarily be incompatible – they may be com- plementary. The point here is merely that the bias in favour of abstraction away from a total reality and the search for generally applicable formulas are not without consequences for the way problems are identified and handled.

Thus, there will be a disinclination to see the total system as the cause of its own problems – there will be a search for identifiable factors within the whole. In general those factors will be selected that are within the paradigm of the research discipline (and within the specialized competence of the researcher as this will enhance his/her position). The result is an image based on a range as narrow as the paradigm of the discipline/researcher – or often narrower because other factors will reduce it further. Cross-, multi- and inter-disciplinary research will not constitute a solution : parallel narrowness is fragmentation, not holism. Trans-disciplinary approaches may help, but they are practically speaking absent except within natural sciences, within social sciences, within the humanities. Holistic images are probably more developed among people in general, and among women in particular, than in researchers – but they at most deliver raw material for problem identification, not the final processing.
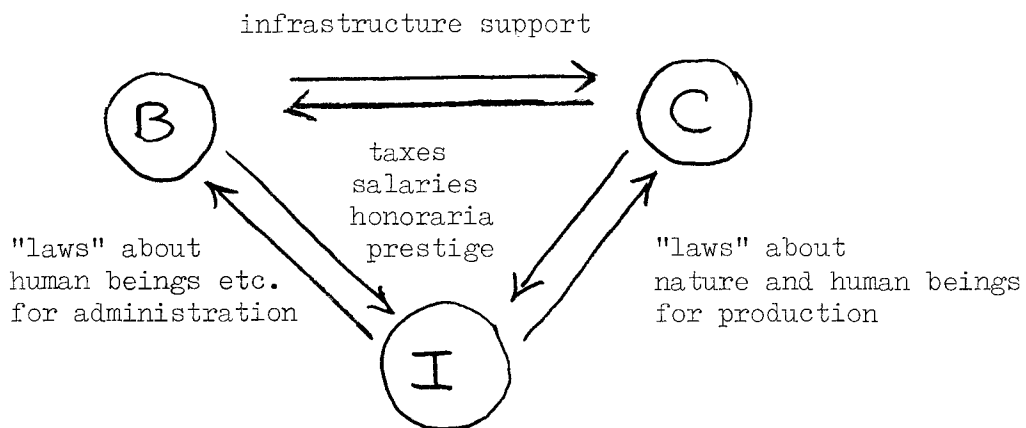Second, the search for generalization, for more universally valid formulas – intrinsically woven into the Western concept of science – will inevi- tably lead to more abstraction in order to fit more general formula. The

distance from concrete, specific reality will increase. The result is not only
narrowness, but possibly irrelevance or at least inadequacy. The problem of
being with other people becomes reduced to a problem of footwear for walking to
them, through abstraction; the problem is then transformed to a problem of giving
shoes of the same size to everybody. A caricature, but hardly a non-suggestive one.

3. The unspecified link : who are the actors ? In the naive model the link from
research findings to problem solution is usually not specified - it supposedly
comes about by somebody picking up the outputs from research institutions. The
probability of being "picked up" increases with increased dissemination. However,
in practice it is clear who can make use of research findings of the type described:
those who are operating structures based on abstraction and generalization. These
are above all bureaucratic and corporate actors. A general research finding consti-
tues a basis both for large-scale bureaucratic administrative action and for large-
-scale industrial production. The intrinsic link between Western science, a univer-
sally just bureaucracy treating everybody according to the same objective rules
and mass production of goods and services in a predictable and standardized manner
is at the very core of the Western social construction, now being imitated eagerly
in many corners of the world. Since bureaucracies and corporations tend to be staffed
by people who also are intellectuals/researchers (sometimes manqués)and will easily
turn research findings by their colleagues into something that can be implemented
as administration and/or production. In doing so I, in fact, deliver to B and C what
B and C need most : the general "laws" (both in the prescriptive and descriptive sense)
according to which administration and production can be reinforced; be given more
scope and domain. In return for this B and C will reward I by means of salaries,
honoraria and prestige - on the condition that they can use the work product from
I - their research findings. There are two patterns for this : I can be employed
directly by B and C and the work product is used by those who pay them ; or I can
be employed by I (universities, academies, etc.) and they choose their research
freely on the condition that the results are made publicly available.

The relation is something like this:

Figure 2.   The B,C,I-complex

infrastructure support

"laws" about
human beings etc.
for administration

taxes
salaries
honoraria
prestige

"laws" about
nature and human beings
for production

It is a mutually supportive,self-reinforcing and potentially extremely expensive system : all of these people, their offices, hardware of various kinds have to be paid in one way or the other. Probably indispensable at a moderate level the complex - beyond a certain size - becomes a major threat to both human and social development - a theme to be developed below.

4. <u>The problem of implementation and evaluation</u>. If the B,C, I-complex is well integrated, non-antagonistic, findings made by I under B and C contracts and implemented by B and C will tend to be favourably evaluated by the B,C, I-complex Having research specialization (I) mirrored - to a considerable extent - in ministry and agency specialization (B - at the governmental and intergovernmental levels respectively) intellectual narrowness has its counterpart in sectorial policies and commercial specialization. Hence, the biases built into research will pass unnoticed by B and C as they have many of the same biases. A Ministry of Health and a pharmaceutical company will not discover how medical research neglects, say, human needs for self-mastery,for being master of one's own situation - they are both to a large extent based on that neglect. Thus, B is more likely to want citizens to look for B - <u>l'état providence</u> - for help and C more likely to want them to buy from C what they need; and B might prefer this to get a basis for taxation. The net result for the ordinary man and woman is <u>dependency</u> - but, if this is outside the range of evaluation it will pass undetected. This does not mean that all types of biases, narrowness and shortcomings will always remain undetected only that they are more likely to be detected by other branches of B, C and I - possibly wanting to spin other webs of dependency with other sectors of bureaucracy for other products, for other types of narrow imagery. It may also be discovered by people themselves, who will then have to fight it out with these strong forces that will do their best to co-opt popular initiatives.

As B,C, I-complexes have a built-in tendency to grow they will rarely define problems as being completely solved lest that would undermine the rationale for their existence. On the other hand there is no danger as B,C,I-complexes will generate new problems that the same or different parts of the complex will try to come to grips with - thereby transforming rather than solving problems. The inclination will be to say not that a problem has been solved but that it is (in the process of) being solved.
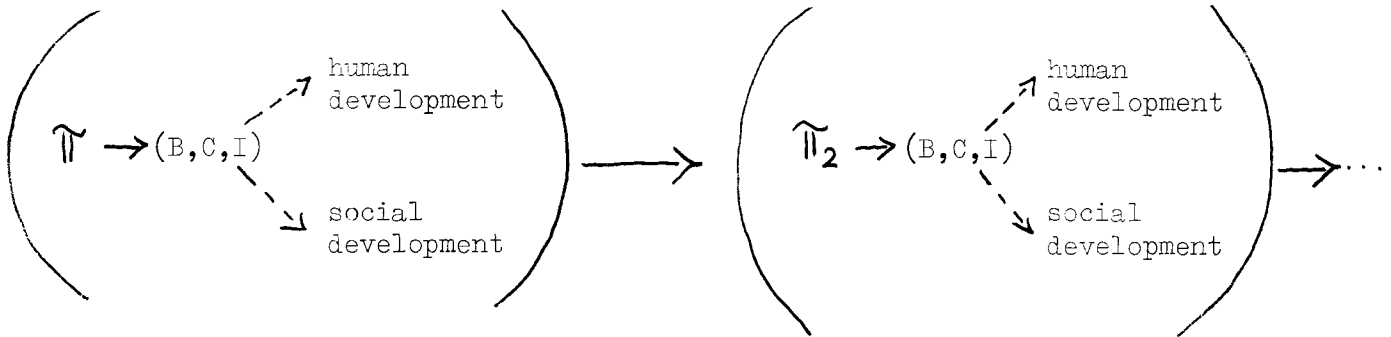
* * * * *

Clearly, what the point of departure in Figure 1 neglects is the effect that process has on the B,C,I-complex and the effect that, in turn, it has on human and social development. If we refer to the process (optimistically) depicted in Figure 1, as Π , then another model might look something like this :

Figure 3.   A more realistic model

$$\left(\Pi \to (B,C,I) \begin{array}{l} \nearrow \text{human} \\ \text{development} \\ \searrow \text{social} \\ \text{development} \end{array} \right) \longrightarrow \left(\Pi_2 \to (B,C,I) \begin{array}{l} \nearrow \text{human} \\ \text{development} \\ \searrow \text{social} \\ \text{development} \end{array} \right) \to \ldots$$

The process itself leads to (B,C,I) growth which has some negative effects on human development (HD) and on social development (SD); in other words to problems. That leads to second order processes of problem solution which leads to further (B,C,I) growth which leads to further HD and SD problems, and so on.

The effect of the B,C,I-complex on human and social development is by no means simple; no unambiguous conclusion can be arrived at. Using the check-list one may perhaps say the folowing, in very general terms :

(1) Security - the tendency to search for large scale solutions within a relatively narrow spectrum will tend to make the system more vulnerable, hence less secure. Basing energy, for instance, on oil (or nuclear energy) facilitates administration (of scale) and also profitable economies of scale - energy systems based on inter-meshing grids of ten, twenty different types of inputs can probably only work optimally at a local level.

(2) Welfare - the B,C,I-complex is capable of bringing about very high levels of need-satisfaction, but very often at the expense of somebody or something. Focus on a narrow spectrum of, for instance, food, health and energy inputs will lead to very heavy pressures on material resources. Resources for newsprint and school textbooks will compete with resources for rational agriculture. Resources processed for high consumption groups and areas will lead to underdevelopment in those places and groups. C is probably most responsible here because it operates the economic cycles; B may have a restraining influence on C through successful operation of administrative counter-cycles.

(3) <u>Identity</u> – Large-scale, narrow-range activity directed from above will lead
to concentration of the control of material resources, and also of power resources.
It becomes important that needs are satisfied the way the B,C,I-complex has pre-
scribed and facilitated.Needs for a sense of <u>mastery</u> of own situation, for a
<u>challenge</u> that may spur creativity, for <u>togetherness</u> with others in producing
solutions to problems, for a sense of <u>meaningfulness</u> (related to a more holistic
approach to reality) and identity with a system that is comprehensible to everybody
will inevitably suffer.

(4) <u>Freedom</u> – Again, it is the narrow-range perspective that carries most of the
causal burden : by gambling on a limited number of factors for reasons of administra-
tive feasibility and economic profitability the range of options will be reduced.
In addition, the way in which the system is operated from centers far removed from
most people makes it obscure – not transparent – and reduces the possibility of
making rational choices.

(5) <u>Production</u> – The system is immensely productive and has also produced its own
rationality in terms of cost effectiveness, input-output ratios. Output per factor
unit, in other words <u>productivity</u> measures diverts the attention away from the
whole purpose of development : production to satisfy basic needs,and towards economism.

(6) <u>Distribution</u> – Under efficient B-directed action the social democracies of
Northern Europe and the socialist countries of Eastern Europe and elsewhere have
shown that it is possible for the B,C,I-complex to initiate action that may distri-
bute goods and services so that the bottom level of material needs satisfaction is
raised. Without any such measures – usually including subsidy one way or the other
of such basic satisfiers as food, medicine, health care and energy, the enormous
expenses incurred by running a B,C,I-complex would price the units produced out
of the range of the possible for the common consumer if he is to bear the expenses.

(7) <u>Nature</u> – Large-scale, narrow-range operation – receiving its rationale from
generalizing and abstract science – will invariably lead to the overutilization of
some and underutilization of other resources. The resource utilization prophile
will be very lopsided relative to what nature offers, and hence tend to lead to
imbalances that would have been avoided with a prophile more similar to nature's
own. This is probably also true of B-generated action aimed at restoring balances
(governmental and intergovernmental environmental action) : it is being done in the
same way, according to the same B-C-I harmonization formula built around the two
characteristics mentioned: abstraction and generalization.

(8) <u>Structure</u> – If vertical, marginalizing, fragmenting and segmenting structures
run by a small elite of (usually) middle-aged males with university education is
what is meant by"social development"anything promoting the B,C,I-complex will be
conducive to that under present rules of operation. If social development is seen

more as the opposite, participatory self-reliance down to the local level, growth of B,C,I-complexes is clearly anti-thetical.

(9) <u>Culture</u> - It is probably correct to say that B,C,I growth is a genuine child of Western culture, or Western social cosmology with its disrespect for nature and its tendency to foster vertical, fragmenting social relations – not to mention its tendency, towards an epistemology based exactly on the characteristics mentioned. But it is not equally compatible with other cultures – opening for the allegation that its implantation and growth in other cultures in fact is an example of socio-cultural imperialism and, hence, anti-development.