Inter-sectoral Dialogue DOCUMENTS
18th May 1992, Geneva

CONFIGURING GLOBALLY AND CONTENDING LOCALLY

Shaping the global network of local bargains by decoding and mapping Earth Summit inter-sectoral issues

Inter-sectoral Dialogue (Rio de Janeiro, 1-2 June 1992)

Prepared for the
International Facilitating Committee for the Independent Sectors
in the UNCED process (Geneva)

Anthony J N Judge

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CHECKLIST OF DOCUMENTS FOR RIO INTER-SECTORAL DIALOGUE

A. Checklist of documents (ie this document) IFCD50

B. Contextual statements
- Premises for an inter-sectoral gathering (IFCD51A)
- Dilemmas of inter-sectoral dialogue processes (IFCD51B)
- Axes of bias in inter-sectoral dialogue (IFCD51C)
- Dialogue statements or forms of intervention (IFCD51D)
- Structure of declarations: challenging traditional patterns (IFCD51E)
- Articulating "the way forward" (IFCD51F)
- Earth Summit traps and opportunities (IFCD51G)

C. Summary of pre-Rio IFC preparatory processes (IFCD52)

D. Systemic mapping of strategic dilemmas
- Descriptive overview (IFCD53)
- Inter-sectoral strategic dilemmas of sustainable development (Figure 1)
- Competing models and visions of global order (Figure 2)
- Representation of issue areans on icosadodecahedral net (Figures 3A & B)
- Spherical representation of icosadodecahedral net (Figure 4)
- Significance of 3-letter codes (Figure 5)
- Representation of interlocking elements for a sustainable global structure (Figure 6)

E. Coded checklist of Earth Summit issues (Agenda 21, declarations, etc)
- Comments on document processing procedure (IFCD54A)
- Declarations and documents processed (Figure 7)
- Comments on coding issues (Figure 8)
- Declaration issues:
  - clustered by principal subject (Figure 9)
  - sorted by code combinations (Figure 10)

F. Inter-sectoral dialogue and sustainable development metaphors
- Conveying Earth Summit insights (IFCD55)
- Meshing imaginative vision and policy implementability (IFCD55A)
- Appropriate metaphors of sustainable development (IFCD55B)
- Enhancing policy through powerful metaphors (IFCD55C)
- Reframing problems as metaphors (IFCD55D)
- Reframing inter-sectoral cooperation through metaphor (IFCDE)
- Earth Summit as a natural ecological system (IFCDF)

G. Response to "call for insights"
- Reproduced in successive editions of Da Zi Bao (participant messaging system)

CONTEXTUAL STATEMENTS

PREMISES FOR AN INTER-SECTORAL GATHERING (tentative)

1. **Meaning of "the way forward":** There is a need to articulate understanding of what could be meant by "the way forward" in an inter-sectoral context.

2. **Seeing things whole:** There is a need to explore new ways of seeing things as a whole -- without losing sight of the parts for which each sector is responsible. Agenda 21 does not contain a single visual aid reflecting new systemic understanding of sustainability.

3. **Inter-sectoral maps:** There is a need to come to an understanding of where each sectoral concern is located on a map of the functions essential to sustainability -- functions which, when pursued to excess, result in unsustainability.

4. **Overall pattern:** The complex of issues under discussion should preferably be viewed as forming some meaningful overall pattern. Individual issues can usefully be seen as pieces of a systemic "jig-saw puzzle" that we do not as yet fully understand how to put together -- or what the completed "picture" might look like. It would clearly be a mistake to limit the focus to the "laundry list" schema of Agenda 21 -- whatever the priorities or validity of the points therein.

5. **Beyond isolated bargains:** There is a need to move beyond isolated bargains -- often only achieved at the price of unsustainable compromise in other areas. In this sense "local" (namely sector-specific) agreements tend to be achieved at the price of "global" disagreement.

6. **Function of differences:** There is a need to acknowledge the function of differences between sectors. This contrasts with the hope that the differences can be rendered insignificant within a global consensus -- thus making any such consensus a competitive exercise in tokenism.

7. **New patterns of communication:** There is a need to struggle with the challenge of understanding and articulating new patterns of inter-sectoral activity, namely new patterns of communication to sustain sustainability -- conceptual "ley lines". These need to enhance understanding of the whole rather then focusing exclusively on links between selected and privileged parts.

8. **Necessary sectoral constraints:** Unless each sector recognizes the conditions under which its action should be constrained, a culture of sectoral self-righteousness prevails. This imperils the emergence of any sustainable global pattern of new significance.

9. **Challenge to comprehension:** Unless a sector can recognize how it is part of the problem, it must necessarily be unable to understand the nature of the sustainable solution required.

10. **Collective learning:** The inter-sectoral challenge may be seen as a challenge of designing a collective learning process.

Think functionally, act strategically

Configure globally, challenge locally

DILEMMAS OF INTER-SECTORAL DIALOGUE PROCESSES

1. **Common denominators:** Inter-sectoral meetings readily focus on the lowest common denominator, rather than seeking ways of benefitting from the variety of perspectives represented. This is often the price of a certain form of consensus.

2. **Repetition:** Everything that is easy to say about development-environment issues has already been said and written many times. It is questionable whether the time of an inter-sectoral dialogue should be used to make these points again amongst people who have made (and heard) them before.

3. **Statement fatigue:** Many are tired of each others position statements, whether of their insights or of their distortions. There is a need to move beyond the phase of "flag waving", testimony meetings, and intellectual and personal positioning.

4. **Communication styles:** Each sector tends to be impatient regarding insights formulated in the "language" of another sector. Differences in communication style are important, especially in a multi-cultural setting.

5. **Elaboration:** Those presenting insights tend to fail to present them in a sufficiently succinct language. This tendency exploits the limited time resources of the meeting -- and is essentially unsustainable.

6. **Illegitimacy:** Sectors tend to have difficulty accepting the legitimacy of other sectors, even if obliged to create the impression of doing so.

7. **Self-righteousness:** There is a need to move beyond the easy posture of self-righteous blaming of particular sectors -- and the old pattern of scapegoating another to emphasize the innocence of one's own sector.

8. **Over-selling:** Sectors tend to "over-sell" the merits of their concerns, skills and special perspective. Excessive enthusiasm can strin credibility.

9. **Over-confidence:** Sectors tend to fail to recognize the limitations of their own perspective with respect to domains of importance to others.

10. Obvious **solutions:** Some continue to believe in obvious or magical solutions and perceive as unconstructive (or "negative") any attempts to note the limitations of such solutions.

11. **Authorities:** The traditional approach of using respected authority figures to impose order on a "disorderly" dialogue is increasingly questioned. But the challenge of "self-organization" has not yet been fully accepted.

12. **Facilitation:** Efforts to use non-authoritarian, "neutral" facilitators or processes to mediate interactions are considered suspect. Facilitators necessarily have particular cultural, linguistic, ideological or disciplinary biases.

AXES OF BIAS IN INTER-SECTORAL DIALOGUE

1. ORDER versus DISORDER
   1a. Preference for order: Dialogue should be orderly, based on an ordered array of sectoral statements and arguments. Favoured by those defining the environment and development in an orderly manner.
   1b. Preference for disorder: Inter-sectoral dialogue must necessarily be chaotic and disorderly in order to be fruitful. Favoured by those sectors recognizing that they are subject to more forces than can be rationally presented.

2. STATIC versus DYNAMIC
   2a. Preference for static: Inter-sectoral dialogue can be viewed as forming a static, semi-permanent configuration of sectoral positions. Favoured by agencies mandated to respond to particular problems over an extended period of time.
   2b. Preference for dynamic: Dialogue can only be understood as a dynamic, shifting relationship between sectors. Favoured by those preoccupied by short-term considerations.

3. DISCRETE versus CONTINUOUS
   3a. Preference for discrete: Sectors and issues are both viewed during dialogue as distingished by clear boundaries. Favoured by those who need to distinguish and allocate responsibilities.
   3b. Preference for continuous: Sectors and issues are both viewed as forming a continuous, possibly "seamless", field of tensions during dialogue. Possibly favoured by those recognizing pervasive fields of tensions, conspiracy theories, and negative forces.

4. EXTERNAL versus IDENTIFICATION
   4a. Preference for external relationship to phenomena: Sectors and issues viewed as externalities, namely objects of experience to be experienced from without during the dialogue process. Basic to the strategic assumptions of many international programmes.
   4b. Preference for identification with phenomena: Sectoral issues can only be genuinely comprehensible through an intitive identification with the experience they constitute, especially during the dialogue process. Favoured by those whose views have been strongly influenced by personal experience of suffering.

5. SHARPLY versus IMPLICITLY DEFINED
   5a. Preference for sharply defined phenomena: Sectoral issues viewed as directly experiencable. Favoured by those responding to problems seen as concrete realities as opposed to unreal abstractions.
   5b. Preference for implictly defined phenomena: Sectoral preoccupations viewed as implying levels of significance greater than are immediately obvious. Favoured by those who detect more fundamental problems in issues which may not otherwise appear problematic.

6. COMPREHENSIBLE versus INCOMPREHENSIBLE
   6a. Preference for inherently comprehensible phenomena: Sectoral preoccupations viewed as comprehensible in terms of existing paradigms. Favoured by pragmatists working in the light of long experience.
   6b. Preference for inherently incomprehensible phenomena: Sectoral preoccupations calling for explanations in terms of other frames of reference. Favoured, notably, from certain religious perspectives.

7. DUE versus SPONTANEOUS PROCESS
   7a. Preference for due process: Inter-sectoral dialogue should be governed by pre-defined processes. Favoured by those sectors relying on well-developed procedures.
   7b. Preference for spontaneous process: Inter-sectoral dialogue viewed as most fruitful when spontaneous processes emerge. Favoured by those who see chance and accident to be significant.

(Text adapted from W T Jones)

DIALOGUE STATEMENTS OR FORMS OF INTERVENTION (tentative typology)

It may be usefully asked to what extent further repetition of statements of a particular type will shift the discussion to a higher level of discourse. Many interventions simply reinforce existing positions without offering a way forward -- especially when they fail to respond to the context created by opposing positions.

A. CONTEXT-SETTING

Statement of world-views
Affirmations of belief, principles, support or solidarity
Invocations: clauses, principles, deity
Acknowledgement (recognition) of context
Recognition of historical situation (recalling)
Temporal constraints (urgency)

B. PERCEIVED TRUTHS

Statements (perceptions, confirmations, denials, assertions) of facts or conditions
Explanations, answers
Illustrations, parallels

C. JUDGEMENTS

Evaluations, assessments, judgements
Expressions of approval / disapproval
Protest, reject, disagree, contest
Expressions of blame or accusation
Self-evaluation, self-criticism
Recognition of limitations, constraints
Self-justification, excuses
Expressions of regret, apologies

D. APPEALS TO OTHERS

Calls: for solidarity, subscribe to, believe in, support
Calls: for action, research, intervention, sanctions
Appeals for resources
Injunctions upon others (should's or should not's)

E. ACTION

Decisions, action resolutions

F. UNCERTAINTY

Acknowledgement of lack of knowledge or information
Questions

G. INTEGRATIVE INSIGHT

Articulation of challenge or opportunity
Wisdom
Humour

STRUCTURE OF DECLARATIONS: CHALLENGING TRADITIONAL PATTERNS

Many perspectives need to interact to clarify the content of global declarations and render them appropriate. But there is also a need for expertise in new forms of order to clarify the dimensions which could influence the conceptual framework within which that content is presented. Such formal properties are a challenge to ways of thinking that have proved inadequate. They might include:

- **Consensus / Contention:** Here the challenge is to move beyond superficial expressions of consensus and solidarity. These obscure the real differences that reflect complementary functional preoccupations vital to the survival of any complex global system. The "conflict" between such preoccupations needs to be articulated in the form of shared tension ("contention") or strain ("constraint"). This then limits the destabilizing excesses of each of them.

- **Continuity / Discontinuity:** Here the challenge is to ensure the coherence and continuity of the form of the document whilst providing for the presence of perspectives which are inherently incompatible with one another. The art is to use the mutual rejection by particular perspectives as a structuring device that creates the shared tension which expresses and energizes the sense of continuity. The challenge may be framed in terms of embodying discontinuity.

- **Simplicity / Complexity:** Here the challenge is to ensure a form that is comprehensible as a whole whilst embodying a degree of complexity that honours the diversity of preoccupations. The art is to ensure the presence of comprehensible symmetry effects at various levels to avoid the need to focus on lower levels of detail unless required. It is the simplicity that anchors the sense of coherence from which the various levels of detail may be explored.

- **Completeness / Incompleteness:** Here the challenge is to ensure that the form of the document recognizes the limitations of the insights from which it arose. Some degree of completeness is naturally essential as the basis for any consensus. But the implication of "completeness" evokes legitimate objections, both from those whose views were inadequately reflected at the time, and in the light of insights that emerge after its completion. A sense of "incompleteness" is required to open the door to unforeseen reinterpretations, rather than inhibiting such initiatives by creating a sense that appropriate future action can be completely defined.

- **Enfolding / Unfolding:** Here the challenge is to ensure that the form of the document is such that it may be "unpacked" to various levels of detail according to the needs of users at the time. Similarly, it should be possible to conceal such confusing levels of detail by "packing" them away so as to present a relatively simple document. In this way, the full complexities are always present implicitly, whatever the degree to which they are explicated in any one version.

- **Comprehension / Incomprehension:** Here the challenge is to recognize the problems of comprehending a document of global scope. This applies both to the well-informed, sensitive only to particular preoccupations, as well as to those who find much of its detail incomprehensible, whatever their background. The form of the document should be designed with redundant and mnemonic features to guard as much as possible against its "dismemberment" through selective incomprehension. On the other hand, the form should draw attention to the possibility of comprehending the conceptual challenges and paradoxes of globality in new ways -- whether through personal insight or future discoveries.

- **Constraints / Freedoms:** Here the challenge is to interweave into the form of the document an appropriate balance of constraints and freedoms. Some may be seen as global constraints opening up local freedoms. Others may be seen as local constraints that provide the guarantee of global freedoms. However such a design needs to go beyond a mechanistic approach. To be appropriate it needs to provide for a transformative or evolutionary dimension that reflects changing understanding of the nature of constraint and freedom.

- **Symbol / Sign:** Here the challenge is to ensure that the document can fulfil its function as a symbol of an appropriate new order. However at the same time, for it to be of operational significance, it must also serve as an indicator of a pattern of actions through which that order can be given form.

ARTICULATING "THE WAY FORWARD"

1. We should move away from mere reiterations of our sectional concerns and interests.

2. We should aim to deepen our understanding of the perspectives, the objectives, and the implications of our own sectional interests and positions. This itself would be achieved by willingness to subject those interests and positions to candid and rigourous examination in a collegial climate.

3. We should aim to deepen our appreciation of the perspectives, the objectives, and the implications of the sectional interests and positions of others. This is inevitable in a process where all ideas contend and all voices are heard in an atmosphere of mutual respect and tolerance.

4. We should seek to recognise the points of convergence: the concerns which are shared, the issues which unite, and the universal interests which energise us all. This would be a natural result of deepening understanding of one's own as well as others' positions.

5. We should attempt to go beyond recognizing merely the least common denominators and seek also to isolate the points of divergence: the concerns and interests which separate us and which therefore do not lend themselves to unified or collective actions and approaches. It is understandable that there will be an irreducible set of concerns and interests around which there is and can be no consensus. This is inevitable given our different cultures, background, motivation, and life situation. It may even be desirable that this be so, as a way of preserving individuality, diversity, and group identity. All the more reason that the points of divergence be analysed, isolated, understood and respected in our continuing dialogue.

6. We should seek to identify the milestones of progress relating to the concerns and interests which are shared, as well as the various routes by which we might get there.

7. We should aim to agree about the prospects for and the specifics of action which should be undertaken, wether individually or collectively, in order to reach those milestones.

EARTH SUMMIT TRAPS AND OPPORTUNITIES

1. Believing that everyone can and should agree on a single set of principles and guidelines, whether in the form of a charters, declarations or pledges.

2. Believing that it is useful to label some perspectives as wrong or inappropriate, especially in the absence of any sense of a global functional context.

3. Believing that the way forward is simple and that any perceived complexity is the product of inappropriate understanding.

4. Believing that unpleasant issues can be postponed or treated as irrelevant.

5. Believing that it is only a media exercise and that people are not increasingly impatient with expensive exercises in collective impotence.

6. Believing that symbolic processes are a substitute for effective interaction.

7. Believing that the diversity of positions does not call for designing in healthy disagreement to maintain a pool of alternative perspectives.

8. Believing that it is appropriate to marginalize bodies and cultures representing alternative perspectives (whether by use of geographical distance, procedural or linguistic devices).

9. Believing that collective learning, even at the highest policy levels, is not vital to the emergence of more appropriate structures and processes.

10. Believing that it is sufficient to wish to be "on the other bank of a river" and that the technical challenge of "bridge construction" can be ignored.

11. Believing in the adequacy of the "one answer", whether problem-specific, technocratic, spiritual, ethical, or based on common sense, or on particular values.

12. Believing that no major breakthrough is possible, despite the prevalence of short-termism, tokenism, opportunism, cynicism, and out-dated modes of thinking.

SUMMARY OF IFC PRE-RIO PREPARATORY PROCESSES

A number of procedures and processes have been explored as possibilities to facilitate the inter-sectoral dialogue in Rio de Janeiro. Most of these were approved in principle by IFC, others emerged during the course of interaction with contacts interested in the challenge of inter-sectoral dialogue. Some procedures have been provisionally abandoned for lack of time or resources, others have been adapted within the resource and time constraints into a form of immediate value in Rio.

Clarifying the nature of higher orders of consensus: a draft proposal was produced for a methodology to clarify possibilities in the light of recent insights from disciplines and conceptual explorations concerned with this issue ("Higher Orders of Inter-Sectoral Consensus", 22 January 1992). The intention was to highlight the possibilities of structures based on "contention" between irreconcilable differences, rather than relying on consensus or the emergence of dominant perspectives. This envisaged several complementary initiatives included amongst those identified below. Elements of this proposal were included in the final project proposal (approved March 1992). The processes and tangible products considered are as follows:

A. INITIATIVES UNDERTAKEN

1. Sectoral declaration processing: Analysis of sectoral declarations was seen as one approach to establishing the commonality and differences between sectoral positions.

(a) The possibility of undertaking both a critical and a comparative analysis was considered, notably by developing a typology of statements made in declarations. Consideration was given to the possibility of building a database of declaration statements to facilitate comparative analysis. Pre-Rio declarations were reviewed, including the extensive Compendium of declarations prepared by ELCI for the Roots of the Future Conference (Paris, December 1991). It was decided that the formal comparability of the declarations did not facilitate this type of approach and that the kind of analysis possible would not justify this approach within the time available.

(b) An alternative approach was finally undertaken based on the identification of key issues mentioned in declarations. These were coded in terms of strategic dilemmas (see point 2).

2. Systemic mapping of strategic dilemmas: This approach emerged from the work on polarizing issues (see point 7) in relation to the work on declaration processing (see point 1). It indicated the possibility of exploring patterns of strategic dilemmas, relating them to concrete issues, and representing them on new forms of imagery in two and three-dimensions.

3. Call for conceptual insights: Initially it was hoped to convene one or more workshops to clarify current understanding amongst specialists of new forms of inter-sectoral dialogue and higher orders of consensus. This proved impractical because of time and resource constraints. It was finally decided to initiate by mail a "call for insights" to a wide range of groups and individuals with specialized knowledge relevant to the challenges of inter-sectoral dialogue. The original intent was to process the results into a common format accompanied by a brief analysis. It was finally decided that wider distribution could be achieved by formatting them as earlier inputs to the participant messaging process (see point 4).

4. Participant messaging (Da Zi Bao): This process, recommended to IFC for the Global Forum as a whole in June 1991, was tested in Paris in December 1991 and at PrepCom IV in New York. Its use was approved to facilitate participant interaction during the inter-sectoral dialogue and as a means of initiating the flow of messages for the Global Forum.

5. Metaphors of inter-sectoral dialogue and sustainable development: Some texts were prepared to highlight the challenge in terms of metaphors. This can be seen as an outcome of the original initiative on catalytic imagery (see point 12).

B. INITIATIVES RE-FORMULATED OR ABANDONED

6. Political analysis: This approach was originally envisaged as a complement to the computer-based analysis of sectoral declarations (see point 1). On reviewing the declarations it was however decided that they did not readily lend themselves to this type of approach.

7. Polarizing issues and strategic dilemmas: The identification of such issues or dilemmas was seen as a way of clarifying the positions of the sectors in relationship to one another. The intent was to explore ways of building on irreconcilable differences rather than attempting to avoid them. An initial set of Earth Summit "polarizing issues and euphemisms" was prepared but was finally considered unhelpful in terms of the underlying objective of raising the level of debate. However this approach did serve to focus attention on the need for a more systemic approach based on strategic dilemmas (see point 2).

8. Call for sectoral insights: In an effort to sharpen understanding of sectoral positions (beyond that supplied by sectoral declarations), both in terms of common positions and fundamental differences, the possibility of a pre-Rio questionnaire was considered as a basis for a meta-conferencing procedure (see point 9). The most systematic approach to this was to be based on a set of polarizing issues (see point 7). This approach was finally limited to an invitation for pre-Rio inputs to the Da Zi Bao (see point 4).

9. Meta-conferencing: The intention was to use an approach pioneered by Stafford Beer based on questions designed to polarize the pattern of sectors along different dimensions -- preferably on the basis of questions formulated by the sectors themselves (see points 7 and 8). The statistical possibilities of manipulating any data, in order to generate maps of the networks of issue connections and sectoral connections, seemed less helpful than envisaged with the resources immediately available -- especially in the light of late confirmation that the approach had been further developed by Stafford Beer.

10. Process facilitation: Consideration was given to a number of different approaches to facilitating the inter-sectoral dialogue meeting. Two main difficulties inhibited any major breakthroughs on this front. Skilled facilitators tend to be closely identified with particular cultures, especially North American, and their use therefore raised political and cultural issues in a context which was already sufficiently problematic. Many processes which might have been used normally require consensus amongst participants to engage in the process. However the nature of these processes is sufficiently controversial in a multi-cultural setting that no such prior consensus can be assumed. Engaging in such a process could then be seen as an unwarranted imposition. Several promising possibilities were rejected: Open Space Technology, "Syntegrity" process, Metaplan, ZOP. Time and resources were also major factors.

11. Computer-assisted dialogue monitoring: As a variant of the questionnaire possibility (see point 9), consideration was given to the use of a system whereby each participant could indicate via a set of push-buttons reactions to questions. Answers were fed directly into a computer which provided on screen a statistical breakdown of the responses, clustered in various ways. The system considered was rejected in part because of the invasive nature of the technology and in part because of the simplistic methodology which did not cluster participants in a sufficiently useful way.

12. Catalytic imagery: As a complement to various other initiatives, Network 92 was used as a vehicle for a "call for catalytic imagery" as a means of conveying Earth Summit insights. The intention was to obtain suggestions for inter-sectoral images which could best capture the Earth Summit insights and empower people to move forward in new ways. The number and quality of replies was not sufficient to proceed further with the initiative in the time available. The network map in two-dimensions, and its three-dimensional version, can be seen as one response to this search for new imagery (see separate document). The documents produced on metaphors could be seen as another (see point 5).

13. Structural visualization: There was a concern to move beyond the traditional text representation of the challenges of inter-sectoral dialogue and to endeavour to open up new possibilities by portraying sectoral and issue relationships in two and three-dimensions. This could have been one output from the meta-conferencing initiative (see point 9) or from the call for catalytic imagery (see point 12). Examples of this approach finally emerged from the work on strategic dilemmas (see point 2). Consideration was briefly given to the possibility of adapting an existing software package to provide a "structural outliner" as a means of capturing and reconfiguring patterns of sectors and issues.

SYSTEMIC MAPPING OF STRATEGIC DILEMMAS

In a follow-up report to his involvement as Secretary-General of the Brundtland Commission, Jim MacNeill articulates for the Trilateral Commission the policy options for sustainable development in terms of **"shaping global bargains"** (Beyond Interdependence, 1991). In this sense a global bargain involves at least two parties and two issues, implying a trade-off between the parties on the issues. However according to this perspective the arenas to be subject to bargaining emerge haphazardly as a result of conventional political processes. There is no systemic sense of how the bargains interweave to ensure the sustainability of development as whole. There is no sensitivity to issues which can be conveniently ignored by powerful majorities. In a real sense this corresponds to the traditional paradigm of ad-hocery which has contributed so much to the emergence and maintenance of the present crisis.

The following pages provide an overview of a response to this challenge. The overview consists of the following elements:

- Description of the approach to systemic mapping of strategic dilemmas, introducing the subsequent figures. This refers to Document E (separate) in which over 450 Earth Summit issues are itemized on the basis Agenda 21, NGO declarations, and other documents

- Pattern of strategic dilemmas in table form (see Figure 1) designed to code and organize strategic dilemmas of sustainable development. **Sustainable development is a function of the pattern as a whole rather than of its components.**

- Caricatural presentation of **competing visions of global order** based on traditional hierarchical thinking (see Figure 2).

- Globally patterned network (see Figures 3A and 3B) chosen to be compatible with the set of strategic functions in Figure 1. The areas can then be used to signify issue- specific bargain arenas. **The network is thus a globally organized network of local bargain arenas** (where global and local are understood in a functional rather than a geographical sense).

- The systemic coherence of the network pattern of Figure 3 becomes clear when it is seen how **the 2-dimensional network may be folded around the surface of a sphere in 3 dimensions** (see Figure 4). This establishes the functional "globality" of the pattern of bargain arenas and the associated strategic dilemmas

- The bargaining arenas in Figure 3 are tentatively identified in the light of interpretations of the code combinations (see Figure 5). **The significance of the code combinations is based on the clustering of issues in declarations** (see Document E). The pairs of complementary triangles in Figure 3 are used to reflect the two complementary interpretations of each code in Figure 5, namely **development-focused** and **environmentally-sensitive.**

- Further insights into how local bargains may interlock may be obtained by considering the tensegrity structures which illustrate the principles by which spherical structures can be rendered self-sustaining in practice (see Figure 6). **Tensegrity structures are effectively patterns of sustainability.**

DESCRIPTIVE OVERVIEW

The overall purpose of the inter-sectoral dialogue is to raise the level of inter-sectoral debate. The challenge is to move beyond simplistic consensus and beyond acrimonious restatement of established positions. The challenge is one of moving towards higher orders of consensus.

Strategic Dilemmas

To explore and illustrate new possibilities, the focus of the exercise described here is on identifying "strategic dilemmas" underlying debates on Earth Summit issues. These are the dilemmas which reflect such seemingly irreconcilable concerns as safeguarding watercourses versus exploiting essential hydro-electric energy reserves. The assumption is that the set of these local (namely issue-specific) long-term dilemmas may offer clues to new patterns of global (namely inter-sectoral) strategies and bargains.

There were two points of departure:

(a) A brainstorming exercise in the identification of **polarizing dilemmas**. This proved to be unsatisfactory because it lacked any systemic ordering.

(b) **Clustering of issues** identified in the Brundtland Report, Agenda 21, and in **sectoral declarations**. Over 450 such issues now appear in a checklist (see Document E). As a checklist this document has the merit of providing a crude context for specific sectoral concerns. However this is not enough. It fails to respond to the need to raise the level of debate by offering a global (inter-sectoral) context for specific bargains, checks and balances. Such checklists, like Agenda 21, are effectively overwhelming. They encourage simplistic attempts to identify "the most important problem" whose solution it is hoped will magically transform all the others.

Pattern of Strategic Dilemmas

Figure 1 is one attempt to respond to this situation by showing how different social functions, understood as strategic opportunities, interfere with each other to engender a pattern of strategic dilemmas. In that pattern each strategy may take a privileged role or may in turn be constrained by other strategies. For example, when "environment" is a privileged function, "well-being (+jobs)" may be sacrificed, whereas, when "well-being (+jobs)" is the privileged function, sacrificing "environment" is the alternative option. Neither option is satisfactory, but both appear to have their place.

Any such dilemma may of course be "resolved" by short-term measures, but the nature of the dilemma renders such solutions unsustainable in the longer-term. **Sustainable development is a function of the pattern as a whole rather than of its components.**

The choice of six principal functions as the basis for the pattern in Figure 1 is of course arbitrary -- but it is certainly more systemic than the chapter organization of the Brundtland Report or of Agenda 21. A different number of clusters could have been used, bearing in mind the constraints of over-simplification and excessive complexity.

Network of Bargain Arenas

The traditional tabular presentation of Figure 1 is itself a conceptual trap. It encourages a very mechanistic approach to the pattern of dilemmas, reinforcing tendencies to much-contested forms of "linear thinking". The linearity may be deliberately challenged by allowing the information to be encoded or projected onto a network. In this exercise **the network has been deliberately chosen to facilitate comprehension of global properties of the pattern of strategic dilemmas** (see Figure 3A and 2B). As noted below the global significance of the pattern, and the basis for its sustainability, only emerges when its form in three-dimensions become apparent.

In the network the principal lines traversing the pattern are used to represent the six selected strategic preoccupations of Figure 1. They are coded by the same letters. Most of the lines can only appear as broken in two dimensions, although in three they are seen to form unbroken interlocking circles around a sphere (see Figure 4). In this exercise, the interlocking of these circles creates a pattern of triangles and pentagons. These may be understood as simpler (3-valent) and more complex (5-valent) bargaining arenas around specific concerns.

Identifying the Bargaining Arenas

Each triangle in the network can be described by a 3-letter code reflecting a particular combination of the original 6 strategic functions. On the basis of work on coding the declaration issues according to these functions (described in Document E), a tentative indication of the significance of each code is given here in Figure 5. The codes appear in two columns. The left hand column indicates a **development-focused application of the strategies**. The right hand column indicates **an environment-sensitive application of the strategies**. In both cases typical problems resulting from inappropriate implementation are indicated. Keywords from that indication have been inserted into the network diagram.

It becomes clear that on a single network pattern (Figure 3A: Alternate A), two triangles appear with the same code, and are therefore used here to indicate the development-focused and the environment-sensitive keywords for that code combination. They are on opposite sides of the network (notably when displayed in three dimensions). Only half of the 20 possible combinations appear on that pattern. A further 10 appear in the second version (Figure 3B: Alternate B). The two versions result from the different orders in which the functions can appear. The complete range of Earth Summit issues and related strategies is effectively mapped onto these two networks.

Re-interpreting the Bargaining Challenge

In contrast to that approach, **the patterning exercise here emphasizes the necessarily global structure of the network of issue-specific bargains**. Namely it starts from an assumption of inter-sectoriality (functional globality) and allows specific sectoral (functionally local) concerns to emerge as features of the pattern of strategic options. From this perspective, **it seems extremely doubtful that local issue-specific bargains (emissions, forests, etc) can be effectively struck in isolation from the global context of strategic dilemmas** -- as tends currently to be assumed. Any such isolated bargains would therefore tend to be unsustainable in the longer-term.

De-stressing Issue-specific Bargains

This perspective does however suggest that articulation of these dilemmas within a global framework may redistribute the tensions which currently make it extremely difficult to achieve issue-specific bargains of any consequence in isolation. This redistribution may well provide unsuspected contextual support for such bargains by rendering explicit a new pattern of checks and balances. **Where bargains are no longer treated in isolation, tensions which would otherwise have to be dealt with explicitly within a given bargaining arena (reducing the probability of success) may now be recognized implicitly as contextual to that bargain.**

This stresses the importance of treating the totality of Earth Summit issues as a set of inter-weaving strategic options in order to reduce the difficulty of achieving success on particular fronts.

This approach **points to new policy possibilities in which the degree of global consensus required is reduced to a minimum** (in a design sense) by localizing the patterns of disagreement. In this way **disagreement no longer acts globally -- tearing apart the global community**. Rather it is locally confined and understood as a long-term strategic dilemma on which "consensus" can only be achieved in the short-term. **Sustainability thus lies at the global level not at the local level.**

Catalytic Imagery

There is a need for richer, and more challenging, imagery to capture the complexity of strategic options to clarify new options both for policy makers and wider audiences. The two-dimensional representation, for "local" purposes, of the "global" structure of the Earth clarifies the challenge. The importance of the shift to three-dimensional representation is particulary obvious in this geographical parallel between representations of the Earth as a globe, and the many efforts to project such information onto 2-dimensional maps -- each with their special distortion. It is the inadequacy of the 2-dimensional representation which highlights the value of the 3-dimensional structure in stressing **globality** and providing a context for **local** issue-specific arenas.

Both in the two- and three-dimensional forms the imagery proposed here is **an invitation to reflection along new lines**. As intended, it deliberately breaks with familiar patterns. It invites further reflection and experiment to better portray the relation between global and local -- and the strategic opportunities which emerge. It is possible that the main value of the structures presented lies in the mapping exercises that they encourage, namely in the creativity and reflection that they evoke, rather than in any particular pattern which may be favoured.

Possible Interpretation Refinements

The merit of the 3-dimensional representation of the Earth Summit issues is that it may be used to clarify why strategic dilemmas appear to emerge. Bargain arenas have been recognized here in pairs of triangles in a network pattern. **The "dilemma" in each case may be seen as a failure to recognize the global properties of the structure** which separate the two complementary (but distinct) arenas -- for these are on opposite sides of the spherical structure. Collapsing the distinctions into a two-dimensional representation, in which the triangles are super-imposed, is what guarantees the appearance of a dilemma. It is an appropriate global consensus which allows them to be understood as separate, thus eliminating the dilemma.

In practice the construction of three-dimensional spherical structures (like geodesic domes) requires understanding of more than those surface features with which the bargaining arenas have been associated here. According to the principles of tensegrity (namely tensional integrity) explored by R Buckminster Fuller, new types of global structures may be created that are self-sustaining by a particular three-way pattern of tensile forces. Such a structure is not supported or maintained (by special authority structures). It is pulled outward into sphericity by inherent tensional forces which its geometry also serves to restrain (see Figure 6). It responds as a system with local stresses being uniformly distributed throughout the structure, and uniformly absorbed by every part of it as a classic example of synergy. It is not necessary that these structures should be patterned on regular polyhedra, but the tension networks are most economical when their strands run for considerable distances without changing direction -- and preferably along great-circles.

Tensegrity structures clarify ways in which individual bargains need to be interlocked using local elements of disagreement ("compression elements") within the global network of agreement ("tension elements"). **Tensegrity structures are effectively patterns of sustainability.** The challenge is to find useful ways to encode such patterns to offer insights into the strategies of sustainable development.

Limitations and Further Possibilities

It is necessary to use two alternate versions of the network pattern with this approach. This may not be the case with other coding approaches along these lines. Complementary projections are however also required in geographical mapping. Organic molecules essential to life (notably benzene) are based on resonance between two complementary structures. Most tensegrity structures exist in right- and left-handed versions.

It is important to recognize that there are whole families of network patterns that correspond to different spherical structures in three dimensions. That presented here suggests just one way of "cutting the strategic cake". There are indications that increasing the complexity of the network in order to explicitly capture more detailed issues could provide global contexts which make it even easier to handle issue-specific bargains. What is required is a special database which could enable people to shift between different levels of functional detail as is done between maps in geographical atlases and in geographical information systems.

INTER-SECTORAL STRATEGIC DILEMMAS OF SUSTAINABLE DEVELOPMENT

Privileged function / Constrained function	Population Security P	Well-being Health W	Learning Education L	Production Trade T	Environment Impacts E	Regulation Equity R	UN Bodies	Sectors
Population/Relief P Security/Peace Vulnerable groups Women/Youth	Sacrifice of one population group for another? PP	Sacrifice pop. relief/growth for well-being of population WP	Sacrifice pop. relief/growth for education, research, etc LP	Sacrifice pop. relief/growth for economic growth? TP	Sacrifice pop. relief/growth for environment? EP	Sacrifice population relief/growth for equity? RP	UNFPA, UNV Security Cl UNICEF, UNHCR INSTRAW	Relief Military,Peace Indigenous Women,Youth
Well-being/Health W Employment (condit.) Quality of life Welfare/Fulfilment	Sacrifice well-being (+jobs) for population relief/growth PW	Sacrifice of one form of well-being for another? WW	Sacrifice well-being (+jobs) for education, research, etc LW	Sacrifice well-being (+jobs) for economic growth? TW	Sacrifice well-being (+jobs) for environment? EW	Sacrifice well-being (+jobs) for equity RW	WHO ILO HABITAT,UNRISD	Health Labour Religions
Learning/Education L Science/Research Culture/Arts/Lang. Inform./Communic.	Sacrifice educ. (+culture) for pop. relief/ growth? PL	Sacrifice educ. (+culture) for well-being? WL	Sacrifice of one form of education for another? LL	Sacrifice educ. (+culture) for economic growth? TL	Sacrifice educ. (+culture) for environment? EL	Sacrifice educ. (+culture) for equity? RL	UNESCO, WIPO UNU, UNITAR UPU,ITU,ACCIS	Students Science Media Information
Production/Trade T Industry/Technology Agriculture/Fish. Energy/Mining	Sacrifice prod. (+trade) for population relief/growth PT	Sacrifice prod. (+trade) for well-being? WT	Sacrifice prod. (+trade) for education, research? LT	Sacrifice of one form of production for another? TT	Sacrifice of prod. (+trade) for environment? ET	Sacrifice of prod. (+trade) for equity? RT	UNDP, UNCTAD UNIDO,GATT FAO,WFP,IFAD IAEA	Development Industry/ Commerce
Environment/Impact E Ecosystems/Species Urban. / Transport Design/Landscaping	Sacrifice envir. for population relief/growth? PE	Sacrifice envir. for well-being? WE	Sacrifice envir. for education, research, etc? LE	Sacrifice envir. for economic growth? TE	Sacrifice of one environmental benefit for another? EE	Sacrifice envir. for equity? RE	UNEP, UNESCO HABITAT, WMO ICAO, IMO	Environment Conservation Architects
Regulation/Equity R Govern./Mgt./Admin. Justice/Order Finance/Debt Mgt.	Sacrifice equity for population relief/growth? PR	Sacrifice equity for well-being? WR	Sacrifice equity for education, research, etc? LR	Sacrifice equity for economic growth? TR	Sacrifice equity for environment? ER	Sacrifice of one form of equity for another? RR	ECOSOC, ACC UNDP ICJ IBRD,IMF	NGO coalit. Law, Rights Finance/Banks

- Column and row headings correspond to major clusters of functions essential to the sustainable development of society.
- Words used to label the scope of clusters are necessarily inadequate at the level of generality indicated.
- The clusters could be "unpacked" to give more columns and rows. Cluster label words would then become more specifically appropriate.
- The cells of the table indicate fundamental dilemmas of sustainable development.
- Sacrifices must be made in the process of change and transformation. The dilemma is the level of the sacrifice that is appropriate.
- Sustainability is determined by the balance between the various forms of sacrifice and the constraints that they impose on one another.
- The columns/rows can be thought of in terms of values, logics or languages which successively confront each other.
- Sectors in right hand column are mainly those represented at the Rio de Janeiro Inter-Sectoral Dialogue

Figure 1A

SIGNIFICANCE OF CODES IN FIGURE 1A (tentative)

Figure 1B

On the basis of 6 principal functions essential to sustainable development, there are 30 strategic dilemmas which may be grouped as 15 pairs. The indicative texts below may stress specific examples.

PW **Population needs/satisfaction / Social (un)development**
PW: Application of austerity measures to ensure long-term viability of population (cf "structural adjustment")
WP: Avoidance of measures of restraint to satisfy short-term popular demand

PL **Societal culture / Tradition**
PL: Commitment to family and group advancement at the expense of individual education (cf traditional parental commitment, socialist educational priorities)
LP: Commitment to individual education at the expense of family and group advancement (cf "selfish self-advancement", learning without social obligations)

PT **Economic (in)security of social groups**
PT: Foregoing economic opportunities to safeguard cultural integrity (cf indigenous groups, isolationism, restricted employment of women)
TP: Pursuit of economic opportunities despite the effects on cultural integrity and minority groups (cf discrimination in employment, slavery, "sweat shops", child labour)

PE **Environmental (in)security**
PE: Exploitation of non-renewable resources to ensure group survival (cf degradation of marginal lands, deforestation for fuel-wood)
EP: Control of population growth and activity to conserve natural resources

LR **Intellectual disciplines / Systems analysis**
LR: Excellence at price of general improvement in learning
RL: General improvement in learning at the price of excellence

TR **Regulation of trade / Finance**
TR: Rewarding the entrepreneur at the price of the worker (capitalism)
RT: Equal sharing of benefits to the detriment of the most productive (socialism)

ER **Environmental regulation**
ER: Limiting environmental benefits to the privileged
RE: Allowing degradation of the environment through unconstrained access to resources

PR **Social (in)justice / Governance / Law / Power**
PR: Allowing one group to infringe upon the rights of another
RP: Limiting population expansionism to safeguard vulnerable groups

WR **Ethical/Moral/Spiritual living**
RW: Limiting quality of life (+ jobs) to the privileged
WR: Reducing quality of life (+ full employment of the few) so that all benefit, to however limited a degree

WE **Quality of life**
WE: Over-consumption and exploitation of non-renewable resources
EW: Reduction in quality of life (+ jobs) to safeguard environment

TE **Economic development**
TE: Over-exploitation of non-renewable natural resources
ET: Reduction in industrial and agricultural (+ fisheries) productivity to safeguard natural resources

LE **Ecology**
LE: Undertaking research and traditional cultural activities destructive of the environment (cf "scientific whaling")
EL: Foregoing research and traditional cultural activities destructive of the environment

LT **Research and development / Technology development**
LT: Restraining economic development to permit learning (cf ecosystem research, urban archaeological sites)
TL: Limiting education to training relevant to employment opportunities (cf "educational relevance")

WT **Livelihood / Conditions of work / Consumption**
WT: Foregoing economic opportunities to cultivate quality of life (indigenous cultures, "dropping out")
TW: Economic development at price of health and quality of life ("entering the rat race", "no gain without pain")

WL **Arts / Cultural self-knowledge**
WL: Foregoing further learning opportunities to enjoy present quality of life (cf avoiding challenges)
LW: Giving up present quality of life to focus on challenges of further learning education)

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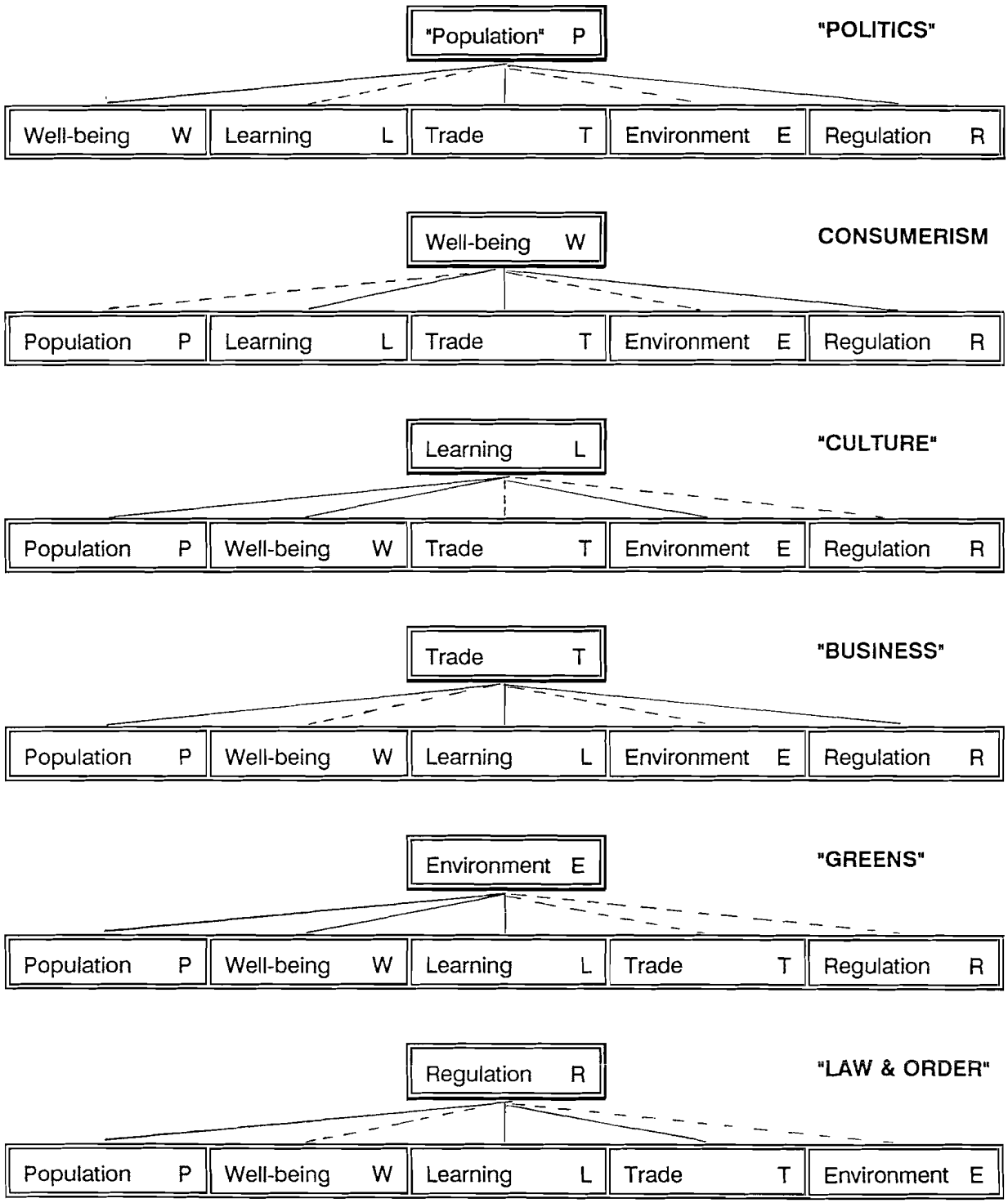
Figure 2 (IFCD53A)

COMPETING MODELS AND VISIONS OF GLOBAL ORDER VIA FUNCTION DOMINANCE

The 6 hierarchical structures below may be viewed as caricatures of a set of currently competing world views. In each, the dominant function (from Figure 1) tends to distort or suppress the operations governed by the recessive functions (in much the same way as the gene for brown eyes masks the expression of the "blue eyes" gene). **The challenge of sustainable development is to interweave the functional contributions so that all are both expressed and constrained under appropriate circumstances.**



REPRESENTATION OF ISSUE ARENAS ON ICOSADODECAHEDRAL NET (tentative)
(Alternate A)

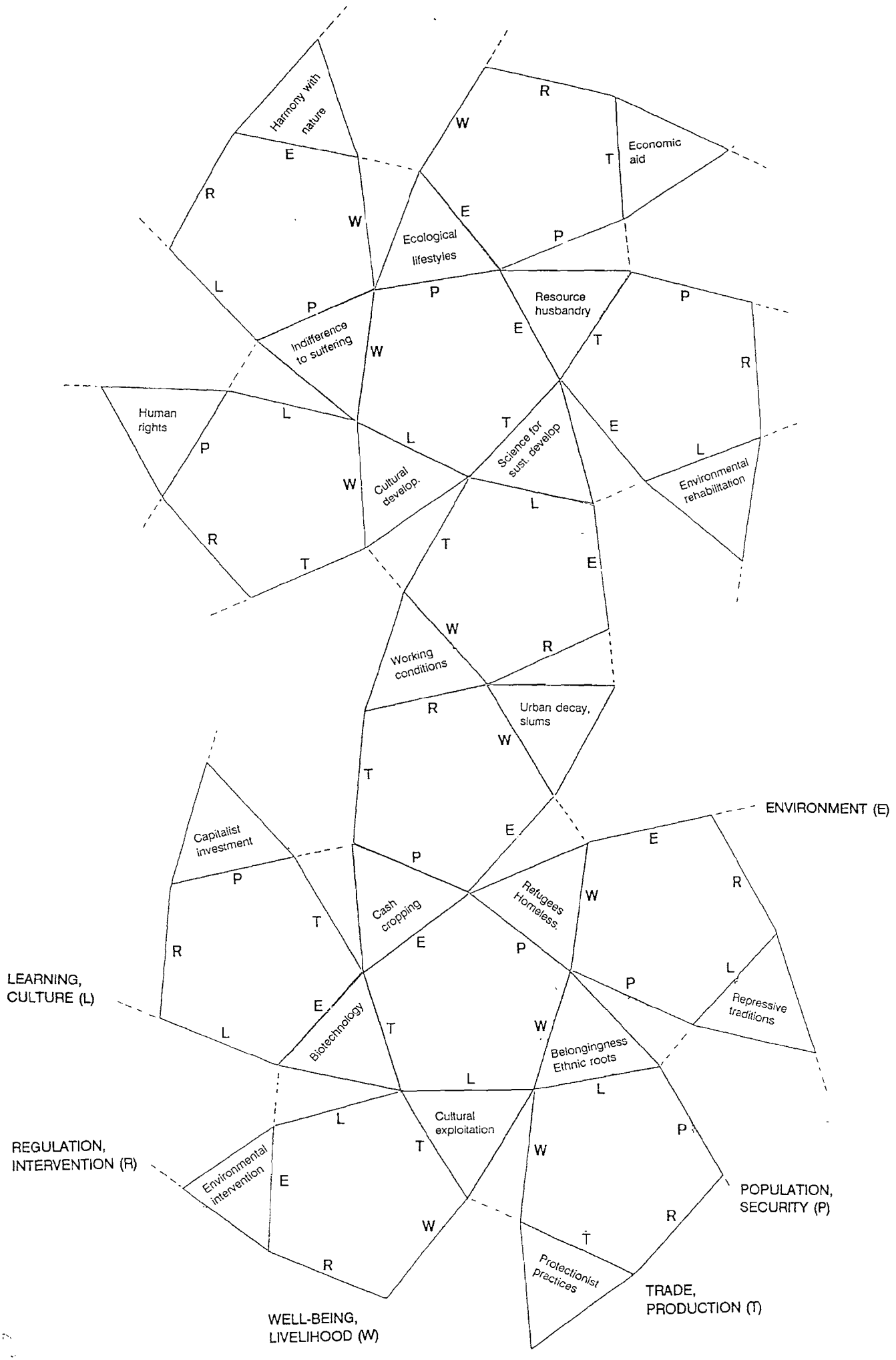
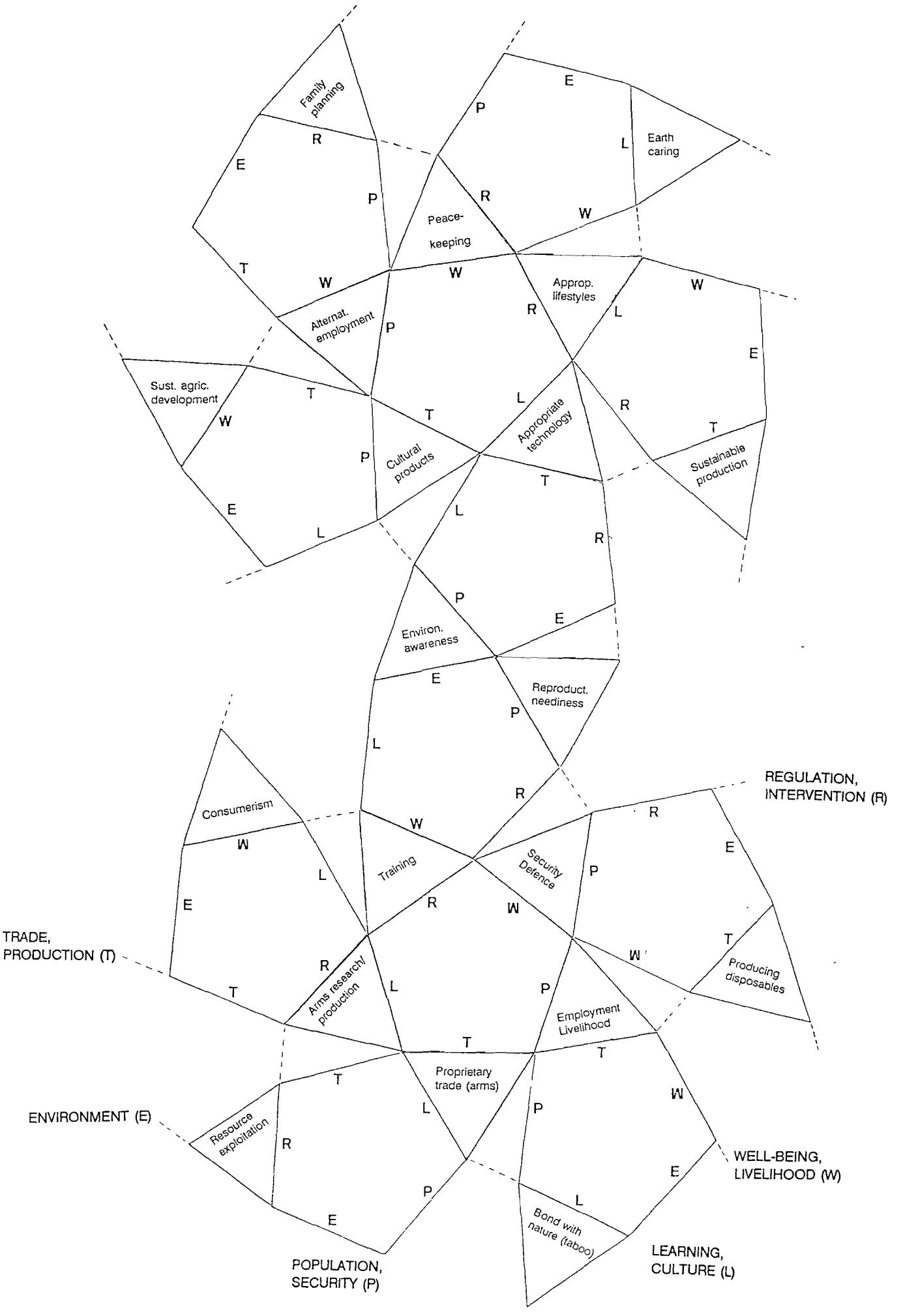


Figure 3B

REPRESENTATION OF ISSUE ARENAS ON ICOSADODECAHEDRAL NET (tentative)
(Alternate B)



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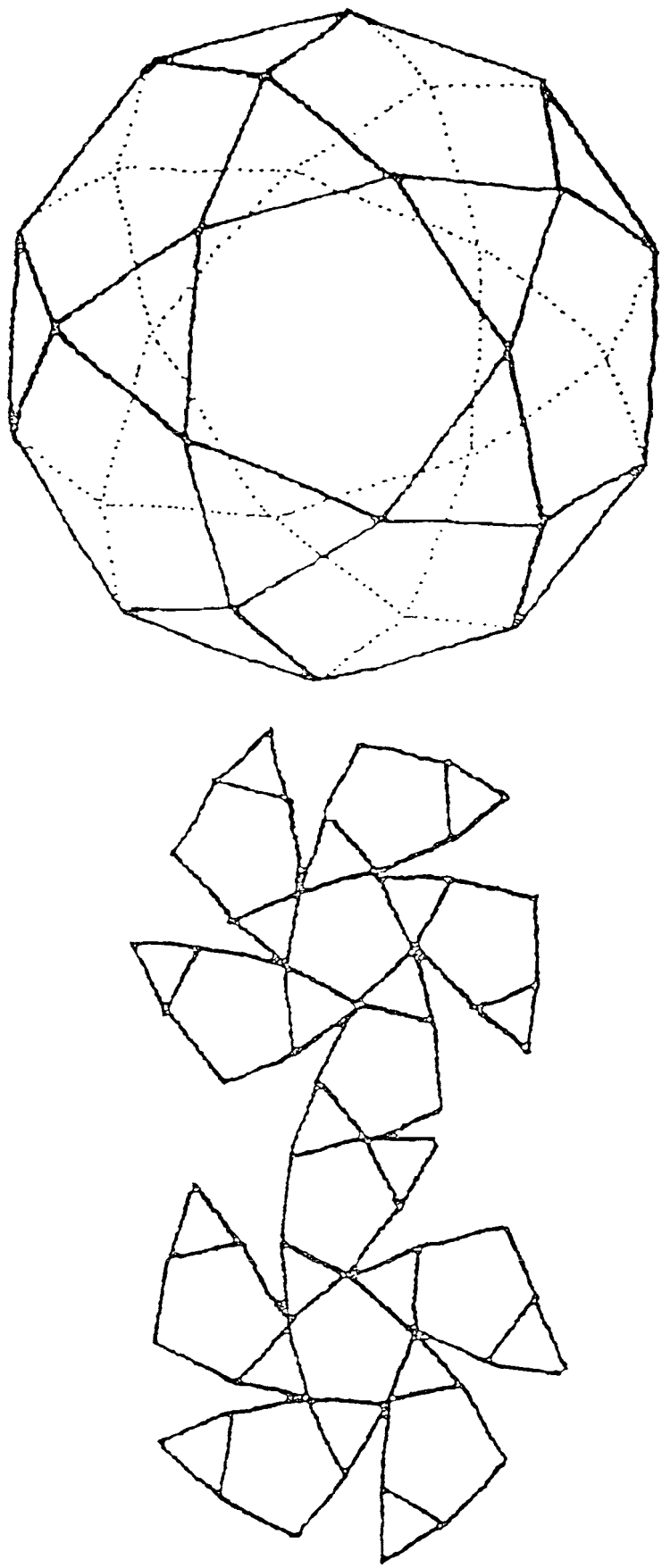
SPHERICAL REPRESENTATION OF ICOSADODECAHEDRAL NETWORK OF FIGURE 3

Illustrating the emergence of global qualities interrelating local areas



SIGNIFICANCE OF 3-LETTER CODES IN FIGURE 3 Figure 5 (IFCD53D)

Based on combinations of functions presented in Figure 1. Wordings are indicative only. See also Figure 1A.

		DEVELOPMENT-FOCUSED			ENVIRONMENT-SENSITIVE
LER	+	Application of knowledge to redesign the environment (eg draining swamps, clearing forests, introduction of species)	LER*	+	Application of knowledge to reconstitute devastated ecosystems
	-	Irresponsible intervention in ecosystems (eg elimination of wetlands)		-	Ineffectual application of knowledge to remedy negative environmental conditions
LTE	+	Application of learning to productive exploitation of the environment ("green revolution") / Biotechnology management	LTE*	+	Science for sustainable development
	-	Environmentally irresponsible research / Irresponsible biotechnology / Unconstrained advocacy of agrochemicals		-	Ineffectual use of learning to ensure environmentally sound development
LTR	+	Application of knowledge/know-how according to production/commercial priorities (arms production)	LTR*	+	Appropriate research for economic development / Research into non-exploitive patterns of production
	-	Misapplication of knowledge (weapons research)		-	Ineffectual/Unproductive application of knowledge for development
PER	+	Fulfillment of reproductive needs / Unconstrained population dybamics	PER*	+	Population control / Family planning
	-	Excessive population levels (for the environment) / Unwanted children		-	Eugenics / In-breeding / Ageing population / Imbalanced sex ratio
PLE	+	Traditional (spiritual) bond with the environment	PLE*	+	Environmental awareness
	-	Taboo / Superstition		-	Environmental fascism
PLR	+	Maintenance of traditional patterns of authority (or cultural values) / Imposition of particular ideology	PLR*	+	Human rights / "Affirmative action"
	-	Social rigidity / Discrimination against minorities / Repression / Socially inappropriate conceptual inadequacies		-	?
PLT	+	Restrictive proprietary trade (seed varieties) / Arms trade	PLT*	+	Development of culturally sensitive products / Exchange of cultural artefacts
	-	Dependence on high yield crops		-	Culturally insensitive development
PTE	+	Economic exploitation of environmental endowments	PTE*	+	Husbandry/Stewardship of available resources
	-	Military/Industrial complex / Cash crops		-	Community collapse / Economic decay
PTR	+	Capital investment ideology for economic gain (eg capitalism)	PTR*	+	Economic development programmes / Aid for development / Aid "with human rights strings"
	-	Exploitative political/economic ideologies (eg colonialism, fascism)		-	Ineffectual remedial ideologies (eg socialism, communism)
PWE	+	Environmentally-dependent indigenous communities / Nomadic lifestyles	PWE*	+	Creation of ecological settlements (cities/villages) and lifestyles
	-	Unsustainable land/water use / Refugees / Homelessness / Migration / Squatters		-	Socially unattractive/alienating ecological settlements/lifestyles

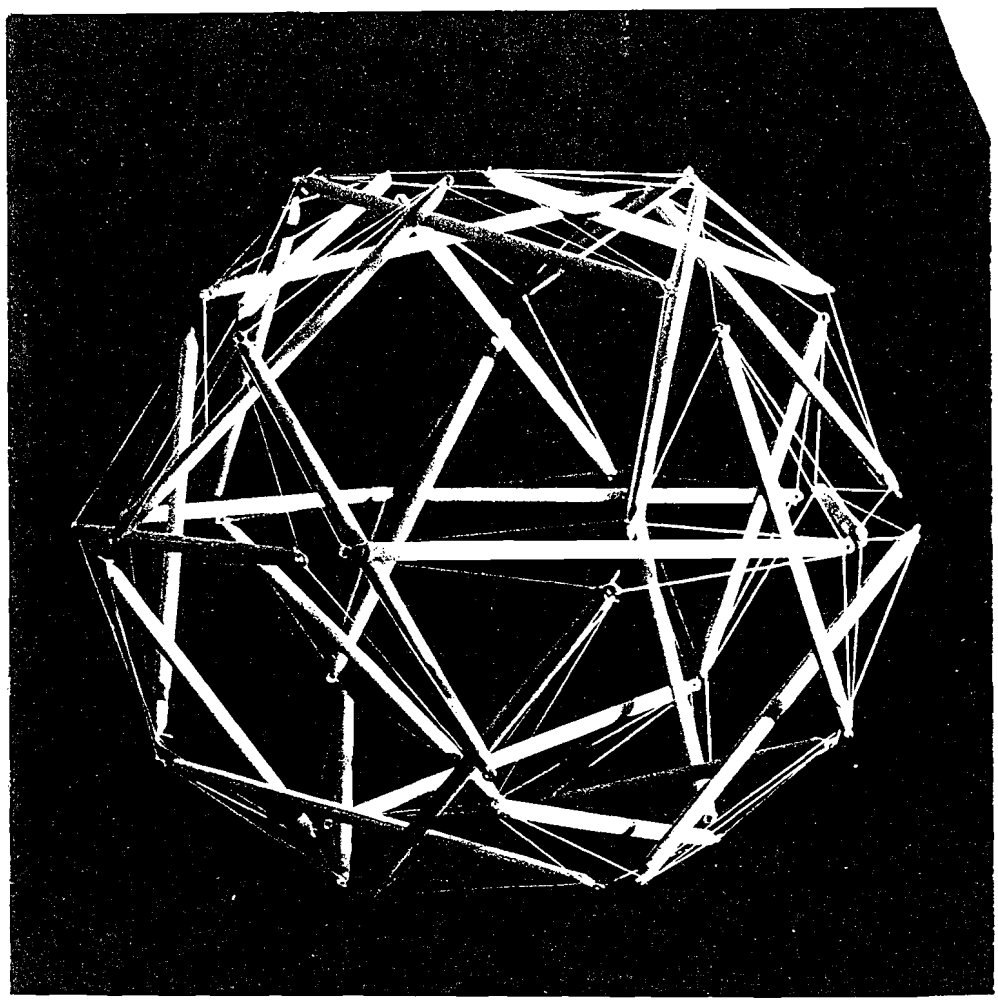
PWL	+	Belonginess / Roots
	-	Ethnic disintegration / Cultural invasion
PWR	+	Protection of the population / Security / Defence
	-	Socio-political insecurity / Disempowerment
PWT	+	Productive employment / Livelihood security
	-	Unemployment / Food shortages
TER	+	Exploitation of resources for economic development (survival)
	-	Wasting non-renewable resources / Laying waste / Wastes
WER	+	Exploitation of environment to enhance quality of life (eg safaris, all terrain vehicles, exotic plants/pets/cosmetics/foodstuffs/drugs)
	-	Urban decay / Slums
WLE	+	Exploitation of environmental and cultural resources to maximize well-being / Consumerism
	-	Over-consumption patterns
WLR	+	Human resource development / Training for jobs / Educating public opinion / Public health programs
	-	Inappropriate education / Propaganda
WLT	+	Exploitation of cultural heritage / Exploitation of commercial opportunities of tourism
	-	Degradation of cultures / Cultural invasion
WTE	+	Energy-intensive production to improve quality of life / Exploitation of energy resources for development (survival) / Production of non-essentials (throw-away products)
	-	Over-exploitation of environmental resources (eg over-fishing, over-grazing, fuel-wood crisis, "slash and burn")
WTR	+	Protection of trade, production and traditional livelihoods
	-	Restrictive trade practices / Exploitative conditions of work / Crime

PWL*	+	Charitable action
	-	Indifference to condition/suffering of others
PWR*	+	Peace-keeping operations / Empowering communities
	-	Miscarriage of justice / Police brutality
PWT*	+	Development of alternative employment opportunities
	-	?
TER*	+	Sustainable use of resources / Restraint on exploitative economic growth
	-	Ineffectual/Unproductive use of resources (for survival)
WER*	+	Living in harmony with nature
	-	Ineffectual endeavours to live in harmony with nature
WLE*	+	Cultivation of more appropriate (environment-friendly) consumption patterns / "Caring for the Earth"
	-	Fadism / Cultism
WLR*	+	Creation of opportunities to fulfill aspirations and identity needs / Affirmative action / Appropriate lifestyles
	-	Alienation / Substance abuse
WLT*	+	Cultural development
	-	Cultural homogenization / Cultural imperialism
WTE*	+	Low-resource living and production patterns / Sustainable agricultural development
	-	Subsistence agriculture / Grinding poverty
WTR*	+	Creation of new economic opportunities / Improving conditions of work (quality of working environment) / Allocation of resources for development
	-	Ineffectual development initiatives / Structural adjustment "without a human face" / Informal economies

Figure 6

REPRESENTATION OF INTERLOCKING ELEMENTS REQUIRED TO CONSTRUCT A SUSTAINABLE GLOBAL STRUCTURE

Tensional integrity (tensegrity) structure sustaining the spherical form of the icosadodecahedral form in Figure 3 and 4. Tensegrity structures are effectively patterns of sustainability.



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CODED CHECKLIST OF EARTH SUMMIT ISSUES

Brundtland Report, Agenda 21, NGO declarations, etc

COMMENTS ON DOCUMENT PROCESSING PROCEDURE

The initial objective was to devise a means of comparative processing of sectoral declarations in order to clarify the positions of agreement and disagreement amongst sectors on the range of Earth Summit issues. To this end a range of declarations relevant to the UNCED process were collected (see Figure 7). On inspection it was decided that they did not readily lend themselves to a detailed comparative analysis. There were two principal reasons. Firstly, the documents were of a variety of forms which would have complicated any attempt at comparison -- a number were not in fact "declarations". Secondly, the time and resources finally available did not permit any detailed review.

In the light of the work on strategic dilemmas described in Document D, the objective was redefined to glean from the documents the nature of the range of Earth Summit issues to which the responsible bodies were responding.

The intent was to explore the match between the strategic dilemmas of Document D and the specific issues emerging from the various source documents. Initially the Brundtland Report was scanned to obtain a broad range of issues and to cluster them in terms of the 6 major dimensions of Figure 1 (Document D). The range of issues was then extended by incorporating the broader problems registered in the Encyclopedia of World Problems and Human Potential (1991) since these had been derived directly from documents of international organizations and ordered into hierarchies and networks, thus clarifying a number of terminological issues. This facilitated nesting of issues in terms of broader and narrower concepts.

The revised checklist was then matched against the chapter headings of Agenda 21 and against the issues recognized in individual declarations. The documents processed are described in the following document (Figure 7).

To facilitate the match sought with Figure 1 (Document D), the identified issues were coded according to the dimensions of Figure 1. Some remarks on the coding problem are given in a following document (Figure 8). The results are presented in two documents:

- Issues clustered by principal subject (Figure 9)
- Issues sorted by code combinations (Figure 10)

The coding and final form of these tables were achieved as the result of a number of iterations.

It must be remembered that the purpose of this exercise was to identify the issues and not to determine which bodies had recognized, implicitly or explicitly, which issues. For this reason the indication of source was made according to the following guidelines:

- BR (Brundtland Report) was left as an initial source code
- Items from the Encyclopedia were left uncoded
- A21 (Agenda 21) as a source replaced the above
- New issues from declarations cite the document in which they were first encountered, replacing Encyclopedia but not BR or A21
- If a more recent document provided a more articulated pattern of issues, its source may have been cited in preference to any previous non-BR or non-A21 source

It is important to recognize that no issue indicates the complete range of sources citing it.

Figure 7
IFCD54B

DECLARATIONS AND DOCUMENTS PROCESSED

1. Trade Unions (ICFTU): Environment and Development: The Trade Union Agenda (Caracas, 1992), 44 p.
   -- well structured and articulated

2. Students (AIESEC): Youth Action Guide on Sustainable Development (Tokyo, 1990), 220 p.
   -- well written, but not structured as a declaration and not considered as such

3. Global Initiative for the Security and Sustainable Use of Plant Genetic Resources (Oslo, October 1991)
   -- consensus report but not a declaration
   -- focused on Agenda 21

4. Science (ICSU/TWAS): Agenda of Science for Environment and Development into the 21st century (ASCEND 21 Conference Statement, Vienna, November 1991), in *Science International* 45-46, July-December 1991, 6 p.
   -- statements and recommendations in 59 points

5. Industry/Business/Chambers of Commerce (ICC): Declaration of Second World Industry Conference on Environmental Management (Rotterdam, April 1991), 9 p.
   -- commitments and recommendations in 47 points

6. ECE: Ministerial Declaration on Sustainable Development in the ECE Region (Bergen, May 1990), 21 p.
   -- 29 points

7. Universities: Role of Universities and University Presidents in Environmental Management and Sustainable Development (Talloires, October 1990), 6 p.
   -- findings, recommendations, declaration

8. ASEAN: Kuala Lumpur Accord on Environment and Development (June 1990), 4 p.
   -- 16 points

9. Commonwealth: Langkawi Declaration on the Environment (Kuala Lumpur, October 1989), 2 p.
   -- 25 points

10. Science (African Academy of Sciences): Mbabane Declaration on Environment and Development: Scientific Initiatives (November 1991), 8 p.

11. Citizens Movements/ANGOC, ACFOD, APPROTECH (Southeast Asia): Puncak Pass Declaration on Peoples Participation and Sustainable Development (March 1990), 5 p.
    -- not point structured

12. Interregional Consultation on People's Participation in Environmentally Sustainable Development: The Manila Declaration on People's Participation and Sustainable Development (Manila, June 1989), 5 p.
    -- 8 points

13. Canadian Youth Statement on Environment and Development (Nova Scotia, August 1991), 16 p.
    -- 107 points

14. Earth Action: A Strategy for World-Wide Public Pressure to Protect Our Common Future (November 1991) 6 p.
    -- not point structured

15. Religious Communities for UNCED: Affirmations, Appeals and Pledges made by Religious

Leaders (Campos do Jorao, Brazil, April 1992) 3 p.
-- 16 points

16. The Nairobi Declaration on Climatic Change. International Conference on Global Warming and Climatic Change: African Perspectives (May 1991), 20 p. + conference list.
-- not point structure except for 25 recommendations

17. Blue Planet: Now or Never. A Statement from the Blue Planet Group, Ottawa (September 1991), 3 p.
-- 8 points

18. Ministerial Declaration on Environmentally Sound and Sustainable Development in Asia and the Pacific (no date), 5 p.
-- 32 points

19. ECLAC, Ministers and representatives of the Latin American and Caribbean countries, Tlatelolco Platform of Environment and Development (UNCED Regional Conference, Mexico City, March 1991).
-- 26 points

20. Beijing Ministerial Declaration on Environment and Development (June 1991, representing 41 developing countries.
-- 32 points

21. Bel┼m Declaration 1990: UN Workshop on Creative Financing for Environmentally Sound Technologies (Brazil, December 1990).
-- not point structure except for 10 mechanisms

22. Second World Climate Conference (Geneva, November 1990).
-- Conference Statement 10 p.: Summary (3 points); Main conclusions and recommendations (22 points); Specific Issues (23 points); Organisational and Policy Issues for International Activities (23 points);
-- Ministerial Declaration, 9 p.: 13 points

23. DNR/BUND: Statements from International Workshop on Environment and Development (Bonn, November 1991):
-- Climate and Development, 5 p., 9 points;
-- Biodiversity, 3 p., no point format;
-- Resource Use and International Trade, 3 p.,

24. South Centre: Environment and Development - Towards a Common Strategy of the South in the UNCED Negotiations and Beyond (November 1991), 29 p.

25. Report on 3rd Summit of the World Major Cities (Montreal, October 1991), 40 p.
-- Declaration has 9 points.
-- Background paper: Sustainable Urban Development by Peter Jacobs, 29 p., not in point format.

26. Agenda Ya Wananchi, Citizens' Action Plan for the 1990's (Roots of the Future NGO Conference, Paris, December 1991), 36 p.
-- 5 principles + 21 areas of commitment.

27. Caring for the Earth - A Strategy for Sustainable Living (IUCN/UNEP/WWF), 228 p. + Summary.
-- not in point format.

28. NGO Charters, Declarations, Alliances - The Northern Perspective. A review by Terje Larsen and Elin Enge in *Roots of the Future : Compendium of Citizens Movements Responses to Environment and Development Challenges*, (ElCI, December 1991), 18 p.

29. International Council of Voluntary Agencies.
-- Making Common Cause Internationally : A Policy Statement and Action Plan for International Development, Environment and Population NGOs (November 1989, prepared as response to Brundtland Report) 3 part/8 point Action Plan + 3 Recommendations.
-- Relations Between Southern and Northern NGOs: Policy Guidelines, 4 p., 42 points.

30 *Bridging the Gap - An Agenda for Action.* Non-Governmental Conference of Environment and Development (Danube, March 1990), 9 p.
-- 67 points + Youth Plan of Action (not in point form)

31 International Peace Bureau: Disarm for Life - a message for UNCED (March 1991), 2 p.
-- not in point form.

32 Alliance of Northern People for Environment and Development - Political Framework, 2 p. In *Roots of the Future* (#28).
+ many others in this compendium of Roots of the Future

33 NGO Conference on Energy (Celakovice, June 1991), 4 p.
-- conference statement, not in point form

34. African Charter for Popular Participation in Development. Statement from the International Conference on Popular Participation in the Recovery and Development Process in Africa (Arusha, Tanzania, February 1990), 14 p.
-- 32 points

35. Global Action Plan for the Earth. *Household EcoTeam Workbook.* (US edition, 1990), 145 p.
-- not a declaration but an effective action plan and feedback system towards quantified global environmental goals.

36. Latin American and Caribbean Commission on Development and the Environment. *Our Own Agenda* (1990), 93 p.
-- Well structured and written "Brundtland-like" report to UNCED, but not easy to take points

37 92 NGO Forum, Japan (Tokyo, no date).
-- Agenda 21, Japan: People's Action Plan, Japan Towards 21st Century, 5 p., 5 major points.
-- Earth Charter, Japan: People's Forum, Japan, 4 p., 12 major points.

38. NGO Statement to UNCED from the Seminar on Environment and Development (Penang, July 1991), 4 p.
-- 22 points.

39. The Morelia Declaration (Michoacan, Mexico, September 1991), 3 p.
-- 5 points.

40. Final Report of the Seminar "Poverty and Environment - What Prospects? (Tunis, April 1991).
-- around 30 points.

Also consulted:

Environment Liaison Centre International. Roots of the Future: Compendium of Citizens Movements Responses to Environment and Development Challenges. ELCI, 1991.

King, Alexander & Schneider, Bertrand. The First Global Revolution; a report by the Council of the Club of Rome. New York, Pantheon, 1991.

Union of International Associations. Encyclopedia of World Problems and Human Potential. M⊥nchen, K G Saur Verlag, 1991, 2 vols, 3rd ed.

World Commission on Environment and Develomment. Our Common Future. Oxford, Oxford University Press, 1987 (Brundtland Report)

DECLARATION ISSUES: CLUSTERED BY PRINCIPAL SUBJECT

Derived from Agenda 21, Brundtland Report and various NGO and government declarations (see Figure 7). Coded in relation to Figure 1

	P	W	L	T	E	R		
1	P						**POPULATION/SECURITY:**	
3	P				E	R	**Demographic dynamics and sustainability**	A21/5
3	P				E	R	Excessive population levels and growth	BR
3	P		L	T			Relate demographic and environmental trends	A21/5
3	P	W	L		E	R	Assess implications of current population growth	A21/5
3	P		L			R	Incorporate demographic features into policy and plans	A21/5
3	P	W	L				Raise awareness of demography to sustainable development	A212/5
3	P				E	R	Ageing of world population	
3	P	W	L				Promote human resources development	A21/5
3	P	W		T			Disasters / accidents	BR
5	P	W	L	T	E		Natural/Asteroids	Doc20
5	P	W	L	T	E		Man-made / Accidents	Doc39
5	P	W		T	E	R	Unsustainable military expenditure	BR
3	P			T		R	Competitive arms race/Arms culture	BR
3	P			T		R	Arms trade	
3	P			T		R	Proliferation of nuclear weapons	BR
3	P	W				R	Socio-political instability/Insecurity	Doc27
5	P	W		T	E	R	Aggression/Conflict	Doc31
5	P	W		T	E	R	War (civil, regional)	BR
5	P	W		T	E	R	War (nuclear, biochemical)	BR
5	P	W		T	E	R	Individual violence (assault, torture)	Doc34
5	P	W		T	E	R	Environmental insecurity	BR
3	P	W		T			Migration to cities / Urban drift	BR
3	P			T		R	Small island [developing] countries	Doc18
3	P	W		T			Nuclear accident	Doc27
3	P	W			E		Environmental refugees	BR
3	P	W			E		Rural depopulation	Doc27
3	P	W				R	Land tenure systems / property rights	A21/14
3	P		L			R	Imbalance of power	Doc32
3	P		L			R	Dominance/Hegemony	Doc12
3	P	W				R	Global governance versus self determination	Doc15
3	P		L			R	Territorial/Boundary/Status disputes	Doc27
3	P	W				R	Competition/Rivalry	
3	P		L			R	Foreign intervention	
3	P	W				R	Forced resettlement	
3	P	W	L				Forced assimilation	
3	P		L			R	Social inequality/injustice	Doc15
3	P	W				R	UNDP Human Freedom Index	Doc27
3	P		L			R	Abuse of power	Doc34
3	P			T		R	Economic	Doc15
3	P	W				R	Inequitable land distribution / land reform	Doc2
3	P			T		R	North/south economic divide	Doc15
3	P	W		T			Economic vulnerability of underdeveloped world	Doc16
3	P		L			R	Repression	Doc26
3	P			T		R	Political	Doc15
3	P		L			R	Ethnic/Racial	Doc34
3	P		L			R	Cultural/Religious/Ideological	Doc15
3	P		L			R	Chauvinism/Xenophobia	
3	P		L			R	Nationalism / sovereign rights	Doc18
3	P		L			R	Ethnocentrism	
3	P		L			R	Racism	Doc15
3	P		L			R	Tribalism	
3	P		L			R	Discrimination against minorities	Doc2
3	P	W				R	Vulnerable groups/social systems	BR
3	P	W	L				**Indigenous** people	A21/26
3	P	W	L				Nomads	BR
3	P	W	L				Recognition of special environmental relationship	A21/26
3	P	W	L				Protection of traditional rights / compensation	BR
3	P	W				R	Dispute resolution	A21/26
3	P	W		T			Subsistence farmers	BR
3	P	W				R	Marginalised peoples	Doc15
5	P	W	L	T		R	Women's role	BR
3	P	W		T			Strengthen role in sustainable/equitable development	A21/24
3	P	W				R	Participation of women / universal suffrage	BR
3	P	W	L				Multiple roles (producer, mother, culture, community...)	Doc34
5	P	W	L	T	E		Domestic and resource managers (fuel wood, food etc.)	Doc2
3	P	W	L				Misunderstanding of women's needs	BR
3	P	W		T		R	Equity of employment / wages	Doc2

3	P	W				R	Access to credit and housing rights	Doc26
3	P	W	L				Traditional biases against girls and women	Doc27
3	P	W				R	Women-managed reproductive health care	BR
3	P	W	L				Availability of sex education/contraception/abortion	Doc4
3	P	W				R	Planning family size	BR
5	P	W	L	T		R	**Youth** and children's role	A21/25
3	P		L		E		Support active involvement in sustainable development	A21/25
3	P		L		E		Protection of the environment / promotion equitable society	A21/25
3	P	W	L				Introduction of new values	Doc2
3	P	W		T			Volunteerism	Doc2
3	P	W	L				Cross-cultural internships/exchange	Doc2
3		W	L		E		Networking and environmental education programmes	Doc2
3	P	W	L				Student/school activities	Doc2
3	P	W	L				Combat drug trafficking and abuse	Doc34
3	P		L			R	Youth coalitions / Use of voting power	Doc2
3	P		L			R	Advisors/advisory councils to governments	Doc13
3	P		L			R	Unconstrained political ideologies / unrepresentative government	Doc1
3	P			T		R	Socialism / Communism	Doc1
3	P			T		R	Capitalism	Doc11
3	P			T		R	[Neo-]Colonialism / Imperialism	Doc13
3	P			T		R	Militarism / Fascism	Doc31
3	P		L			R	Fundamentalism	
3	P		L			R	Inadequate public participation/involvement	BR
3		W	L			R	Empowering communities	BR
3	P	W	L				Apathy / Lack of political will / Scepticism	Doc2
3	P	W	L				Lack of vision / Lack of awareness	Doc15
1		W					**WELL-BEING:**	
5	P	W		T	E	R	Basic welfare sufficiency needs	
3	P	W			E		Provide adequate shelter for all	A21/7
3	P	W			E		Personal health / whole system health	Doc35
3	P	W				R	Infant mortality	Doc4
3	P	W				R	Access to health care	BR
3	P	W				R	**Protection against communicable diseases**	A21/6
3	P	W				R	Immunization against main childhood diseases	Doc27
3	P	W			E		Epidemics / AIDS	Doc2
5	P	W	L		E	R	Increasing environmental risk (eg skin cancer, toxicity)	Doc2
3		W		T	E		Ionizing and non-ionizing radiation	A21/2
3		W	L			R	Disability (physical/mental)	A21/6
3		W		T		R	Nutrition/Malnutrition/Hunger	BR
3	P	W				R	Lack of uniform regulatory standards for food	Doc2
3	P	W		T			Chemicals in food	A21/19
3	P	W				R	Social security/Old age security	BR
3	P	W			E		Homelessness / Forced migration	Doc2
1		W					Movement / Sleep	
3	P	W				R	Social neglect / Deprivation	
3		W	L			R	Identity needs	
3		W	L			R	Self-expression / Creativity	Doc35
3		W	L			R	Challenge / New experience	Doc35
3	P	W	L				Relationship / Belongingness / Roots / Community	Doc2
3		W	L			R	Purpose / Transcendental relationship	Doc35
3		W	L			R	Privacy (infringement)	
3	P	W				R	Religious/spiritual experience	Doc15
5	P	W	L	T		R	Social/Family tensions/unrest/breakdown	BR
3	P	W	L				Ethnic disintegration	
3		W	L			R	Unmet aspirations	BR
3	P	W	L				Ethical decay / Moral imperfection	
3	P	W	L				Indifference to suffering	
3	P	W	L				"Now or never"/disaster mentality	Doc17
3		W	L			R	Alienation/Delinquency/Decadence	
3		W	L			R	Substance abuse / Drug addiction	BR
3	P	W				R	Civil disobedience	Doc34
3	P	W				R	Intimidation/Harassment	Doc34
3		W		T		R	Crime (organized)	BR
3	P	W		T			Livelihood/ Quality of life	Doc27
3	P	W		T			Relationship between poverty and sustainable livelihoods	A21/3
3	P	W	L				Alternative livelihood systems	A21/12
5		W	L	T	E	R	**Changing consumption patterns**	A21/5
3		W	L		E		Undertake research on consumption	A21/5
5		W	L	T	E	R	Profligacy / Overconsumption / excessive materialism	BR
3			L	T	E		Excessive beef/pork consumption	Doc2
5	P	W	L	T	E		Demand for non-essentials	Doc35
3				T	E	R	Move towards environmentally sound pricing	A21/5
3	P				E	R	Exercise leadership through government purchasing	A21/5
3	P	W	L				Provide information on "ecowise consuming"	Doc35
3	P	W				R	Inappropriate social / fiscal policies	Doc2
3	P	W				R	Unsatisfactory standard of living	Doc2

3	P	W		T			Unemployment/Underemployment	BR
3		W		T		R	Underpayment for work	Doc27
3		W		T		R	Absenteeism	
3		W		T		R	Conditions of work	BR
3	P	W		T			Exploitation	
3	P	W		T			Forced labour/slavery/military service	Doc34
3	P	W		T			Excessive strain/stress	
3	P	W		T			Occupational hazards	
3		W		T		R	Workers/**Trade unions**	A21/29
3	P			T		R	Strengthen participation and cooperation	A21/29
3		W	L	T			Worker health and environmental safety	Doc1
3	P	W	L				Worker cooperatives	Doc34
3		W		T		R	"Green Work" agreements	Doc1
3		W		T	E		Harmonised environmental guidelines for workplace	Doc1
5		W	L	T	E	R	Clean production, products and services	Doc1
5	P	W		T	E	R	Workplace audits: environmental health and safety	Doc1
3	P	W		T			Worker participation in environmental affairs	Doc1
3	P	W				R	Freedom of association/organisation	Doc1
3	P	W		T			Collective bargaining	Doc1
3	P	W		T			International trade union solidarity	Doc1
3	P	W		T		R	Role of ILO / international standard setting	Doc1
3	P	W				R	Structural violence	Doc27
3	P	W	L				Secularization / Loss of faith	
1			L				**LEARNING/CULTURE:**	
3	P		L			R	**Education/training/public awareness**	A21/7 & 8
3	P		L			R	Illiteracy / Innumeracy	Doc1
3	P		L			R	Appropriate education	Doc15
3	P		L			R	Improved education	BR
3		W	L			R	Educational wastage	BR
3	P		L			R	Environmental education (including values)	Doc27
3	P	W	L				Self-help training	A21/12
3	P		L			R	Excessive specialization / Over-education	
3	P		L			R	Access to education	BR
3	P		L			R	Conceptual fragmentation / Paradigm shift	
3			L		E	R	Accelerating rates of change	Doc4
3			L		E	R	Increasing complexity of interconnections	Doc4
3			L	T	E		Living with uncertainty / precautionary principle	Doc6
3		W	L			R	Coping with value challenges / lifestyle adjustment	Doc35
3			L	T	E		**Science for sustainable development**	A21/31 & 36
3			L	T	E		Strengthen scientific basis for....	A21/36
3			L	T	E		Strengthen multi-scale / interdisciplinary research	Doc4
3	P		L		E		Neglect of environmental studies	Doc16
3			L		E	R	Environmental and social impact assessment methods	Doc1
3			L		E	R	Long-term versus short term planning	Doc2
3			L		E		Improving long-term scientific assessment	A21/36
3			L	T		R	Gap in scientific/technological capacity	BR
3			L	T		R	Lack of scientists/engineers	Doc4
3			L	T	E		Lack of natural resource managers	Doc19
3			L	T	E		Lack of public health and environment professionals	Doc7
3	P		L			R	**Science/technology community role**	A21/31
3			L	T		R	Enhancement of research/technology infrastructure	BR
3	P		L	T			Improve communication and cooperation	A21/31
3			L		E	R	Codes of practice and guidelines for use of ...	A21/31
3			L	T	E		**Information/data for sustainable development**	A21/40
3			L	T	E		Advance earth system studies	Doc4
3			L	T	E		Improve pollution abatement technologies	A21/9
1			L				Accumulation of biological knowledge	BR
3			L	T	E		Inventory global forest resources	Doc27
3			L	T		R	Information handling and availability	A21/40
3	P		L		E		Bridging the data gap / accessibility	A21/40
3			L	T		R	Intellectual property rights	Doc3
3			L	T		R	Role of communications media	Doc4
3			L	T		R	Electronic networking	A21/40
3			L	T	E		Commercial information sources	A21/40
3			L		E	R	Data collection, standards, methods and use	A21/40
3			L		E	R	Global networks of research centres / data exchange	Doc21
3	P	W	L				Quality of life / sustainable development indicators	Doc27
3		W	L		E		State of Environment reporting/monitoring	Doc36
3		W	L		E		Tradition knowledge of indigenous people	Doc16
3			L	T	E		Information exchange on toxic chemicals and risks	A21/19
3	P		L			R	Role of universities	Doc7
3	P		L				Open channels of information exchange	Doc7
3	P		L			R	Use the university community as a role model	Doc7
3			L	T	E		Increase academic focus on large complex issues	Doc7
3	P	W	L				Public education on sustainability issues	Doc7
3			L		E	R	Direct funds to multidisciplinary research/teaching	Doc7

3	P		L	T	E	R	Partner with other [education] sectors	Doc7
3			L	T		R	Information access/overload	Doc2
3	P		L			R	Corruption of meaning / Disinformation	
3	P		L			R	Propaganda / Psychological warfare	
3	P		L			R	Deception (official/unofficial)	
3		W	L			R	Mental/Spiritual pollution	Doc37
3	P		L			R	Freedom of information/Censorship	Doc13
3	P		L			R	Espionage/Surveillance	
3	P		L			R	Official secrecy	
3		W	L	T			Cultural heritage exploitation/destruction	Doc36
3	P	W	L				Role of visual arts & artistic communication	Doc27
3	P	W	L				Role of exhibits and display centres	Doc27
3	P	W	L				Cultural invasion/imperialism	
3	P		L			R	Cultural homogenization	
3		W	L	T			Cultural deprivation/alienation	
1				T			**TRADE/PRODUCTION:**	
3	P			T		R	**Trade liberalization**	**A21/2**
3				T	E	R	Developing an environment/trade and development agenda	A21/2
3				T	E	R	Make trade and environment mutually supportive	A21/2
3	P			T		R	"Fair trade" not "free trade"	Doc26
3	P			T		R	Deregulation	Doc2
5	P	W		T	E	R	Protectionism / Market access	BR
3		W		T		R	Tariff barriers	Doc5
3		W		T		R	Deteriorating terms of trade	BR
3		W		T		R	Restrictive trade practices	Doc5
3		W		T		R	Inappropriate commodity prices	Doc40
3				T	E	R	Improve international cooperation in commodity trade	A21/2
3		W		T		R	Instability of trade/production	
3	P			T		R	Dependency on trade	BR
3	P		L	T			Diversification of trade cf one main export commodity	A21/2
5	P	W	L	T		R	Revival of economic growth / Economic growth	BR
3		W		T		R	Inflation	
3			L	T	E		Develop new concepts of sustainable economic growth	A21/3
5	P	W		T	E	R	Improving quality of growth / Unbalanced economic growth	BR
3				T	E	R	Negative environmental impacts of industrial activity	BR
3				T	E	R	Pollution-intensive production costs	BR
3				T	E	R	Inappropriate industrialization	BR
3		W	L	T			Diversified production systems	A21/13
3			L	T		R	Technology reorientation (uncontrolled use)	BR
3	P			T		R	Distribution / concentration of economic activity	Doc2
5		W	L	T	E	R	Biotechnology management	BR
3			L	T		R	Legal protection of nations' biological rights	Doc24
3			L	T		R	Concessional access for developing countries	Doc24
5	P	W	L	T		R	Underdevelopment / UNDP Human Development Index	Doc27
3	P	W		T			"People-centred development"	Doc12
3		W	L	T			Redefine "prosperity"	Doc13
3			L	T		R	Encourage entrepreneurial/investment initiatives	Doc2
3			L	T		R	**Capacity building in developing countries**	BR
3			L	T		R	Enhancement of technological capacity	BR
3			L	T		R	Underfunding of [agricultural] training programmes	Doc3
3			L	T		R	National service schemes versus "brain-drain"	Doc2
3			L	T		R	Use of local capabilities/resources before imports	Doc34
3		W		T		R	Access to markets in the North	Doc24
3			L	T	E		**Environmentally sound technology transfer**	A21/34
3			L	T		R	Public domain and subsidised appropriate technology	Doc5
3			L	T	E		Accessed through information databases/networks	Doc5
3			L	T		R	Programmes of technical cooperation and assistance	A21/34
3				T	E	R	Tied to compliance with international conventions	Doc5
3			L	T		R	Collaborative arrangements and partnerships	A21/34
3			L	T	E		Environmentally [safe and] sound technology	A21/34
3		W		T	E		**Sustainable agricultural/rural development**	A21/14
3				T	E	R	Food spoilage/wastage	Doc2
3				T	E	R	Unproductive use of resources	Doc1
3				T	E	R	Inappropriate use and pricing of agrochemicals	BR
3				T	E	R	Improper pricing / non-cost of environmental externalities	Doc2
3				T	E	R	Unstable markets / fluctuating prices	Doc2
3		W		T		R	Fluctuating availability/shortages	BR
3		W		T		R	Over-subsidized production and agricultural inputs	BR
3		W		T		R	Export of surpluses	BR
3			L	T	E		Land resource and rehabilitiation data banks	A21/14
3			L	T	E		Appropriate agro-ecological zoning and landuse	A21/14
3			L	T		R	Improve training for rural servicing / extension workers	A21/14
3		W	L	T			Promote integrated pest management	Doc27
3	P	W		T			Food production/security	BR
3	P	W		T			Role of small primary producers	A21/32
3	P	W		T			Strengthen role of farmers	A21/32

Figure 9

3	P	W		T			Unproductive subsistence agriculture	
3	P	W		T			Cooperatives of small scale farmers	Doc2
3		W	L	T			Farming households and technologies	A21/14
3			L	T	E		Permaculture / agroforestry	Doc30
3			L	T	E		Small-scall agro-processing techniques	A21/14
3	P			T	E		Biological pest control methods	Doc27
3	P	W		T			Growing illegal drugs	Doc36
3		W	L	T			Integrated farm management technologies	A21/14
3	P			T		R	Decentralization policies for rural development	A21/14
3	P			T		R	Farmers' Rights to plant and animal genetic resources	A21/14
3	P			T		R	Neglect of minor crops/varieties and animal breeds	Doc3
3				T	E	R	Energy and resources	BR
3				T	E	R	Inefficient use of resources / Energy conservation	BR
3				T	E	R	Decentralise energy supplies	Doc30
3			L	T	E		Moratorium and phase-out nuclear plants	Doc33
3			L	T	E		New and renewable energy sources and technologies	Doc5
3	P			T		R	Market failure to price and to allocate scare resources	Doc2
3		W		T		R	Underground economy / Black markets / Illegal trading	
3			L	T		R	Inappropriate incentive systems	BR
3	P			T		R	**Business/Industry community role**	A21/30
3	P			T		R	Responsible entrepreneurship	A21/30
3			L	T		R	Unethical commercial practices	
3				T	E	R	Socially responsible capital investment	Doc2
3			L	T	E		Use full social and environmental costs	Doc27
3	P	W		T			Openness / Dialogue with local community	Doc5
3			L	T		R	Revised accounting standards / environmental auditing	Doc2
3				T	E	R	[In]adequate industry standards/practices/compliance	Doc5
3			L	T		R	Public - private sector partnerships	Doc2
3				T	E	R	Multinational/transnational corporations	Doc2
3			L	T		R	**Restrictive patents and proprietary rights**	BR
3			L	T	E		Promote cleaner production	A21/30
3		W		T	E		Dangerous products	A21/19
3	P			T	E		Phase-out "black listed" toxics and hazardous substances	Doc30
3	P			T	E		"Cradle to grave" waste management	Doc27
3			L	T		R	Equipment/Servicing inadequacy/unreliability	
3			L	T		R	Inadequate standardization	
3			L	T		R	Access to spare parts/maintenance	
3			L	T		R	Product planned obsolescence	
3			L	T		R	Inappropriate design	
3				T	E	R	Socio/ecological product labelling	Doc30
1					E		**ENVIRONMENT:**	
3	P		L		E		Carrying capacity of earth / sustainability thresholds	Doc27
5		W	L	T	E	R	Conserve life-support systems, vitality and diversity	Doc27
3			L		E	R	Access to satisfactory data on land classification and land use	A21/11
5	P	W		T	E	R	Enhancing/overexploitation of non-renewable resources	BR
3				T	E	R	Landscape conservation	Doc36
5	P	W		T	E	R	Ecosystem degradation and stress	BR
3				T	E	R	Desertification / Drought	A21/12
3				T	E	R	Waterlogging / salinization	Doc18
3		W			E	R	**Mountain/hill-area development**	A21/13
3				T	E	R	Watershed destruction / development	BR
3		W		T	E		Diversification of mountain economies	A21/13
3				T	E	R	Marginal land use	A21/10
3				T	E	R	Land degradation/Soil erosion	BR
3				T	E	R	Overstocking / Over-grazing	Doc19
3				T	E	R	Over-intensive / irrigated / monoculture agriculture	Doc19
3				T	E	R	**Deforestation**	A21/11
3				T	E	R	Over-cutting	BR
3		W			E	R	Depletion of fuel-wood	BR
3		W		T	E		Forest rehabilitation, afforestation, reforestation	A21/11
3		W	L		E		Alternatives to shifting cultivation	A21/11
3				T	E	R	Promote means that gain full economic values of forests	A21/11
3			L	T	E		Conservation of tropical and old growth forests	Doc9
3			L	T	E		Sustainable harvesting methods for forest	A21/11
5	P	W		T	E	R	Water resource shortages/degradation	A21/18
3			L	T	E		Reuse of waste water	Doc27
3	P		L		E		Proposal: UN World Water Day	A21/18
3		W	L		E		Groundwater protection	A21/18
3				T	E	R	Water pollution surveillance and control	A21/18
3		W			E	R	Efficient and equitable allocation	A21/18
3	P	W			E		Water resources conservation and quality protection and	A21/18
3	P	W			E		Local capacity-building and public participation	A21/18
3				T	E	R	Marine ecosystems	Doc27
3			L		E	R	Global system of coastal and marine protected areas	Doc27
3				T	E	R	Overfishing / Whaling	BR
3				T	E	R	Ban tangle net and drift net fishing	Doc9

Figure 9

3			T	E	R	Liaison on seabed mining	Doc19
3	P			E	R	Degradation from land-based activities	A21/17
3	P		T		R	Guaranteed sustainable yields	A21/17
3	P		T		R	Exclusive economic zones	A21/17
3			T	E	R	**Fragile ecosystems**	A21/12 & 13
3			T	E	R	Wetlands, mangroves, corals	Doc18
3		W		E	R	Coastal zones/estuaries	Doc4
3			T	E	R	Environmental consequences of armed conflict	BR
3		L	T	E		Environmental damage from tourism	Doc30
3			T	E	R	Destruction of natural barriers	
3		L		E	R	Preservation of bioregional diversity	Doc3
5	P	W	T	E	R	Biodiversity / Genetic erosion	BR
5	P	W	L	E	R	Conservation of genetic resources	Doc3
3		L	T	E		Vavilov centres of plant genetic diversity	Doc3
3		L		E	R	International and regional cooperation and coordination	A21/15
3		L		E	R	Global sufficiency of protected areas / reserves	Doc13
3			T	E	R	Species extinction	BR
3			T	E	R	Unnatural restriction of animal ranges	Doc27
3			T	E	R	Destruction of wildlife habitats	Doc27
3			T	E	R	Endangered species protection	Doc13
3			T	E	R	Environmental pollution (waste) management	BR
3			T	E	R	**Protecting the atmosphere**	A21/9
3		W	T	E		Urban-industrial air pollution / acid rain	BR
5	P	W	T	E	R	Greenhouse gases / climate change / global warming	BR
3		L	T	E		Reverse dependence on fossil fuels	Doc30
3			T	E	R	Depletion of stratospheric ozone	BR
3		L		E	R	Phase out organo-halogens	Doc30
3			T	E	R	Create global climate observing system	Doc22
3		L	T		R	Leapfrog developing countries to benign technology	Doc22
5		W	L	T	E	R	Minimize the generation of wastes	A21/5
3			T	E	R	**Hazardous/toxic chemicals/wastes**	A21/19-20
3			T	E	R	Illicit traffic in toxic and hazardous products	Doc19
3		W	L		E	Assessment of chemical risks	A21/19
3			T	E	R	**Radioactive wastes**	A21/22
3		W	T	E		Sewage	A21/21
3	P		T	E		Minimize waste / mazimize reuse and recyling	A21/21
3	P	W		E		Extending waste service coverage	A21/21
3	W		T	E		**Solid wastes and landfill**	A21/21
3			L	T	E	Environmentally sound waste disposal and treatment	A21/21
3			T	E	R	Chemical pollution of soil, water, etc	BR
3		W	T	E		Marine pollution (and subsea waste disposal)	BR
3			L	T	E	Pollution of orbital space and Antarctica	BR
5	P	W	L		E	R	**Sustainable human settlements**	A21/6
3	P		L		E		Recognise reciprocity between settlement and hinterland	Doc25
3	P			T	E		Reduce consumption of materials and energy	Doc25
3		W			E	R	Uncontrolled physical expansion of cities	BR
3		W			E	R	Illegal settlements	BR
3		W			E	R	Urban decay (sanitation, water supplies, shelter)	BR
3		W			E	R	Sustainable urban transport policy	Doc27
3	P	W			E		Foot and bicycle versus automobile	Doc25
3		W	L		E		Ecological city [re]building programmes	Doc25
3		W	L		E		"Green, clean and efficient"	Doc27
3		W	L		E		"Barefoot architects/builders"	Doc24
3		W	L		E		Move information not people	Doc27
3	P	W			E		Small urban improvement works by NGOs	Doc36
3	P	W			E		Waste production, recycling and disposal	Doc27
3	P	W			E		Urban air pollution	A21/6
3	P	W				R	Urban noise pollution	A21/6
3	P	W			E		Indoor air pollution	A21/6
3	P	W			E		Managing settlements in disaster-prone areas	A21/7
3	P	W			E		"Healthy Cities" movement	Doc27
						R	**REGULATION/INTERVENTION:**	
3		W		T		R	Redistribution of pattern of assets/consumption	BR
3	P			T		R	Uneven development	BR
3	P		L			R	Uneven distribution of power and influence	BR
3		W		T		R	Uneven income distribution	BR
3	P			T		R	**Land reform/Landless households**	BR
3				T	E	R	Uneven energy consumption	BR
3				T	E	R	Differences in environmental endowment	BR
3				T	E	R	Appropriate/Inappropriate decision-making	BR
5	P		L	T	E	R	Establishment of appropriate regulations and standards	BR
3				T	E	R	**Integration of environment/development**	BR
3	P		L			R	Institutional fragmentation/rigidities	BR
3	P		L			R	Sectoral fragmentation of responsibility	BR
3	P			T		R	Asymmetry in bargaining power	BR
3	P		L			R	Short-termism/Institutional myopia	BR

Figure 9

3	P		L			R	Symptom-focused policies	BR
3	P		L			R	Post-crisis and remedial policy-making	BR
3			L	T		R	Risk management	BR
3	P		L			R	Inadequate government foresight	BR
3	P		L			R	Emergency unpreparedness	BR
3	P	W				R	Drought unpreparedness	A21/12
3	P	W				R	Relief unpreparedness	A21/12
3	P				E	R	Risk reduction programmes	A21/19
3	P		L			R	Lack of accountability (cf multiple accountability)	
3			L	T		R	Incompetent management	BR
3	P			T		R	Self-seeking national sovereignty	BR
3				T	E	R	**Acceleration of sustainable development**	BR
3			L	T		R	Negative attitude to dialogue on development	BR
3		W		T		R	Austerity programmes	BR
3			L		E	R	Review economic and administrative practices and laws	Doc27
1						R	**Financial resources/mechanisms**	BR
3		W			E	R	Environmental funding / resource taxes	BR
3				T	E	R	Performance bonds / tradeable permits	Doc27
3		W		T		R	Unrealistic taxes on rural land	BR
3		W		T		R	Net resource flows away from developing countries	BR
3		W		T		R	Enhancing flow of resources to developing countries	BR
3		W		T		R	Burden of debt / Debt forgiveness/rescheduling	BR
3				T	E	R	"Nature for debt" swaps	Doc26
3	P			T		R	Inappropriate/unfair terms of aid transfer	Doc2
3	P			T		R	Stagnating flows of aid	BR
3	P			T		R	Role of multilateral development banks and IMF	Doc24
3	P			T		R	Transfer from military budgets	Doc27
3				T	E	R	Use of non-renewable resources for foreign exchange	BR
3				T	E	R	"Polluter/User Pays Principle"	Doc30
3	P		L			R	Institutional mechanisms	
3				T	E	R	Definition of national resource accounts	Doc2
3	P		L			R	Strengthening and harmonization of criteria and regulation	A21/20
1						R	**International institutional mechanisms**	**A21/39**
3	P		L			R	High-level interagency coordination mechanism	A21/39
3	P		L			R	Organs, programmes, organizations of the UN system	A21/39
3	P		L			R	UN specialized agencies and related organizations	A21/39
3	P				E	R	Establish UN Commission on Sustainable Development	Doc26
3	P				E	R	Inadequate international environmental law / court of..	Doc39
3	P				E	R	Limitations of treaty-making over "global commons"	Doc14
3				T	E	R	Implementation of existing agreements	A21/20
3				T	E	R	Ratify Convention on Law of the Sea	Doc27
3			L		E	R	Ratify World Heritage Convention	Doc37
5	P	W		T	E	R	Ratify conventions on nuclear accidents/toxic wastes	Doc27
5	P		L	T	E	R	Hasten Global Convention on Climate Change	Doc22
3			L		E	R	Role of IPCC, WCP, IGBP, WMO	Doc22
3	P			T		R	Review/renegotiate GATT	Doc26
3				T	E	R	Cooperation arrangements on forest resources	Doc19
3				T	E	R	Enlarge jurisdiction / management over oceans	Doc19
1						R	**Regional and subregional organizations**	A21/39
3	P		L			R	Decline in multilateral cooperation	BR
1						R	Transborder problems / Transboundary agreements	BR
3				T	E	R	Air pollution	BR
3	P		L			R	National consensus for capacity building	A21/37
3	P		L			R	More use of regional agreements/protocols	Doc19
3			L		E	R	Complete proposed ECE Convention on EIA	Doc6
3		W			E	R	Conclude agreements on freshwaters, drainage basins	Doc27
3	P	W				R	Delivery of assistance at the regional level	A21/37
3	P	W				R	Full partnership with indigenous peoples	NGO26
3	P	W				R	Strenthen role of major groups	A2123
1						R	**Local authorities**	A21/28
1						R	Inadequate government infrastructure	BR
3	P		L			R	Inadequate legislation	BR
3	P		L			R	Enhance community consultation / participation	Doc27
1						R	Lack of financial base of local government	BR
3	P				E	R	Make environmental policy and local objectives	Doc37
3	P		L			R	**Nongovernmental organizations**	A21/27
3	P				E	R	"Partners for Sustainable Development"	A21/27
3	P		L			R	People's global agenda for action and feedback system	Doc35
3	P		L			R	Intersectoral linkage	Doc16
3	P		L			R	Organisational cooperation / networks	Doc2
3		W	L			R	Show alternative modes/models of working	Doc28
3		W	L			R	Strengthen self-assistance acitivities	Doc40
3	P	W				R	Representation of overlapping constituencies	Doc29
3	P	W				R	United but different / Diversity increases security	Doc29
3	P	W				R	Grassroots/citizen action	Doc14
3	P		L			R	Lobbying	Doc14
3		W		T		R	Consumer behaviour	Doc2

Figure 9

3		W	L		R	Community mobilisation	Doc30
3			L	E	R	Community management of local environmental affairs	Doc27
5	P	W	L	E	R	Ethical codes, rights and responsiblities	
3	P	W			R	Human rights	Doc1
3	P		L		R	Respect for cultural and ethnic quality / language	Doc29
3	P	W			R	Rights of future generations	Doc35
3	P	W			R	Aboriginal rights to lands and resources	Doc27
3	P	W			R	Intergenerational equity	Doc4
3	P	W			R	Recognise children's rights	
3	P	W			R	Relative responsibility (based on wealth/capability...)	Doc20
3	P			E	R	Sharing equitably the "burden of adjustment"	Doc24
3	P			E	R	Responsibilities arising from environmental ethics	Doc4
3	P			E	R	Respect and care for the community of life	Doc27
3		W		E	R	Rights of species / equality of living things	Doc15
3		W		E	R	Earth stewardship	Doc4
3	P			E	R	Global responsibilities of sovereign nations	Doc16
3	P			E	R	Environmental rights, proposed Charter of..	Doc30
3	P			E	R	Concept of environmental crime	Doc40
3		W	L		R	Reinforce values which support sustainable consumption	A21/5
3		W	L		R	Individual responsibility	Doc35
3		W	L		R	Personal growth / group transformation	Doc35
3		W	L		R	Creative social transformation	Doc35
3		W	L		R	Spiritual evolution / evolution of humanity	Doc37
3		W	L		R	Oneness with life/the divine/the universe	Doc15

Figure 10

DECLARATION ISSUES: SORTED BY CODE COMBINATION

Derived from Agenda 21, Brundtland Report and various NGO and government declarations (see Figure 7). Coded in relation to Figure 1

P	W	L	T	E	R		
					R	REGULATION/INTERVENTION:	
1					R	**International institutional mechanisms**	A21/39
1					R	**Financial resources/mechanisms**	BR
1					R	**Regional and subregional organizations**	A21/39
1					R	Transborder problems / Transboundary agreements	BR
1					R	**Local authorities**	A21/28
1					R	Lack of financial base of local government	BR
1					R	Inadequate government infrastructure	BR
1				E		**ENVIRONMENT:**	
1			T			**TRADE/PRODUCTION:**	
1		L				**LEARNING/CULTURE:**	
1		L				Accumulation of biological knowledge	BR
1	W					Movement / Sleep	
1	W					**WELL-BEING:**	
1	P					POPULATION/SECURITY:	
3			T	E	R	Move towards environmentally sound pricing	A21/5
3			T	E	R	Make trade and environment mutually supportive	A21/2
3			T	E	R	Developing an environment/trade and development agenda	A21/2
3			T	E	R	Improve international cooperation in commodity trade	A21/2
3			T	E	R	[In]adequate industry standards/practices/compliance	Doc5
3			T	E	R	Improper pricing / non-cost of environmental externalities	Doc2
3			T	E	R	Multinational/transnational corporations	Doc2
3			T	E	R	Unstable markets / fluctuating prices	Doc2
3			T	E	R	Socially responsible capital investment	Doc2
3			T	E	R	Inefficient use of resources / Energy conservation	BR
3			T	E	R	Energy and resources	BR
3			T	E	R	Inappropriate use and pricing of agrochemicals	BR
3			T	E	R	Inappropriate industrialization	BR
3			T	E	R	Food spoilage/wastage	Doc2
3			T	E	R	Tied to compliance with international conventions	Doc5
3			T	E	R	Decentralise energy supplies	Doc30
3			T	E	R	Unproductive use of resources	Doc1
3			T	E	R	Negative environmental impacts of industrial activity	BR
3			T	E	R	Pollution-intensive production costs	BR
3			T	E	R	Water pollution surveillance and control	A21/18
3			T	E	R	**Protecting the atmosphere**	A21/9
3			T	E	R	Depletion of stratospheric ozone	BR
3			T	E	R	Environmental pollution (waste) management	BR
3			T	E	R	Destruction of natural barriers	
3			T	E	R	Create global climate observing system	Doc22
3			T	E	R	Promote means that gain full economic values of forests	A21/11
3			T	E	R	Endangered species protection	Doc13
3			T	E	R	Environmental consequences of armed conflict	BR
3			T	E	R	Overfishing / Whaling	BR
3			T	E	R	Unnatural restriction of animal ranges	Doc27
3			T	E	R	Species extinction	BR
3			T	E	R	**Fragile ecosystems**	A21/12 & 13
3			T	E	R	Destruction of wildlife habitats	Doc27
3			T	E	R	Liaison on seabed mining	Doc19
3			T	E	R	Wetlands, mangroves, corals	Doc18
3			T	E	R	Ban tangle net and drift net fishing	Doc9
3			T	E	R	Marine ecosystems	Doc27
3			T	E	R	**Hazardous/toxic chemicals/wastes**	A21/19-20
3			T	E	R	Waterlogging / salinization	Doc18
3			T	E	R	**Radioactive wastes**	A21/22
3			T	E	R	Over-cutting	BR
3			T	E	R	Desertification / Drought	A21/12
3			T	E	R	Landscape conservation	Doc36
3			T	E	R	Socio/ecological product labelling	Doc30
3			T	E	R	Chemical pollution of soil, water, etc	BR
3			T	E	R	Illicit traffic in toxic and hazardous products	Doc19
3			T	E	R	Watershed destruction / development	BR
3			T	E	R	Over-intensive / irrigated / monoculture agriculture	Doc19
3			T	E	R	Overstocking / Over-grazing	Doc19
3			T	E	R	**Deforestation**	A21/11
3			T	E	R	Marginal land use	A21/10

3		T	E	R	Land degradation/Soil erosion	BR
3		T	E	R	"Nature for debt" swaps	Doc26
3		T	E	R	Performance bonds / tradeable permits	Doc27
3		T	E	R	**Integration of environment/development**	BR
3		T	E	R	Appropriate/Inappropriate decision-making	BR
3		T	E	R	Differences in environmental endowment	BR
3		T	E	R	Uneven energy consumption	BR
3		T	E	R	Use of non-renewable resources for foreign exchange	BR
3		T	E	R	"Polluter/User Pays Principle"	Doc30
3		T	E	R	Enlarge jurisdiction / management over oceans	Doc19
3		T	E	R	**Acceleration of sustainable development**	BR
3		T	E	R	Cooperation arrangements on forest resources	Doc19
3		T	E	R	Air pollution	BR
3		T	E	R	Implementation of existing agreements	A21/20
3		T	E	R	Definition of national resource accounts	Doc2
3		T	E	R	Ratify Convention on Law of the Sea	Doc27
3	L		E		Improving long-term scientific assessment	A21/36
3	L		E	R	Long-term versus short term planning	Doc2
3	L		E	R	Environmental and social impact assessment methods	Doc1
3	L		E	R	Codes of practice and guidelines for use of ...	A21/31
3	L		E	R	Increasing complexity of interconnections	Doc4
3	L		E	R	Accelerating rates of change	Doc4
3	L		E	R	Global networks of research centres / data exchange	Doc21
3	L		E	R	Direct funds to multidisciplinary research/teaching	Doc7
3	L		E	R	Data collection, standards, methods and use	A21/40
3	L		E	R	Access to satisfactory data on land classification and land use	A21/11
3	L		E	R	International and regional cooperation and coordination	A21/15
3	L		E	R	Global system of coastal and marine protected areas	Doc27
3	L		E	R	Phase out organo-halogens	Doc30
3	L		E	R	Preservation of bioregional diversity	Doc3
3	L		E	R	Global sufficiency of protected areas / reserves	Doc13
3	L		E	R	Role of IPCC, WCP, IGBP, WMO	Doc22
3	L		E	R	Ratify World Heritage Convention	Doc37
3	L		E	R	Review economic and administrative practices and laws	Doc27
3	L		E	R	Community management of local environmental affairs	Doc27
3	L		E	R	Complete proposed ECE Convention on EIA	Doc6
3	L	T		R	Enhancement of research/technology infrastructure	BR
3	L	T		R	Gap in scientific/technological capacity	BR
3	L	T		R	Lack of scientists/engineers	Doc4
3	L	T		R	Intellectual property rights	Doc3
3	L	T		R	Information access/overload	Doc2
3	L	T		R	Role of communications media	Doc4
3	L	T		R	Electronic networking	A21/40
3	L	T		R	Information handling and availability	A21/40
3	L	T		R	Collaborative arrangements and partnerships	A21/34
3	L	T		R	Revised accounting standards / environmental auditing	Doc2
3	L	T		R	Inadequate standardization	
3	L	T		R	Access to spare parts/maintenance	
3	L	T		R	Product planned obsolescence	
3	L	T		R	Equipment/Servicing inadequacy/unreliability	
3	L	T		R	**Restrictive patents and proprietary rights**	BR
3	L	T		R	Unethical commercial practices	
3	L	T		R	Programmes of technical cooperation and assistance	A21/34
3	L	T		R	Public - private sector partnerships	Doc2
3	L	T		R	Inappropriate incentive systems	BR
3	L	T		R	Improve training for rural servicing / extension workers	A21/14
3	L	T		R	Underfunding of [agricultural] training programmes	Doc3
3	L	T		R	National service schemes versus "brain-drain"	Doc2
3	L	T		R	Enhancement of technological capacity	BR
3	L	T		R	Encourage entrepreneurial/investment initiatives	Doc2
3	L	T		R	Technology reorientation (uncontrolled use)	BR
3	L	T		R	Use of local capabilities/resources before imports	Doc34
3	L	T		R	**Capacity building in developing countries**	BR
3	L	T		R	Public domain and subsidised appropriate technology	Doc5
3	L	T		R	Legal protection of nations' biological rights	Doc24
3	L	T		R	Concessional access for developing countries	Doc24
3	L	T		R	Inappropriate design	
3	L	T		R	Leapfrog developing countries to benign technology	Doc22
3	L	T		R	Incompetent management	BR
3	L	T		R	Risk management	BR
3	L	T		R	Negative attitude to dialogue on development	BR
3	L	T	E		Excessive beef/pork consumption	Doc2
3	L	T	E		Information exchange on toxic chemicals and risks	A21/19
3	L	T	E		Advance earth system studies	Doc4
3	L	T	E		Increase academic focus on large complex issues	Doc7
3	L	T	E		Commercial information sources	A21/40
3	L	T	E		**Information/data for sustainable development**	A21/40

Figure 10

3		L	T	E	Inventory global forest resources	Doc27
3		L	T	E	Improve pollution abatement technologies	A21/9
3		L	T	E	Lack of natural resource managers	Doc19
3		L	T	E	Living with uncertainty / precautionary principle	Doc6
3		L	T	E	**Science for sustainable development**	A21/31 & 36
3		L	T	E	Strengthen scientific basis for....	A21/36
3		L	T	E	Lack of public health and environment professionals	Doc7
3		L	T	E	Strengthen multi-scale / interdisciplinary research	Doc4
3		L	T	E	Moratorium and phase-out nuclear plants	Doc33
3		L	T	E	Promote cleaner production	A21/30
3		L	T	E	Develop new concepts of sustainable economic growth	A21/3
3		L	T	E	Use full social and environmental costs	Doc27
3		L	T	E	Small-scall agro-processing techniques	A21/14
3		L	T	E	Permaculture / agroforestry	Doc30
3		L	T	E	Land resource and rehabilitiation data banks	A21/14
3		L	T	E	Environmentally [safe and] sound technology	A21/34
3		L	T	E	New and renewable energy sources and technologies	Doc5
3		L	T	E	Accessed through information databases/networks	Doc5
3		L	T	E	**Environmentally sound technology transfer**	A21/34
3		L	T	E	Appropriate agro-ecological zoning and landuse	A21/14
3		L	T	E	Environmental damage from tourism	Doc30
3		L	T	E	Conservation of tropical and old growth forests	Doc9
3		L	T	E	Environmentally sound waste disposal and treatment	A21/21
3		L	T	E	Pollution of orbital space and Antarctica	BR
3		L	T	E	Vavilov centres of plant genetic diversity	Doc3
3		L	T	E	Sustainable harvesting methods for forest	A21/11
3		L	T	E	Reuse of waste water	Doc27
3		L	T	E	Reverse dependence on fossil fuels	Doc30
3	W			E R	Uncontrolled physical expansion of cities	BR
3	W			E R	Depletion of fuel-wood	BR
3	W			E R	**Mountain/hill-area development**	A21/13
3	W			E R	Efficient and equitable allocation	A21/18
3	W			E R	Coastal zones/estuaries	Doc4
3	W			E R	Environmental funding / resource taxes	BR
3	W			E R	Illegal settlements	BR
3	W			E R	Sustainable urban transport policy	Doc27
3	W			E R	Urban decay (sanitation, water supplies, shelter)	BR
3	W			E R	Earth stewardship	Doc4
3	W			E R	Conclude agreements on freshwaters, drainage basins	Doc27
3	W			E R	Rights of species / equality of living things	Doc15
3	W		T	R	Absenteeism	
3	W		T	R	Conditions of work	BR
3	W		T	R	Workers/**Trade unions**	A21/29
3	W		T	R	Nutrition/Malnutrition/Hunger	BR
3	W		T	R	"Green Work" agreements	Doc1
3	W		T	R	Underpayment for work	Doc27
3	W		T	R	Crime (organized)	BR
3	W		T	R	Inappropriate commodity prices	Doc40
3	W		T	R	Restrictive trade practices	Doc5
3	W		T	R	Deteriorating terms of trade	BR
3	W		T	R	Instability of trade/production	
3	W		T	R	Tariff barriers	Doc5
3	W		T	R	Inflation	
3	W		T	R	Underground economy / Black markets / Illegal trading	
3	W		T	R	Access to markets in the North	Doc24
3	W		T	R	Over-subsidized production and agricultural inputs	BR
3	W		T	R	Fluctuating availability/shortages	BR
3	W		T	R	Export of surpluses	BR
3	W		T	R	Burden of debt / Debt forgiveness/rescheduling	BR
3	W		T	R	Redistribution of pattern of assets/consumption	BR
3	W		T	R	Uneven income distribution	BR
3	W		T	R	Enhancing flow of resources to developing countries	BR
3	W		T	R	Austerity programmes	BR
3	W		T	R	Unrealistic taxes on rural land	BR
3	W		T	R	Net resource flows away from developing countries	BR
3	W		T	R	Consumer behaviour	Doc2
3	W		T	E	Harmonised environmental guidelines for workplace	Doc1
3	W		T	E	Ionizing and non-ionizing radiation	A21/2
3	W		T	E	Dangerous products	A21/19
3	W		T	E	**Sustainable agricultural/rural development**	A21/14
3	W		T	E	Marine pollution (and subsea waste disposal)	BR
3	W		T	E	Diversification of mountain economies	A21/13
3	W		T	E	Forest rehabilitation, afforestation, reforestation	A21/11
3	W		T	E	Urban-industrial air pollution / acid rain	BR
3	W		T	E	Sewage	A21/21
3	W	L		R	Substance abuse / Drug addiction	BR
3	W	L		R	Unmet aspirations	BR

3		W	L		R	Privacy (infringement)	
3		W	L		R	Purpose / Transcendental relationship	Doc35
3		W	L		R	Self-expression / Creativity	Doc35
3		W	L		R	Challenge / New experience	Doc35
3		W	L		R	Identity needs	
3		W	L		R	Disability (physical/mental)	A21/6
3		W	L		R	Alienation/Delinquency/Decadence	
3		W	L		R	Empowering communities	BR
3		W	L		R	Coping with value challenges / lifestyle adjustment	Doc35
3		W	L		R	Educational wastage	BR
3		W	L		R	Mental/Spiritual pollution	Doc37
3		W	L		R	Spiritual evolution / evolution of humanity	Doc37
3		W	L		R	Creative social transformation	Doc35
3		W	L		R	Oneness with life/the divine/the universe	Doc15
3		W	L		R	Strengthen self-assistance acitivities	Doc40
3		W	L		R	Personal growth / group transformation	Doc35
3		W	L		R	Individual responsibility	Doc35
3		W	L		R	Community mobilisation	Doc30
3		W	L		R	Show alternative modes/models of working	Doc28
3		W	L		R	Reinforce values which support sustainable consumption	A21/5
3		W	L	E		Networking and environmental education programmes	Doc2
3		W	L	E		Undertake research on consumption	A21/5
3		W	L	E		Tradition knowledge of indigenous people	Doc16
3		W	L	E		State of Environment reporting/monitoring	Doc36
3		W	L	E		Groundwater protection	A21/18
3		W	L	E		Alternatives to shifting cultivation	A21/11
3		W	L	E		Assessment of chemical risks	A21/19
3		W	L	E		Move information not people	Doc27
3		W	L	E		"Barefoot architects/builders"	Doc24
3		W	L	E		"Green, clean and efficient"	Doc27
3		W	L	E		Ecological city [re]building programmes	Doc25
3		W	L	T		Worker health and environmental safety	Doc1
3		W	L	T		Cultural deprivation/alienation	
3		W	L	T		Cultural heritage exploitation/destruction	Doc36
3		W	L	T		Promote integrated pest management	Doc27
3		W	L	T		Integrated farm management technologies	A21/14
3		W	L	T		Redefine "prosperity"	Doc13
3		W	L	T		Diversified production systems	A21/13
3		W	L	T		Farming households and technologies	A21/14
3	P			E	R	Ageing of world population	
3	P			E	R	Excessive population levels and growth	BR
3	P			E	R	**Demographic dynamics and sustainability**	A21/5
3	P			E	R	Exercise leadership through government purchasing	A21/5
3	P			E	R	Degradation from land-based activities	A21/17
3	P			E	R	Risk reduction programmes	A21/19
3	P			E	R	Limitations of treaty-making over "global commons"	Doc14
3	P			E	R	Establish UN Commission on Sustainable Development	Doc26
3	P			E	R	Inadequate international environmental law / court of..	Doc39
3	P			E	R	Sharing equitably the "burden of adjustment"	Doc24
3	P			E	R	Responsibilities arising from environmental ethics	Doc4
3	P			E	R	Environmental rights, proposed Charter of..	Doc30
3	P			E	R	Concept of environmental crime	Doc40
3	P			E	R	Global responsibilities of sovereign nations	Doc16
3	P			E	R	Respect and care for the community of life	Doc27
3	P			E	R	Make environmental policy and local objectives	Doc37
3	P			E	R	"Partners for Sustainable Development"	A21/27
3	P		T		R	Small island [developing] countries	Doc18
3	P		T		R	Proliferation of nuclear weapons	BR
3	P		T		R	Arms trade	
3	P		T		R	Competitive arms race/Arms culture	BR
3	P		T		R	Political	Doc15
3	P		T		R	North/south economic divide	Doc15
3	P		T		R	Economic	Doc15
3	P		T		R	Militarism / Fascism	Doc31
3	P		T		R	Capitalism	Doc11
3	P		T		R	[Neo-]Colonialism / Imperialism	Doc13
3	P		T		R	Socialism / Communism	Doc1
3	P		T		R	Strengthen participation and cooperation	A21/29
3	P		T		R	Deregulation	Doc2
3	P		T		R	"Fair trade" not "free trade"	Doc26
3	P		T		R	**Trade liberalization**	**A21/2**
3	P		T		R	**Dependency on trade**	**BR**
3	P		T		R	**Distribution / concentration of economic activity**	**Doc2**
3	P		T		R	**Responsible entrepreneurship**	**A21/30**
3	P		T		R	**Business/Industry community role**	A21/30
3	P		T		R	Decentralization policies for rural development	A21/14
3	P		T		R	Farmers' Rights to plant and animal genetic resources	A21/14

Figure 10

3	P		T		R	Market failure to price and to allocate scare resources	Doc2
3	P		T		R	Neglect of minor crops/varieties and animal breeds	Doc3
3	P		T		R	Guaranteed sustainable yields	A21/17
3	P		T		R	Exclusive economic zones	A21/17
3	P		T		R	Review/renegotiate GATT	Doc26
3	P		T		R	Transfer from military budgets	Doc27
3	P		T		R	Asymmetry in bargaining power	BR
3	P		T		R	Inappropriate/unfair terms of aid transfer	Doc2
3	P		T		R	Stagnating flows of aid	BR
3	P		T		R	Role of multilateral development banks and IMF	Doc24
3	P		T		R	**Land reform/Landless households**	BR
3	P		T		R	Self-seeking national sovereignty	BR
3	P		T		R	Uneven development	BR
3	P		T	E		Phase-out "black listed" toxics and hazardous substances	Doc30
3	P		T	E		"Cradle to grave" waste management	Doc27
3	P		T	E		Biological pest control methods	Doc27
3	P		T	E		Minimize waste / mazimize reuse and recyling	A21/21
3	P		T	E		Reduce consumption of materials and energy	Doc25
3	P	L				Open channels of information exchange	Doc7
3	P	L			R	Imbalance of power	Doc32
3	P	L			R	Ethnic/Racial	Doc34
3	P	L			R	Cultural/Religious/Ideological	Doc15
3	P	L			R	Chauvinism/Xenophobia	
3	P	L			R	Dominance/Hegemony	Doc12
3	P	L			R	Repression	Doc26
3	P	L			R	Social inequality/injustice	Doc15
3	P	L			R	Foreign intervention	
3	P	L			R	Incorporate demographic features into policy and plans	A21/5
3	P	L			R	Territorial/Boundary/Status disputes	Doc27
3	P	L			R	Abuse of power	Doc34
3	P	L			R	Nationalism / sovereign rights	Doc18
3	P	L			R	Ethnocentrism	
3	P	L			R	Tribalism	
3	P	L			R	Discrimination against minorities	Doc2
3	P	L			R	Racism	Doc15
3	P	L			R	Unconstrained political ideologies / unrepresentative government	Doc1
3	P	L			R	Advisors/advisory councils to governments	Doc13
3	P	L			R	Inadequate public participation/involvement	BR
3	P	L			R	Fundamentalism	
3	P	L			R	Youth coalitions / Use of voting power	Doc2
3	P	L			R	Appropriate education	Doc15
3	P	L			R	Cultural homogenization	
3	P	L			R	Illiteracy / Innumeracy	Doc1
3	P	L			R	**Science/technology community role**	A21/31
3	P	L			R	Conceptual fragmentation / Paradigm shift	
3	P	L			R	Environmental education (including values)	Doc27
3	P	L			R	Excessive specialization / Over-education	
3	P	L			R	Access to education	BR
3	P	L			R	**Education/training/public awareness**	A21/7 & 8
3	P	L			R	Improved education	BR
3	P	L			R	Deception (official/unofficial)	
3	P	L			R	Propaganda / Psychological warfare	
3	P	L			R	Use the university community as a role model	Doc7
3	P	L			R	Freedom of information/Censorship	Doc13
3	P	L			R	Corruption of meaning / Disinformation	
3	P	L			R	Role of universities	Doc7
3	P	L			R	Official secrecy	
3	P	L			R	Espionage/Surveillance	
3	P	L			R	Inadequate government foresight	BR
3	P	L			R	Sectoral fragmentation of responsibility	BR
3	P	L			R	Post-crisis and remedial policy-making	BR
3	P	L			R	Institutional fragmentation/rigidities	BR
3	P	L			R	Emergency unpreparedness	BR
3	P	L			R	Symptom-focused policies	BR
3	P	L			R	More use of regional agreements/protocols	Doc19
3	P	L			R	National consensus for capacity building	A21/37
3	P	L			R	Short-termism/Institutional myopia	BR
3	P	L			R	UN specialized agencies and related organizations	A21/39
3	P	L			R	Decline in multilateral cooperation	BR
3	P	L			R	Lack of accountability (cf multiple accountability)	
3	P	L			R	Strengthening and harmonization of criteria and regulation	A21/20
3	P	L			R	Uneven distribution of power and influence	BR
3	P	L			R	Institutional mechanisms	
3	P	L			R	High-level interagency coordination mechanism	A21/39
3	P	L			R	Organs, programmes, organizations of the UN system	A21/39
3	P	L			R	**Nongovernmental organizations**	A21/27
3	P	L			R	Enhance community consultation / participation	Doc27

Figure 10

3	P		L			R		Inadequate legislation		BR
3	P		L			R		People's global agenda for action and feedback system		Doc35
3	P		L			R		Organisational cooperation / networks		Doc2
3	P		L			R		Respect for cultural and ethnic quality / language		Doc29
3	P		L			R		Intersectoral linkage		Doc16
3	P		L			R		Lobbying		Doc14
3	P		L		E			Support active involvement in sustainable development		A21/25
3	P		L		E			Protection of the environment / promotion equitable society		A21/25
3	P		L		E			Neglect of environmental studies		Doc16
3	P		L		E			Bridging the data gap / accessibility		A21/40
3	P		L		E			Proposal: UN World Water Day		A21/18
3	P		L		E			Carrying capacity of earth / sustainability thresholds		Doc27
3	P		L		E			Recognise reciprocity between settlement and hinterland		Doc25
3	P		L	T				Relate demographic and environmental trends		A21/5
3	P		L	T				Improve communication and cooperation		A21/31
3	P		L	T				Diversification of trade cf one main export commodity		A21/2
3	P		L	T	E	R		Partner with other [education] sectors		Doc7
3	P	W				R		Inequitable land distribution / land reform		Doc2
3	P	W				R		Women-managed reproductive health care		BR
3	P	W				R		Marginalised peoples		Doc15
3	P	W				R		Vulnerable groups/social systems		BR
3	P	W				R		Access to credit and housing rights		Doc26
3	P	W				R		Dispute resolution		A21/26
3	P	W				R		Participation of women / universal suffrage		BR
3	P	W				R		Land tenure systems / property rights		A21/14
3	P	W				R		UNDP Human Freedom Index		Doc27
3	P	W				R		Socio-political instability/Insecurity		Doc27
3	P	W				R		Global governance versus self determination		Doc15
3	P	W				R		Planning family size		BR
3	P	W				R		Forced resettlement		
3	P	W				R		Competition/Rivalry		
3	P	W				R		Inappropriate social / fiscal policies		Doc2
3	P	W				R		Freedom of association/organisation		Doc1
3	P	W				R		Intimidation/Harassment		Doc34
3	P	W				R		Unsatisfactory standard of living		Doc2
3	P	W				R		Civil disobedience		Doc34
3	P	W				R		Structural violence		Doc27
3	P	W				R		Access to health care		BR
3	P	W				R		Social neglect / Deprivation		
3	P	W				R		Lack of uniform regulatory standards for food		Doc2
3	P	W				R		Infant mortality		Doc4
3	P	W				R		Immunization against main childhood diseases		Doc27
3	P	W				R		Social security/Old age security		BR
3	P	W				R		Religious/spiritual experience		Doc15
3	P	W				R		**Protection against communicable diseases**		A21/6
3	P	W				R		Urban noise pollution		A21/6
3	P	W				R		Drought unpreparedness		A21/12
3	P	W				R		Relief unpreparedness		A21/12
3	P	W				R		Human rights		Doc1
3	P	W				R		Grassroots/citizen action		Doc14
3	P	W				R		United but different / Diversity increases security		Doc29
3	P	W				R		Representation of overlapping constituencies		Doc29
3	P	W				R		Full partnership with indigenous peoples		NGO26
3	P	W				R		Delivery of assistance at the regional level		A21/37
3	P	W				R		Strenthen role of major groups		A2123
3	P	W				R		Intergenerational equity		Doc4
3	P	W				R		Recognise children's rights		
3	P	W				R		Aboriginal rights to lands and resources		Doc27
3	P	W				R		Rights of future generations		Doc35
3	P	W				R		Relative responsibility (based on wealth/capability...)		Doc20
3	P	W			E			Environmental refugees		BR
3	P	W			E			Rural depopulation		Doc27
3	P	W			E			Personal health / whole system health		Doc35
3	P	W			E			Homelessness / Forced migration		Doc2
3	P	W			E			Provide adequate shelter for all		A21/7
3	P	W			E			Epidemics / AIDS		Doc2
3	P	W			E			Local capacity-building and public participation		A21/18
3	P	W			E			Water resources conservation and quality protection and		A21/18
3	P	W			E			Extending waste service coverage		A21/21
3	P	W			E			"Healthy Cities" movement		Doc27
3	P	W			E			Foot and bicycle versus automobile		Doc25
3	P	W			E			Managing settlements in disaster-prone areas		A21/7
3	P	W			E			Indoor air pollution		A21/6
3	P	W			E			Urban air pollution		A21/6
3	P	W			E			Waste production, recycling and disposal		Doc27
3	P	W			E			Small urban improvement works by NGOs		Doc36
3	P	W		T				Disasters / accidents		BR

Figure 10

3	P	W		T				Economic vulnerability of underdeveloped world	Doc16
3	P	W		T				Strengthen role in sustainable/equitable development	A21/24
3	P	W		T				Subsistence farmers	BR
3	P	W		T				Volunteerism	Doc2
3	P	W		T				Migration to cities / Urban drift	BR
3	P	W		T				Nuclear accident	Doc27
3	P	W		T				Excessive strain/stress	
3	P	W		T				Unemployment/Underemployment	BR
3	P	W		T				Forced labour/slavery/military service	Doc34
3	P	W		T				Exploitation	
3	P	W		T				Occupational hazards	
3	P	W		T				Collective bargaining	Doc1
3	P	W		T				International trade union solidarity	Doc1
3	P	W		T				Chemicals in food	A21/19
3	P	W		T				Livelihood/ Quality of life	Doc27
3	P	W		T				Relationship between poverty and sustainable livelihoods	A21/3
3	P	W		T				Worker participation in environmental affairs	Doc1
3	P	W		T				Role of small primary producers	A21/32
3	P	W		T				Strengthen role of farmers	A21/32
3	P	W		T				Food production/security	BR
3	P	W		T				Cooperatives of small scale farmers	Doc2
3	P	W		T				Openness / Dialogue with local community	Doc5
3	P	W		T				Unproductive subsistence agriculture	
3	P	W		T				Growing illegal drugs	Doc36
3	P	W		T				"People-centred development"	Doc12
3	P	W		T		R		Equity of employment / wages	Doc2
3	P	W		T		R		Role of ILO / international standard setting	Doc1
3	P	W	L					Traditional biases against girls and women	Doc27
3	P	W	L					Student/school activities	Doc2
3	P	W	L					Misunderstanding of women's needs	BR
3	P	W	L					Cross-cultural internships/exchange	Doc2
3	P	W	L					Availability of sex education/contraception/abortion	Doc4
3	P	W	L					Introduction of new values	Doc2
3	P	W	L					Multiple roles (producer, mother, culture, community...)	Doc34
3	P	W	L					Combat drug trafficking and abuse	Doc34
3	P	W	L					**Indigenous** people	A21/26
3	P	W	L					Raise awareness of demography to sustainable development	A212/5
3	P	W	L					Forced assimilation	
3	P	W	L					Promote human resources development	A21/5
3	P	W	L					Nomads	BR
3	P	W	L					Recognition of special environmental relationship	A21/26
3	P	W	L					Protection of traditional rights / compensation	BR
3	P	W	L					Apathy / Lack of political will / Scepticism	Doc2
3	P	W	L					Worker cooperatives	Doc34
3	P	W	L					Lack of vision / Lack of awareness	Doc15
3	P	W	L					Indifference to suffering	
3	P	W	L					Ethnic disintegration	
3	P	W	L					Relationship / Belongingness / Roots / Community	Doc2
3	P	W	L					Ethical decay / Moral imperfection	
3	P	W	L					"Now or never"/disaster mentality	Doc17
3	P	W	L					Provide information on "ecowise consuming"	Doc35
3	P	W	L					Alternative livelihood systems	A21/12
3	P	W	L					Secularization / Loss of faith	
3	P	W	L					Quality of life / sustainable development indicators	Doc27
3	P	W	L					Role of exhibits and display centres	Doc27
3	P	W	L					Role of visual arts & artistic communication	Doc27
3	P	W	L					Cultural invasion/imperialism	
3	P	W	L					Public education on sustainability issues	Doc7
3	P	W	L					Self-help training	A21/12
3	P	W	L		E	R		Assess implications of current population growth	A21/5
3	W		T	E				**Solid wastes and landfill**	A21/21
5		W	L	T	E	R		Clean production, products and services	Doc1
5		W	L	T	E	R		Profligacy / Overconsumption / excessive materialism	BR
5		W	L	T	E	R		**Changing consumption patterns**	A21/5
5		W	L	T	E	R		Biotechnology management	BR
5		W	L	T	E	R		Conserve life-support systems, vitality and diversity	Doc27
5		W	L	T	E	R		Minimize the generation of wastes	A21/5
5	P		L	T	E	R		Establishment of appropriate regulations and standards	BR
5	P		L	T	E	R		Hasten Global Convention on Climate Change	Doc22
5	P	W		T	E	R		War (nuclear, biochemical)	BR
5	P	W		T	E	R		Individual violence (assault, torture)	Doc34
5	P	W		T	E	R		War (civil, regional)	BR
5	P	W		T	E	R		Unsustainable military expenditure	BR
5	P	W		T	E	R		Environmental insecurity	BR
5	P	W		T	E	R		Basic welfare sufficiency needs	
5	P	W		T	E	R		Workplace audits: environmental health and safety	Doc1
5	P	W		T	E	R		Protectionism / Market access	BR

5	P	W		T	E	R	Improving quality of growth / Unbalanced economic growth	BR
5	P	W		T	E	R	Greenhouse gases / climate change / global warming	BR
5	P	W		T	E	R	Enhancing/overexploitation of non-renewable resources	BR
5	P	W		T	E	R	Water resource shortages/degradation	A21/18
5	P	W		T	E	R	Biodiversity / Genetic erosion	BR
5	P	W		T	E	R	Ecosystem degradation and stress	BR
5	P	W		T	E	R	Ratify conventions on nuclear accidents/toxic wastes	Doc27
5	P	W		T	E	R	Aggression/Conflict	Doc31
5	P	W	L		E	R	Increasing environmental risk (eg skin cancer, toxicity)	Doc2
5	P	W	L		E	R	Conservation of genetic resources	Doc3
5	P	W	L		E	R	**Sustainable human settlements**	A21/6
5	P	W	L		E	R	Ethical codes, rights and responsiblities	
5	P	W	L	T		R	Women's role	BR
5	P	W	L	T		R	**Youth** and children's role	A21/25
5	P	W	L	T		R	Social/Family tensions/unrest/breakdown	BR
5	P	W	L	T		R	Revival of economic growth / Economic growth	BR
5	P	W	L	T		R	Underdevelopment / UNDP Human Development Index	Doc27
5	P	W	L	T	E		Man-made / Accidents	Doc39
5	P	W	L	T	E		Natural/Asteroids	Doc20
5	P	W	L	T	E		Domestic and resource managers (fuel wood, food etc.)	Doc2
5	P	W	L	T	E		Demand for non-essentials	Doc35

INTER-SECTORAL DIALOGUE AND SUSTAINABLE DEVELOPMENT

METAPHORS

CONVEYING EARTH SUMMIT INSIGHTS

Challenge

Information overload: One of the characteristics of the Earth Summit in Rio de Janeiro will be the quantity of information, whether governmental or nongovernmental -- and whether in the form of position papers, background documents, handouts, reports or declarations. Both policy-makers and the media will be subject to an unusual degree of information overload. Much of the information will be underused, both at the event and in its aftermath.

Shifting awareness: The real test of the Earth Summit, as many have suggested, will however lie in its ability to "shift the level of awareness". Without a doubt, information is necessary to this process. But the shift will be anchored and given credibility by those few images which can give coherence to the complex insights that emerge to interrelate fruitfully the many powerfully conflicting interests.

Beyond consensus: Much hope is being placed in the emergence of a new consensus at the Earth Summit. It is readily forgotten that consensus is easiest when it is superficial. Beyond such consensus there is the continuing reality of the tensions between groups with incompatible goals and mind-sets. It is the imagery that reconfigures that reality which will open opportunities for appropriate action.

Penetrating power of imagery: It is the few key images -- "worth a thousand words" -- which will focus an imaginative approach to the wealth of information. It is around them that the media can build stories meaningful to a wider audience. It is these images which ensure that the insights are carried where information cannot penetrate -- whether into the interstices of industrialized societies or to the far corners of the Earth. It is the images which will be remembered
long after the Earth Summit is forgotten by all but its participants.

Clues

Meaning of "insightful imagery": To fulfil the function indicated above, such imagery needs to go beyond "description" or "prescription", beyond "naming problems" or "envisaging solutions", and beyond "blaming" or "exhorting". Clues to the "Factor X" which can catalyze more fruitful responses may perhaps be found in one or more of the following:

- **Parables** ... for those of religious inclination, what are the "parables" of Rio?
- **Learning pathways** ... for educators, what are the "learning pathways" and "journeys" opened up by Rio?
- **Wisdom stories** ... for those aware of the power of the story teller, what "stories" or "fables" can carry the insights of Rio?
- **Case studies** ... for those with a management orientation, are there "case studies" evoking the policy dilemmas of Rio?
- **Proverbs** ... for those recognizing their power, what are the "proverbs" which can guide initiatives emerging from Rio?
- **Myths** ... for those touched by the power of myth, what "myths" or "legends" capture the challenges of Rio?
- **Metaphors** ... for those challenged by metaphor what are the "metaphors" which reconfigure the challenge of Rio?

On the one hand, we seem to need "catalytic convertors" for our "exhausted imagination". But on the other, our cultural heritage constitutes a huge "gene-pool" of the imagination on which we can draw in response to the planetary dilemma.

Criteria

Catalytic imagery: Care must however be taken in finding appropriate images. Superficial images will not evoke new ways of acting. What indeed are the "images" which will catalyze more sustainable forms of action -- evoking and guiding appropriate programmes? How can such images best capture and carry the insights emerging from the sectoral and inter-sectoral concerns of the Earth Summit?

Multi-level imagery: The art of appropriate imagery is to permit people to derive different levels of significance from it (by unpeeling it like an onion). At its most superficial level it may offer succinct explanations, or it may provide a symbol or slogan exhorting political action. Much more is required of the imagery from Rio. Somehow it must also carry insights into the nature of the appropriate balance between conflicting priorities. But above all it must be the catalyst for creative insight into the way forward, both for the individual and for groups -- whether in policy-making or in concrete action programmes.

Complementary imagery: The Earth Summit is being organized in terms of 3 working groups (Land, etc; Oceans, etc; and Institutional mechanisms) and intends to have 6 outcomes (Agenda 21, Earth Charter, Conventions, Technology Transfer, Financial Resources, and Institutions). Imagery is required to carry the essence of each of these initiatives and the shift in attitude required to empower them. But that imagery must also render comprehensible the essential complementarity between these initiatives. Much more is therefore required than the sort of unrelated poster images traditionally produced by the different Specialized Agencies of the United Nations.

MESHING IMAGINATIVE VISION AND POLICY IMPLEMENTABILITY

Note on the challenging dilemma of an imaginative response to the policy implications of sustainable development -- using metaphor as a vital cognitive interface.

0. Introduction

This note assumes recognition of the complexity of the policy challenges of sustainable development, the need for "new thinking" and the importance of more imaginative approaches to policy-making and organization. The implications of these issues for the theme of this note have been explored in the section on metaphor in the *Encyclopedia of World Problems and Human Potential* (1991).

1. Beyond "tinkering" and crisis management

There will continue to be many situations in which it appears expedient to respond to priorities with the skills of crisis management. There will always be opportunities for reconfiguring organizational structures and lines of communication so as to suggest that adequate response is being made to the problem dynamic -- at least in the shorter term.

As many acknowledge, more is however required. This is a real challenge to the imagination to articulate new visions of appropriate order and of longer term significance.

2. The search for new forms of order

Do the imaginative possibilities evoked in the search for new forms of order reflect a level of richness and complexity appropriate to the emerging social reality? It can readily be argued that much of what is proposed is "more of the same", offering "solutions to yesterday's problems".

Much of such thinking constitutes a "linear" extrapolation from existing approaches to organization and policy design. Despite pleas for "holistic", "quantum leaps" towards more "integrative" approaches, these remain fuzzy in detail, however attractive and appropriate they may appear in outline.

3. Beyond "boring" possibilities: the evocative constraint

It is increasingly clear that the emerging possibilities can only have a chance of succeeding if they can be adequately articulated through the media. This means more than the ability to "package" the possibility in terms which are comprehensible. Many comprehensible policies are simply boring and, as such, alienating.

Unless the new approaches are adequately evocative, triggering the imagination and a sense of participation, they will of necessity be inappropriate. Appropriate policies call for a new form of identification on the part of those whom they touch.

4. Conceptual scaffolding in support of imaginative proposals

Complex building designs require scaffolding to allow the complementary structural elements to be held in position before they can counter-balance the tensions and stresses they engender. It can be argued that imaginative policy proposals require a form of "conceptual scaffolding" to juxtaposition their complementary elements -- before they can be adequately "locked into place" by a comprehension of the whole (a "global" comprehension).

Such conceptual scaffolding is required to anchor subtle possibilities crafted by the collective imagination -- and to render them communicable and credible. It is especially necessary given the degree of opposition between interests representing vital, and complementary, concerns in society.

5. Scaffolding possibilities from high technology and traditional wisdom

It has been argued that current policy-making language draws upon very simple forms of conceptual scaffolding. As a result only simpler forms of policy design are rendered possible. It can be readily argued that these are inappropriate to the complex challenges of the present and the future.

Ironically, traditional wisdom from many cultures offers rich patterns (whether from symbolism, mythology or folk tales) that can be used to interrelate complementary structural elements -- and ensure their widespread comprehensibility. This possibility remains to be explored. The ability to articulate policies using such patterns may prove vital to the comprehensibility and credibility of new policies appropriate to such cultures. The failure to consider this dimension is a major factor in the "inappropriateness" of Western management styles

in such cultures.

The current dramatic evolution of computer technology and software offers another form of scaffolding. Beyond the bar charts and pie charts of the "business graphics" basic to most current forms of policy-making, other forms of graphics are emerging. These forms blend image and data in more dynamic and complex ways. As such they offer new vehicles for the imagination and its articulation. Such technology can be used to give form to hitherto unforeseen conceptual structures of great richness. And the technology can help to render them comprehensible. The relevance to the policy community remains to be explored. Ironically, such technology will be used for entertainment before its wider relevance is investigated.

6. The chasm between imaginative possibilities and policy realities

There is thus a tragic "gap" between imaginative possibilities and implementable policies. Existing policies, with all their acknowledged defects, have had the advantage of having been exposed to articulation into programmatic detail. In fact it is only hindsight on this implementation in practice which has highlighted their defects.

Imaginative possibilities, however attractive they may appear at first sight, do not inspire equivalent confidence concerning their satisfactory implementability.

New tools are required to bridge this chasm. Such tools must offer the means of both articulating complexity and also of rendering it comprehensible. This is the cognitive challenge of respecting the "local" focus required for implementability, whilst providing a "global" context necessary for comprehensibility.

7. Metaphor as a vital cognitive interface

Many recent studies suggest that metaphor plays a fundamental cognitive role in giving form to new varieties of understanding. It has also been demonstrated that **people and cultures can become entrapped in simplistic metaphors that are inadequate to the challenges that they face.**

It is noteworthy that metaphor is used in many cultures and at all levels of society -- and especially by managers and politicians. It is doubtful whether modern management could function without the use of military and sporting metaphors. It could be argued that the current rich use of metaphor in slums is a means through which people reconfigure their cognitive environment to ensure their psychic survival. Metaphor is also the traditional vehicle through which the elders of a village or tribe articulated options in the face of challenges -- drawing upon the wisdom of their culture. Many advances in computer software design are explicitly made in terms of new "metaphors". Metaphor would therefore appear to be a major unexplored resource through which richer and more complex policies can be articulated and rendered comprehensible.

8. Policy implications

There is no lack of imagination or of visions of new approaches to social organization. On the other hand, there are well-defined constraints on what appears possible at any given time, given the current thinking and procedures which have proved their worth over the years.

If new forms of social order are to emerge in response to the challenge of sustainable development, there is a need to break through the "imagination barrier" imposed by the use of simplistic conceptual scaffolding. There is a need to question the adequacy of the metaphors used to articulate existing policies -- and to search for richer, more complex and more dynamic metaphors. It is richer metaphors which will enable the articulation of more complex policies appropriate to the challenge of sustainable development.

The success of the United Nations "Earth Summit" (Rio de Janeiro, 1992) may well not be measured in terms of specifics on which compromises are agreed. These will be quickly forgotten except by specialists. **If there is to be the "fundamental shift in attitude" so frequently called for, this can only be triggered and articulated by new and richer metaphors.** It is such metaphors which will give coherence to emerging specific policies of appropriate complexity. It is such coherence which will determine whether the policies are accepted by wider publics and interest groups.

Great care should be devoted to exploring richer metaphors through which to give a sense of coherence and pattern to the variety of complementary interests represented at the Earth Summit. It is these metaphors which could prove to be the most important outcome of the event -- and of most relevance to the dilemma of sustainable development.

APPROPRIATE METAPHORS OF SUSTAINABLE DEVELOPMENT

1. Reframing the challenge of sustainable development
In response to the challenge of sustainable development, the potential of metaphor may be used to redefine that challenge. In both conceptual and policy terms it may be conceived as being one of designing metaphors to give form to a "sustainable ecology of development policies"(Judge, 1989).

In relation to the issues raised by Srivastva and Barrett (1988) and Barrett and Cooperrider (1989), it could prove appropriate to use richer metaphors to integrate (and render comprehensible as sets), the individual metaphors which govern the action of groups over time, or which govern opposing factions during a given period.

2. Levels of relationship between competing policies
A simplistic metaphor of the relationship between "environment" and "development" is that of "having one's cake and eating it too". It makes a critical difference what metaphor is used, whether implicitly or explicitly, to view the relationship between competing policy concepts:

(a) From a particular concept: From any given policy concept other concepts can only be viewed as threatening since that concept provides no sense of context, other than itself. "Enemy" is then an appropriate metaphor. Such defensive postures are not uncommon in policy forums. "Sustainable development" can be perceived in these terms with any other policy perspective as the enemy.

(b) As a group of competing concepts: Here context is provided by the sense of a "marketplace of ideas" in which the most appropriate products survive, if the market mechanism works satisfactorily. A more powerful metaphor is that of the "gladiatorial arena", in which one concept strives to emerge triumphant at the expense of the others, possibly learning from them in order to do so. Metaphors of this type, including those based on competitive sports, are widely used as noted above. "Sustainable development" can then be perceived as a set of competing concepts from which the most appropriate will emerge triumphant -- as the ideal result of a policy forum.

(c) As a homeostatic ecology of concepts: The two previous perspectives can however be perceived as subsystems or processes within an "ecology" of policy concepts. Here there are a variety of relationships between alternative policies (including "predation", "parasitism", and "commensalism"), but these function such as to maintain a balance between the different "species" of policy within the ecology (see following note). "Sustainable development" can then be perceived as a stewardship function of ensuring the stability of an ecology of policy concepts in which each fulfils particular developmental functions under particular conditions and there is a niche for developmental policies of all sizes and orientations.

(d) As an evolving ecology of concepts: Of greater interest is the possibility of perceiving "sustainable development" as an evolving ecology of developmental policies. Here there is a maintenance dimension corresponding to a homeostatic ecology as well as a longer-term evolutionary dimension as the various species adapt and evolve to emerging conditions, with new species emerging as the creative result of mutation processes.

3. Reframing the relationship between competing policies
If "sustainable development" is associated with metaphors of the first two kinds, its long-term value is questionable. If it can be perceived through metaphors of richness equivalent to the last two kinds, it can perform the integrative function necessary to incorporate both the policy priorities of "development" (in its many forms) and of "environment" (in its many forms). Note that only the last kind encompasses the continuing proliferation of alternative interpretations through a recognition of "speciation" processes.

There is an attractive conceptual elegance in endeavouring to use the natural environment as a metaphoric map to provide conceptual handles on the many policy dimensions of sustainable development. It suggests the need for a certain isomorphism between the pattern of development policies and the structure of the natural environment within which (and in response to which) they are implemented (Judge, 1984c). The ecological metaphor is explored in a following note.

4. Implications for policy forums
In any policy forum the question may then be asked as to the nature of the metaphor used to sustain the relationship between the range of policy perspectives represented. If that metaphor is not of requisite variety any result of such a forum can only be of value limited in time and space.

The insight of "sustainable development" cannot be satisfactorily embodied in a single policy or set of policies if no coherent context is provided for those who have to understand or approve it. Whatever the multiple, alternative or competing articulations of "sustainable development" at the conceptual or policy level, the insight integrating their dynamic relationships can only be adequately communicated at the metaphoric level.

If new approaches cannot be effectively implemented so as transform the functioning of international meetings, then they are also of little significance outside that arena. It is for this reason that challenge of transformative conferencing (see Section TC) constitutes an acid test for new proposals.

5. Implications for human development
In the light of the challenge of sustainable development, the question might well be asked as to how many metaphors people need to ensure their survival -- and especially their psychological survival? Is there a problem of metaphor impoverishment and deprivation associated with both ineffectual policies and individual alienation?

Is it possible that a metaphoric measure is necessary as a complement to the questionable value of current social indicators and the questionable educational role played by the exclusive use of the IQ measure of intelligence? To the extent that we ourselves are metaphors, do we need to develop richer metaphors through which to experience and express our self-image?

6. Implications for social development
If individual learning is governed by metaphors (as a number of studies indicate), how is it that metaphors governing societal learning and development have not been studied? In the light of Andreas Fuglesang's severe criticism of western assumptions concerning communication in developing countries (1982), would it not be more useful to conceive of different cultures as operating within different root metaphors?

Is it possible that social transformation is essentially a question of offering people (and empowering them to discover from their own traditions) richer and more meaningful metaphors through which to live, act and empower themselves?

ENHANCING POLICY THROUGH POWERFUL METAPHORS

To a large extent the patterns of understanding appropriate to social innovations for global management cannot be effectively presented in the conventional linear mode (of which this text is an example). It is indeed possible to present a highly articulated argument, but the exercise bears some resemblance to the classic attempt to describe a spiral staircase verbally. The description, although exact, is not meaningful.

To be consistent with the argument, the kinds of insights to be gained from metaphors are presented using selected metaphors as examples of relevance to global management. Three such metaphors are presented below. A fourth, based on traffic, is presented in the following note. Section MP represents a sophisticated pattern of metaphor(s based on building design. Section TP may also be considered as an exercise in metaphor development to clarify issues of sustainable policy cycles.

1. Natural ecosystems as a source of policy insights
It is unfortunate that those claiming to be most sensitive to the need for sustainable development, namely the "greens", are unable to organize policy forums which reconcile policy differences in a significantly new way. It is worth exploring whether they at least could make creative use of an ecological metaphor to integrate their factions in a manner from which others could benefit. However, it is especially ironic that they seem to have felt no need to apply insights from their extremely valuable ecological thinking to new understanding of their own policy processes.

(a) **Interacting species:** Any policy forum constitutes a social system. Such a social system can be likened to an ecosystem with a range of interacting species. Each policy faction can be perceived as a species with varying numbers of members. The relationship between such factions can be observed in the light of the ways in which species may interact (symbiosis, commensalism, parasitism, allopathy, synnecrosis, amensalism, predation, allotropy, or none). It is clear that some policies are "predatory" and that complementary policies may be perceived as "symbiotic". Such relationships may effectively vary over time. Predation only takes place when the predator needs to eat. At other times the relationship is "peaceful".

(b) **Food webs:** A major ecological insight is that every species is some other species "lunch". It is not useful to think in terms of "good" species and "bad" species -- although members of any given species are obliged to perceive those that threaten them as "bad" to give focus to their fight for survival. Nor is it helpful to aim naively to have only symbiotic relationships between species -- eliminating the carnivores. Species are woven together in food chains. It is not helpful to focus attention solely on the top of any food chain (however magnificent the species there may appear) -- it is the food chain as a whole that needs to be understood. An endangered species is an important indicator of dangers to the ecosystem as a whole. On the other hand the cyclic rise and fall in numbers of particular species under different environmental conditions is a dynamic to which a resilient ecosystem responds appropriately -- any such rise or fall may be neither "good" nor "bad".

(c) **Endangered ecosystems:** In this light, a policy is naturally experienced as "bad" by other policies to which it is a threat. It is in turn experienced as "bad" and "good" by other policies. This level of perception does not help to understand the dynamics of the ecosystem of policies. At the ecosystemic level the issue is whether the numbers and dynamics of the species are destabilizing the ecosystem irreversibly and in what way. Excessive proliferation of any species, "swarming", endangers the ecosystem. This suggests that the predominance of any particular policy might have disastrous consequences. The health of the ecosystem lies in the healthy relationship between the species, even though this involves many predatory relationships.

(d) **Shifting the level of debate:** Through this metaphor, the level of debate is shifted. The natural tendency of any species to proliferate must be constrained by other species. The necessary "consumption" of some "innocent" policy by "predatory" interests needs to be explored in this light, as with the "regrettable decline" of other "predatory" policies for lack of resources. Any short-sighted effort to prevent the "nice" herbivores from being so "cruelly" consumed by the "nasty" carnivores invokes the need to "cull" their numbers periodically or prevent them breeding.

(e) **Enriching the ecosystem:** In these terms it is possible to shift the debate from consideration of species to consideration of whether the ecosystem could be usefully enriched: which ecosystems are "unhealthy", when should swamps be drained and arid zones "irrigated" ? The difficulty here is that with the prevailing emphasis on monoculture, there is little shared understanding of how to diversify an ecosystem in ways such as those recommended by the Permaculture Movement (**). It is no wonder that many policy initiatives amount to a form of policy monoculture, fertilized by inappropriate use of resources and leading to pollution of the food chain.

(f) **Designing systems of policies:** An ecosystem calling for enrichment might be one which had been degraded by excesses of the past. The system of policies currently prevailing there would need to be redesigned. But note that it is the system of policies that needs to be redesigned, which does not imply that some single policy should prevail -- and the design needs to be an organic rather than a mechanistic one. It may mean that new "predators" should be introduced and that some population of "herbivores" should be cut back. Enrichment may involve introduction of many smaller species -- a reminder that the answer does not necessarily lie in mega-policies at the top of the food chain.

(g) **Constraining species of policy:** It should be noted that this metaphor does not suggest a form of policy relativism -- a tolerance of all policies. It suggests that any policy is dangerous in excess and needs counter-acting policies to contain. It suggests that whether a policy has a function depends on the ecosystem and that many policies may have a function within a policy ecosystem of a variety necessary to make it sustainable. This may mean that some policies can be usefully perceived as "prehistoric" but it does not deny that some prehistoric species (such as sharks) may still have a function, perhaps only in certain special niches.

Within this metaphor the many development policies are represented by species, each contributing to the health of the ecosystem. That ecosystem can be enriched by introducing new species to improve its sustainability. But members of those species, in the form of particular programmes and proposals may have a "life and death" relationship to one another -- reflected in such common phrases as "they killed our programme" or "they got our budget allocation".

Both in a policy forum and in the organized initiatives to which it gives rise, the information system needs to be designed to facilitate initiatives which sustain the ecosystem as a whole and which contribute to its redesign. In this sense the system of development policies should have a self-organizing dimension. Such an information system is in many ways a reflection of the food chain. Through it meaning is passed to nourish initiatives at different levels.

2. Crop rotation as a metaphor for a sustainable cycle of policies
Linear thinking encourages adoption of policies without thought to the nature of the policies which will have to follow them to remedy the havoc they cause, however incidentally. Given the many cycles essential to the coherence of the natural environment, a non-linear approach would suggest the exploration of "policy cycles" -- within which any "linear" policies are perceived as phases.

In searching for appropriate metaphors to illustrate the need for cycles of policies, there is a certain appropriateness to using a process which has traditionally been considered basic to sustaining the productivity of the land, namely crop rotation. The rotation of agricultural crops is an interesting "earthy" practice to explore in the light of the mind-set which it has required of farmers for several thousand years.

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Crop rotation is the alternation of different crops in the same field in some (more or less) regular sequence. It differs from the haphazard change of crops from time to time, in that a deliberately chosen set of crops is grown in succession in cycles over a period of years. Rotations may be of any length, being dependent on soil, climate, and crop. They are commonly of 3 to 7 years duration, usually with 4 crops (some of which may be grown twice in succession). The different crop rotations on each of the fields of the set making up the farm as a whole constitute a "crop rotation system" when integrated optimally. Long before crop rotation became a science, practice demonstrated that crop yields decline if the same crop is grown continuously in the same place. There are therefore many benefits, both direct and indirect to be obtained from good rotational cycles.

(a) Control of pests: With each crop grown the emergence of characteristic weeds, insects and diseases is facilitated. Changing to another crop inhibits the spread of such pests which would otherwise become uncontrollable.

(b) Maintenance of organic matter: Some crops deplete the organic matter in the soil, other increase it.

(c) Maintenance of soil nitrogen supply: No single cropping system will ordinarily maintain the nitrogen supply unless leguminous crops are alternated with others.

(d) Economy of labour: Several crops may be grown in succession with only one soil preparation (ploughing). For example: the land is ploughed for maize, the maize stubble is disked for wheat, then grass and clover are seeded in the wheat.

(e) Protection of soil: It was once believed necessary to leave land fallow for part of the cycle. Now it is known that a proper rotation of crops, with due attention to maintaining the balance of nutrients, is more successful than leaving the land bare and exposed to leaching and erosion.

(f) Complete use of soil: By alternation between deep and shallow-rooted crops the soil may be utilized more completely.

(g) Balanced use of plant nutrients: When appropriately alternated, crops reduce the different nutrient materials of the soil in more desirable proportions.

(h) Orderly farming: Work is more evenly distributed throughout the year. The farm layout is usually simplified and costs of production are reduced. The rushed work characteristic of haphazard cropping is avoided.

(i) Risk reduction: Risks are distributed among several crops as a guarantee against complete failure.

There is a striking parallel between the rotation of crops and the succession of (governmental) policies applied in a society. The contrast is also striking because of the essentially haphazard switch between "right" and "left" policies. There is little explicit awareness of the need for any rotation to correct for negative consequences ("pests") encouraged by each and to replenish the resources of society ("nutrients", "soil structure") which each policy so characteristically depletes.

There is no awareness, for example, of the number of distinct policies or modes of organization through which it is useful to rotate. Nor is it known how many such distinct cycles are necessary for an optimally integrated world society in which the temporary failure of one paradigm or mode of organization, due to adverse circumstances (disaster), is compensated by the success of others. It is also interesting that during a period of increasing complaints regarding cultural homogenization ("monoculture"), voters are either confronted with single-party systems or are frustrated by the lack of real choice between the alternatives offered.

There is something to be learnt from the mind-sets and social organizations associated with the stages in the history of crop rotation which evolved, beyond the slash-and-burn stage, through a 2-year crop-fallow rotation, to more complex 3 and 4-year rotations. Given the widespread sense of increasing impoverishment of the quality-of-life, consideration of crop rotation may clarify ways of thinking about what is being depleted, how to counteract this process, and the nature of the resources that are so vainly (and expensively) used as "fertilizer" and "pesticide" to keep the system going in the short-term. The "yield" to be maximized is presumably human and social development. The concern is whether current approaches are a dangerous "policy monoculture" trap.

3. Configuration of incommensurable policies as a resonance hybrid

In a world community characterized by distinct and often opposing views, the possibility of interrelating them so as to form the basis for an overarching structure, without denying the distinctness of those structures, can be usefully illustrated by a concept from chemistry. Chemical resonance hybrids are in fact basic to the molecular structures characteristic of living organisms.

Some chemical molecules cannot be satisfactorily described by a single configuration of bonded atoms. The theory of resonance is concerned with the representation of such molecules by a dynamic combination of several alternative structures, rather than by any one alone. The molecule is then conceived as "resonating" among the several structures and is said to be a "resonance hybrid" of them. The classic example is the benzene molecule (see Figure 2) with 6 carbon atoms. This is one of the basic components of many larger molecules essential to life. Its cyclic form only became credible when Kekulé showed that it oscillated between structures A and B. Linus Pauling later showed that it in fact alternates between all five forms above (and as such requires less energy than for any one of them).

This insight could be used in designing, describing or operating organizations, especially fragile coalitions or volatile meetings, and in giving form to complex agreements and policy configurations which would otherwise not exist. It may provide a key to the successful "marriage" between hierarchies and networks, or between centrally-planned and market-economies. It could also be used to interrelate alternative definitions (or theories, paradigms, policies, etc), especially where none of them is completely satisfactory in isolation. The underlying significance -- in contrast to the essentially unsustainable significance of each in isolation -- emerges through the resonance between the set of alternatives.

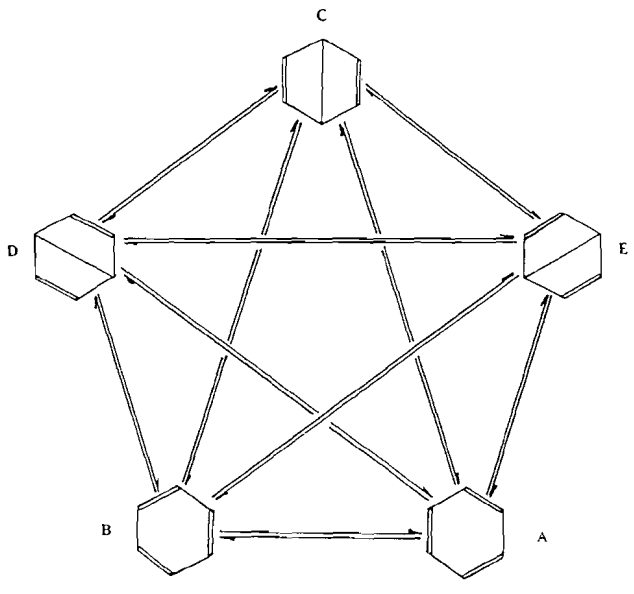

Figure 2: Resonance hybrid: alternation between distinct structures

REFRAMING PROBLEMS AS METAPHORS

It is useful to challenge the thinking trap of "problem-solving". The approach to problems may then be reframed by asking what a problem is "trying to tell us" -- or, better still, is the problem as understood in effect a metaphor for something we would prefer not to understand? From this perspective "institutionalized" problems may in effect be a sort of metaphorical euphemism -- a package which it is better not to unwrap. Problems are not only nasty in themselves, they are also nasty in what they imply about ourselves -- however saintly we might wish to appear as disinterested change agents, victims or innocent bystanders. Consider the following:

1. Substance abuse (including drugs and alcohol)
Is it too trite to suggest that substance abuse is signalling a desperate need for different modes of thinking, feeling and experience than those sanctioned by a society governed by antiquated thinking patterns which have been only too effectively institutionalized in "acceptable" modes of work and leisure? Again, since many in key positions in such institutions also use drugs or alcohol "to relax", what should be learnt from the level of stress -- and schizophrenia -- at which the prevailing mode of thought is requiring them to function? Is substance abuse not effectively offering a remedy for the imaginal deficiency and mechanistic patterning characteristic of "acceptable" individual and collective behaviour? And consequently would not substance abuse become less necessary if society acknowledged more imaginative opportunities? What is the incidence of substance abuse in cultures whose languages make very extensive use of metaphor? Too what extent is it useful to perceive our relation to the prevailing thinking pattern as a form of "addiction" -- a habit that we do not know how to kick?

2. Unemployment (including underemployment and absenteeism)
It is no longer fruitful to argue that a significant proportion of unemployment is simply due to laziness, reluctance to learn new skills, lack of initiative or lack of opportunities. Is it possible that the prevailing mode of thinking is inhibiting peoples ability to imagine new forms of action of value to others, encouraging people to perceive existing employment opportunities as worthless both to themselves and to others, as well as impoverishing the manner in which people consider what to do with their lives? Is unemployment telling us that much of the work on offer is not worth doing -- and that much which is done is pointless? This would certainly be consistent with many criticisms of the consumer society and of industrial exploitation of the environment. Perhaps it is also saying that what we value doing, or are obliged to do, is not appropriately valued (as "work") in an economic system governed by an inadequate mode of thinking. This would certainly be consistent with the debate about the economic value of housework. Contrasting employment with recreation (as opposed to unemployment) is somewhat ironic in that unimaginative leisure opportunities are increasingly incapable of offering "re-creation". Is the level of unemployment also indicating that we really do not know to what society could usefully devote its human resources? Worse still, is it indicating that we have dissociated the challenges to human society from opportunities for "work" because of the way such challenges are perceived within the prevailing pattern of thinking?

3. Ignorance (including functional illiteracy)
Is the level of ignorance, even in industrialized countries, telling us that much of the knowledge on which that judgement is based is not worth learning? This concern has certainly been expressed in debates about existing curricula. Is it suggesting that for their psychic survival people are educating themselves along pathways which are not considered meaningful, or indicative of intelligence, within the prevailing pattern of thinking? This is suggested by the immense resources devoted to music and to "alternative" therapies and belief systems. Is it suggesting that people feel deprived of an imaginal education, faced with the formal (even rote) learning so frequently considered most appropriate (especially "to the needs of industry")? This is suggested by the enthusiasm for graphics, cartoon books, science fiction, fantasy and the archetypal portrayal of cult figures in music. Is our concern with the ignorance of many concealing the fact that those with most expertise and power are really quite ignorant about how to navigate through current and future crises?

4. Homelessness
Is the lack of appropriate shelter, even in industrialized countries, indicating that with our current pattern of thinking we are ineffective in our ability to provide, construct, or acquire cognitive and affective frameworks to shelter us appropriately from the turbulence of the times? This would be consistent with concerns about alienation in modern society. It would also follow from the recognition that many traditional frameworks and belief systems have been torn down or discredited. Even where people are well sheltered, it is often in houses or apartments which reflect an impoverishment of architectural imagination as reinforced by unimaginative building regulations and construction economics. Are our imaginative lives so impoverished by the media that the ability to provide a hospitable "interior decoration" for our psyches has been degraded?

5. Illness
Disease as a metaphor has been explored, especially by Susan Sontag. Nevertheless the preoccupation of the World Health Organization with "Heath for all by the Year 2000" fails to address the increasing prevalence of stress, neurosis and personality disorder -- especially in industrialized countries. Just as the range of individual diseases provides admirable metaphors for a taxonomic study of the world problematique, so it might also be used to explore the diseases of the imagination and of imaginal deficiency.

6. Hunger (including malnutrition)
At the time of writing some 4 million people are threatened with death by starvation in Ethiopia alone. Is this problem not signalling the existence of a subtler and more widespread form of deprivation -- a malnutrition of the psyche and a spiritual hunger which we are even less capable of addressing? This would be consistent with concern about the artificiality and superficiality of experience offered in the emerging "information society" or "global village" -- and with the desperate attempts to increase the level of "realism" by increasing the quantity and degrading quality of violence portrayed in the media. To what extent are our imaginations appropriately nourished at this time -- despite the surfeit of imaginative material available.?

7. Wastage (including environmental degradation)
Is our insensitivity to the processes of wastage and pollution, for which we are individually responsible, signalling the existence of an indifference to the "salubrity" of our imaginative lives? This would be consistent with the concern expressed by some non-western cultures and constituencies at the indifference to "spiritual purity". There is little consensus on what is or is not healthy for the psyche -- just as we are no longer clear, with the increasing scope of pollution, to what extent which foodstuffs are safe. The depletion of natural resources associated with wastage calls for reflection on the possibility that western-inspired culture is depleting its psychic resources in ways that we have yet to understand? Can the imaginative resources of a culture be depleted to a point of "bankruptcy" and how can such resources be conserved and "recycled"? Do empires fall through imaginative failure?

8. Corruption (including crime)
A major criticism of the development aid process is that the resources are diverted away from those most in need, despite agreements to prevent this. Various forms of bribery or "commission" are a common feature, even in industrialized countries. In any position (including intergovernmental agencies), people endeavour to obtain perks and privileges for themselves, for relatives or for friends -- whether this is limited to pilferage of office supplies, extended into the imposition of a "socially acceptable taxation" (or "sweetner") on any transactions which they control, or developed into a full-blown criminal activity. What can be learnt from this degree of self-interest and the associated rule-breaking propensity? Is this an indication that people cannot survive within the mechanistic regulations which emerge from the current pattern of thinking -- or at least choose not to do so, and feel free not to do so when possible? This would be consistent with the admiration for people who can get things done despite the rules, because they are capable of imagining more subtle opportunities. To what extent is corruption associated with a more creative world view -- as reflected in the term "creative accounting"?

REFRAMING INTER-SECTORAL COOPERATION THROUGH METAPHOR

The following set of metaphors endeavours to highlight the range of mind-sets through which cooperation has been so enthusiastically pursued in the last 30 years -- with questionable success. Fundamental problems associated with each are briefly noted. The metaphors provide contrasting windows through which the imagination can explore the ways in which people, groups, factions and governments organize meetings, projects and long-term cooperation to improve the condition of the world.

1. Networking and Teleconferencing
Cooperation may be understood as networking -- the sending and receiving of messages amongst a network of people, groups and institutions within the "global village". This bypasses the conventional difficulties of communicating through and between different levels of organizational hierarchies and opens the doors to new opportunities for cooperation. **Problem:** Despite initial enthusiasm, such exchanges tend to evolve either into chatting, soliloquies or ("under strong leadership") narrow technical exchanges. They rely on mutual appreciation -- there is only limited capacity for management of conflict. Tension and negative feedback are designed out -- networks become incestuous and ineffectual. If the non-viability of a network is recognized, it decays into token exchanges or is abandoned -- possibly to give rise to another. There is little provision for collective learning -- insight and wisdom are not accumulated.

2. Revolution
Cooperation arises when we "bury our differences" in a revolutionary struggle to bury some common enemy, usually a group of people responsible for an iniquitous social structure or for an erroneous belief system. Self-interest, normally the principal obstacle to successful cooperation is transmuted into self-righteousness in a "holy war". **Problem:** In order to mobilize successfully for such a war, systems of restraint have to be abandoned. Once abandoned, there is no check on extreme violence (which may be non-physical) or exploitation by those able to manipulate the situation to their own ends -- in the name of the common cause. There is almost no capacity to distinguish what should be kept from what should be abandoned. Collective learning results only after collective revulsion at the pain and bloodshed and after recognition of the true colours of those who thrive on their necessity.

3. Trade and Development
Cooperation, especially for some French-speaking governments, is equivalent to development -- or the policies and procedures through which it is brought about. In practice this means evolving terms of trade -- "let's trade" -- perceived as mutually beneficial, whatever the constraints and recognized inequities under the agreement. **Problem:** As in the simplest deal, there is considerable scope within the terms of the agreement, for poor quality, unserviceable, obsolescent or hazardous goods. Purchases on credit may be such as to place the purchaser in semi-permanent bondage. The seller may over-sell, ensuring the placement of essentially inappropriate products which create more difficulties than they resolve. The weaker party may be persuaded by a skilled negotiator to part with assets of considerable value, especially when there is pressure to sacrifice long-term benefits to short-term relief. Those dealing on both sides may be more interested in how they benefit personally (kick-backs, career advancement), irrespective of the longer-term consequences to those whose interests they are supposed to represent. Collective learning only results when it is recognized who benefits systematically from such deals and who is systematically impoverished by them.

4. Sexual Intercourse
At its best "making love" is one of the principal examples of effective cooperation between people -- "make love, not war". It calls for sensitivity, initiative and receptivity, and enhances mutual respect. Ideally it ranges from the reassuring to the transforming, and through such dynamics a new generation is conceived. **Problem:** As has been well-publicized, there are many far from ideal ways in which people engage in sex, from brutal domination by one partner through various exploitative sexual games -- not to mention the implications of prostitution, pornography or what some choose to perceive as perversion. It is questionable how often partners are mutually satisfied by such cooperation. Considerable emphasis is placed on preliminary techniques for arousing interest, on short-term "performance", on the level of personal "pay-off" (such as the quality and quantity of orgasms), and on avoiding any long-term consequences. "Safe-sex" is advocated to avoid mutual infection and contraception is practised to avoid the conception of any product from the union -- except amongst those without the means to care for such issue. In the unfortunate event of effective conception, considerable means are deployed to ensure abortion or disposal of the issue by other means. Every effort is made by the majority to avoid any tangible consequences of such acts of cooperation -- whilst a minority goes to great lengths to rectify infertility -- through artificial insemination and the use of surrogates.

5. Environmental ecosystems
The ecosystems interlinking flora and fauna are a valued example of how different species can cooperate -- the ideal of symbiosis is a much favoured model. The Gaia Hypothesis is explored as a model for cooperation at the global scale. Such insights are fundamental to the "green" movement. **Problem:** In the less challenging interpretation, humankind is to be seen as a single species whose members should cooperate as peacefully as those of any other species. This loses sight of the hierarchical "pecking order" obtaining within most such species and the dominance of one or other sex. It loses sight of the competition for territory and exclusion from herds. And, except as the dominant species, it loses sight of the consequences of being part of a food chain. In a more challenging interpretation, humankind forms a multiplicity of species -- not so much by race as by vocation, specialization, ideology or culture. In this case food chains, if only in the form of information, raise many questions -- such as why the factions of the green movement are unsuccessful in functioning symbiotically, and instead draw attention to the other (seven), less symbiotic, forms of interaction between species. In perhaps the most challenging interpretation, each person constitutes an ecosystem of roles and mind-sets, which interweave amongst themselves and with others -- raising questions about who (or what) it is that cooperates.

6. Drama and Opera
A dramatic work can be construed as a design for cooperation -- in which the actors cooperate in exploring themes and dramatic moments which play off each other to bring out certain qualities and insights. For the integrity of the work there is necessarily a deep commitment to ensuring the effectiveness of such cooperation. **Problem:** Even within a dramatic work, a distinction is made between those having minor roles and the stars who have a fundamental need to be set above the others. And, despite increasing exploration into ways of reducing the separation between actors and "audience", whether within a theatre, on television or in the street, there remains a basic distinction between the dramatic reality and that no longer governed by a particular work -- from which the audience is drawn. In effect actors play at cooperating -- as do many who pretend to cooperate -- in contrast to the often less than cooperative relationships obtaining between them off the stage. What is to be said of the basic commitment to "seduce" the audience, who are paying in order to be captured, at least temporarily, by the reality presented. There is also the question as to whether effective cooperation must necessarily be scripted or directed, or at least to what degree actors can improvise. If "all the world's a stage", are there many scripts, and what does that say about cooperation and the need for its direction ?

7. Sharing in spirit
When spiritual values predominate, whether in an established religious tradition, a sect, a charismatic movement, or a religious community, then self-interest as an inhibitor of cooperation is bypassed. Cooperation becomes a sharing in spirit -- in the name of such as Christ, Allah, Buddha, Gaia, or of their enlightened representatives. People are "born again" into a new mode of interaction. **Problem:** Difficulties arise when the priorities are not clear and different factions emerge favouring distinct strategies. Everything then depends on the manner in which the spiritual values

are interpreted and articulated. Groups become vulnerable to skilled operators who can successfully manipulate peoples' relationship to their evolving understanding of spiritual values. It becomes difficult to distinguish between skilled "supervision" for the good of the whole (as part of a spiritual journey) and skilled manipulation at the expense of those who accept the process -- for the benefit of the "disciples" who lead it. An important device used in this process is the stress on some external threat, its insidious influence on those within the group, and the need to maintain a strong "non-cooperative" relationship with those who can be named as vehicles of it -- especially when they follow other practices.

8. Building

Cooperation may be seen as "building together". Emphasis is placed on the tangible, if not on construction in its most concrete sense, whether houses, barns, schools, clinics or community amenities. It may take the form of major projects (joint ventures) such as dams, aircraft, defence systems or satellites. Or it may take the form of building communication networks or distribution networks. Differences are necessarily resolved in the practicalities of ensuring the viability of whatever is constructed -- the process may even be facilitated by common membership in some group such as the freemasons for whom building and architecture are fundamental symbols. **Problem:** Difficulties arise from the easy association with the economic, financial and political interests which approve or underwrite such projects and are involved in their subsequent exploitation. Once their interest has been aroused, it becomes difficult to dissociate such vested interests from any larger purpose for which the cooperative project was conceived. Such interests are totally insensitive (except under legislative constraint) to such issues as the inappropriateness of the project, wastage of scarce resources, or any negative social impact -- which are denied or viewed as unfortunate necessities. Each project is viewed in isolation (often ignoring the resources needed for its upkeep), irrespective of its unfortunate impact on other projects -- thus corrupting the purpose of the original concept. This leads to a legacy of silting dams, uninhabitable buildings, inappropriate monoculture, inoperable factories, obsolete weaponry and abandoned community projects.

9. Games and Teamwork

Games necessarily involve significant cooperation between the players, whether the games take the form of board games, competitive or team sports, or war games. In team games, cooperation operates in one way amongst those of the same team and in another in relationship to the opposing team(s). Successful business and military strategy is developed through a strong awareness of the importance of teamwork in relation to opposing teams. Within a team, explicit recognition is given to the role of each and the manner in which they should be able to support and substitute for each other in the event of crisis. Special attention is given by each to "marking the opposite number" in the opposing team. Each must endeavour to know the games his opponents (and his team mates) endeavour to play. **Problem:** In their least challenging form it is questionable whether games are a useful model of all but the most sterile form of cooperation -- as when two people hit a ball over a net purely for entertainment. Teams are built in order to win a continuing series of games -- not just a single game. As a result both teams and their members shift their focus increasingly to the way in which their status is measured in series or league tables. Increasing those measurements becomes the objective of the game -- whether it be the statistics of ball players or teams, the number of police convictions, bodycounts from military operations, or financial indicators of corporations. Gamesmanship, and questionable devices for increasing convictions and bodycounts, become the rule. The decay of the Olympic spirit, under the influence of politicization, commercialism, medal counting, and the pressure to improve performance with drugs, bears witness to the vulnerability of this approach to cooperation.

10. Celebration

People cooperate through gathering together in some ceremonial, for a celebration, or for a "happening". This form of cooperation may be extended through media events such as Live Aid, Hands Across America, or a World Run. It may take the form of celebrating achievements such as the 40th Anniversary of the United Nations, or the annual celebration of "days", such as One Earth. It may also fulfil a psychologically important ritual or liturgical function within the life of a group -- rekindling enthusiasm and commitment, and reinforcing a sense of community. **Problem:** The great attention aroused by such events, particularly through the media, easily creates the impression that some lasting cooperation has been achieved -- bypassing the obstacles confronted by conventional initiatives. Such events legitimately build hopes and create visions of what might be, but they delude when presented as cooperation of other than the most ephemeral kind. In contrast to the sacrifices normally demanded by any significant cooperation, participants have little to lose by being seen to attend or contribute briefly to a happening. Such events salve consciences, draining resources away from longer-term projects. Symbols of achievement parade as realities, disguising healthy responses to non-achievement.

11. Rule of law

The elaboration of agreements and networks of regulations binding the relationship between social actors is cooperation in one of its most lasting forms. Much effort is devoted to formulating resolutions, declarations of shared principles, and multilateral treaties -- as a means of evolving the framework of law, whether national or international. The stream of regulations from the EEC is a prime example. **Problem:** Much of the effort devoted to articulating such instruments is in response to the need for visible symbols of achievement at the time they were voted or signed -- whether for public relations purposes or to justify participation in a meeting. Many such instruments remain dead letters -- and indeed many are only produced for valid short-term effect, as reminders of what ought to be done. Treaties either fail to enter into force for lack of ratifications, or only govern the behaviour of a minority of potential parties, or are systematically violated, in the letter or in the spirit. Little provision is made for enforcement of obligations. Little is learnt from the lack of commitment to last year's resolutions in the throes of articulating those for this year.

12. Conspiracy of elites

Real cooperation may be seen as associated with the unpublicized, long-term working relationships between elites of whatever kind. This may range from a group of community "elders", through "old boy networks" or "nomenklatura", through academic "invisible colleges", to semi-secret societies such as the freemasons and Opus Dei. It may be cultivated in closed meetings (Trilateral Commission, Bilderberg Group) and by secret diplomacy. It may be articulated in secret agreements, whether between governments, classified research establishments, intelligence agencies, corporations, crime syndicates or revolutionary groups. It may take a seemingly innocent form in conspiracies of the spiritually "initiated" or of like-minded social change agents (the "Aquarian Conspiracy"). ***Problem:*** The successes of this form enhance complacency amongst the elites -- the belief that their power and insight provide adequate social guidance -- as well as encouraging non-elites in this same belief, thus disempowering them. The difficulty with such forms is that there are no checks ensuring that the self-selected participants act in the interest of the wider community rather than their own -- as with cartels and organized crime. Consequently groups such as the freemasons and Opus Dei must check each others excesses in continuing battles hidden from the public eye. Invisible colleges must engage in primitive skirmishes to deprive each other of larger shares of scarce resources. Such groups are often poorly equipped to regulate the excesses of their members, as the publicized excesses of the insider traders, the freemasons, and irresponsible researchers make clear.

The challenge for the 1990s may involve not so much abandoning any one of these mind-sets but rather of learning how to avoid being trapped within any such metaphor as providing "the one solution". In each case there is a need to see through the veils of opportunistic reporting and media hype establishing claims of successful cooperation. The danger is one of being deluded by semblances of cooperation and symbols portrayed as achievements. Their current status constitutes a re-emergence of idolatry -- the perfection and worship of new forms of "golden calf". Such idols of cooperation should not disguise the questionable value of efficient rearrangement of the deck-chairs on the Titanic or of effective use of a tea cup in bailing out a life-boat being swamped in heavy seas.

Is the bitter lesson to be learnt from the last 30 years that: **Until we understand how we -- "the enlightened cooperators" -- are part of the problem, we cannot understand the nature of the solution required ?**

APPROPRIATE METAPHORS OF SUSTAINABLE DEVELOPMENT

1. Reframing the challenge of sustainable development
In response to the challenge of sustainable development, the potential of metaphor may be used to redefine that challenge. In both conceptual and policy terms it may be conceived as being one of designing metaphors to give form to a "sustainable ecology of development policies"(Judge, 1989).

In relation to the issues raised by Srivastva and Barrett (1988) and Barrett and Cooperrider (1989), it could prove appropriate to use richer metaphors to integrate (and render comprehensible as sets), the individual metaphors which govern the action of groups over time, or which govern opposing factions during a given period.

2. Levels of relationship between competing policies
A simplistic metaphor of the relationship between "environment" and "development" is that of "having one's cake and eating it too". It makes a critical difference what metaphor is used, whether implicitly or explicitly, to view the relationship between competing policy concepts:

(a) From a particular concept: From any given policy concept other concepts can only be viewed as threatening since that concept provides no sense of context, other than itself. "Enemy" is then an appropriate metaphor. Such defensive postures are not uncommon in policy forums. "Sustainable development" can be perceived in these terms with any other policy perspective as the enemy.

(b) As a group of competing concepts: Here context is provided by the sense of a "marketplace of ideas" in which the most appropriate products survive, if the market mechanism works satisfactorily. A more powerful metaphor is that of the "gladiatorial arena", in which one concept strives to emerge triumphant at the expense of the others, possibly learning from them in order to do so. Metaphors of this type, including those based on competitive sports, are widely used as noted above. "Sustainable development" can then be perceived as a set of competing concepts from which the most appropriate will emerge triumphant -- as the ideal result of a policy forum.

(c) As a homeostatic ecology of concepts: The two previous perspectives can however be perceived as subsystems or processes within an "ecology" of policy concepts. Here there are a variety of relationships between alternative policies (including "predation", "parasitism", and "commensalism"), but these function such as to maintain a balance between the different "species" of policy within the ecology (see following note). "Sustainable development" can then be perceived as a stewardship function of ensuring the stability of an ecology of policy concepts in which each fulfils particular developmental functions under particular conditions and there is a niche for developmental policies of all sizes and orientations.

(d) As an evolving ecology of concepts: Of greater interest is the possibility of perceiving "sustainable development" as an evolving ecology of developmental policies. Here there is a maintenance dimension corresponding to a homeostatic ecology as well as a longer-term evolutionary dimension as the various species adapt and evolve to emerging conditions, with new species emerging as the creative result of mutation processes.

3. Reframing the relationship between competing policies
If "sustainable development" is associated with metaphors of the first two kinds, its long-term value is questionable. If it can be perceived through metaphors of richness equivalent to the last two kinds, it can perform the integrative function necessary to incorporate both the policy priorities of "development" (in its many forms) and of "environment" (in its many forms). Note that only the last kind encompasses the continuing proliferation of alternative interpretations through a recognition of "speciation" processes.

There is an attractive conceptual elegance in endeavouring to use the natural environment as a metaphoric map to provide conceptual handles on the many policy dimensions of sustainable development. It suggests the need for a certain isomorphism between the pattern of development policies and the structure of the natural environment within which (and in response to which) they are implemented (Judge, 1984c). The ecological metaphor is explored in a following note.

4. Implications for policy forums
In any policy forum the question may then be asked as to the nature of the metaphor used to sustain the relationship between the range of policy perspectives represented. If that metaphor is not of requisite variety any result of such a forum can only be of value limited in time and space.

The insight of "sustainable development" cannot be satisfactorily embodied in a single policy or set of policies if no coherent context is provided for those who have to understand or approve it. Whatever the multiple, alternative or competing articulations of "sustainable development" at the conceptual or policy level, the insight integrating their dynamic relationships can only be adequately communicated at the metaphoric level.

If new approaches cannot be effectively implemented so as transform the functioning of international meetings, then they are also of little significance outside that arena. It is for this reason that challenge of transformative conferencing (see Section TC) constitutes an acid test for new proposals.

5. Implications for human development
In the light of the challenge of sustainable development, the question might well be asked as to how many metaphors people need to ensure their survival -- and especially their psychological survival? Is there a problem of metaphor impoverishment and deprivation associated with both ineffectual policies and individual alienation?

Is it possible that a metaphoric measure is necessary as a complement to the questionable value of current social indicators and the questionable educational role played by the exclusive use of the IQ measure of intelligence? To the extent that we ourselves are metaphors, do we need to develop richer metaphors through which to experience and express our self-image?

6. Implications for social development
If individual learning is governed by metaphors (as a number of studies indicate), how is it that metaphors governing societal learning and development have not been studied? In the light of Andreas Fuglesang's severe criticism of western assumptions concerning communication in developing countries (1982), would it not be more useful to conceive of different cultures as operating within different root metaphors?

Is it possible that social transformation is essentially a question of offering people (and empowering them to discover from their own traditions) richer and more meaningful metaphors through which to live, act and empower themselves?

To a large extent the patterns of understanding appropriate to social innovations for global management cannot be effectively presented in the conventional linear mode (of which this text is an example). It is indeed possible to present a highly articulated argument, but the exercise bears some resemblance to the classic attempt to describe a spiral staircase verbally. The description, although exact, is not meaningful.

To be consistent with the argument, the kinds of insights to be gained from metaphors are presented using selected metaphors as examples of relevance to global management. Three such metaphors are presented below. A fourth, based on traffic, is presented in the following note. Section MP represents a sophisticated pattern of metaphor(s based on building design. Section TP may also be considered as an exercise in metaphor development to clarify issues of sustainable policy cycles.

1. Natural ecosystems as a source of policy insights

It is unfortunate that those claiming to be most sensitive to the need for sustainable development, namely the "greens", are unable to organize policy forums which reconcile policy differences in a significantly new way. It is worth exploring whether they at least could make creative use of an ecological metaphor to integrate their factions in a manner from which others could benefit. However, it is especially ironic that they seem to have felt no need to apply insights from their extremely valuable ecological thinking to new understanding of their own policy processes.

(a) Interacting species: Any policy forum constitutes a social system. Such a social system can be likened to an ecosystem with a range of interacting species. Each policy faction can be perceived as a species with varying numbers of members. The relationship between such factions can be observed in the light of the ways in which species may interact (symbiosis, commensalism, parasitism, allopathy, synnecrosis, amensalism, predation, allotropy, or none). It is clear that some policies are "predatory" and that complementary policies may be perceived as "symbiotic". Such relationships may effectively vary over time. Predation only takes place when the predator needs to eat. At other times the relationship is "peaceful".

(b) Food webs: A major ecological insight is that every species is some other species "lunch". It is not useful to think in terms of "good" species and "bad" species -- although members of any given species are obliged to perceive those that threaten them as "bad" to give focus to their fight for survival. Nor is it helpful to aim naively to have only symbiotic relationships between species -- eliminating the carnivores. Species are woven together in food chains. It is not helpful to focus attention solely on the top of any food chain (however magnificent the species there may appear) -- it is the food chain as a whole that needs to be understood. An endangered species is an important indicator of dangers to the ecosystem as a whole. On the other hand the cyclic rise and fall in numbers of particular species under different environmental conditions is a dynamic to which a resilient ecosystem responds appropriately -- any such rise or fall may be neither "good" nor "bad".

(c) Endangered ecosystems: In this light, a policy is naturally experienced as "bad" by other policies to which it is a threat. It is in turn experienced as "bad" and "good" by other policies. This level of perception does not help to understand the dynamics of the ecosystem of policies. At the ecosystemic level the issue is whether the numbers and dynamics of the species are destabilizing the ecosystem irreversibly and in what way. Excessive proliferation of any species, "swarming", endangers the ecosystem. This suggests that the predominance of any particular policy might have disastrous consequences. The health of the ecosystem lies in the healthy relationship between the species, even though this involves many predatory relationships.

(d) Shifting the level of debate: Through this metaphor, the level of debate is shifted. The natural tendency of any species to proliferate must be constrained by other species. The necessary "consumption" of some "innocent" policy by "predatory" interests needs to be explored in this light, as with the "regrettable decline" of other "predatory" policies for lack of resources. Any short-sighted effort to prevent the "nice" herbivores from being so "cruelly" consumed by the "nasty" carnivores invokes the need to "cull" their numbers periodically or prevent them breeding.

(e) Enriching the ecosystem: In these terms it is possible to shift the debate from consideration of species to consideration of whether the ecosystem could be usefully enriched: which ecosystems are "unhealthy", when should swamps be drained and arid zones "irrigated" ? The difficulty here is that with the prevailing emphasis on monoculture, there is little shared understanding of how to diversify an ecosystem in ways such as those recommended by the Permaculture Movement (**). It is no wonder that many policy initiatives amount to a form of policy monoculture, fertilized by inappropriate use of resources and leading to pollution of the food chain.

(f) Designing systems of policies: An ecosystem calling for enrichment might be one which had been degraded by excesses of the past. The system of policies currently prevailing there would need to be redesigned. But note that it is the system of policies that needs to be redesigned, which does not imply that some single policy should prevail -- and the design needs to be an organic rather than a mechanistic one. It may mean that new "predators" should be introduced and that some population of "herbivores" should be cut back. Enrichment may involve introduction of many smaller species -- a reminder that the answer does not necessarily lie in mega-policies at the top of the food chain.

(g) Constraining species of policy: It should be noted that this metaphor does not suggest a form of policy relativism -- a tolerance of all policies. It suggests that any policy is dangerous in excess and needs counter-acting policies to contain. It suggests that whether a policy has a function depends on the ecosystem and that many policies may have a function within a policy ecosystem of a variety necessary to make it sustainable. This may mean that some policies can be usefully perceived as "prehistoric" but it does not deny that some prehistoric species (such as sharks) may still have a function, perhaps only in certain special niches.

Within this metaphor the many development policies are represented by species, each contributing to the health of the ecosystem. That ecosystem can be enriched by introducing new species to improve its sustainability. But members of those species, in the form of particular programmes and proposals may have a "life and death" relationship to one another -- reflected in such common phrases as "they killed our programme" or "they got our budget allocation".

Both in a policy forum and in the organized initiatives to which it gives rise, the information system needs to be designed to facilitate initiatives which sustain the ecosystem as a whole and which contribute to its redesign. In this sense the system of development policies should have a self-organizing dimension. Such an information system is in many ways a reflection of the food chain. Through it meaning is passed to nourish initiatives at different levels.

2. Crop rotation as a metaphor for a sustainable cycle of policies

Linear thinking encourages adoption of policies without thought to the nature of the policies which will have to follow them to remedy the havoc they cause, however incidentally. Given the many cycles essential to the coherence of the natural environment, a non-linear approach would suggest the exploration of "policy cycles" -- within which any "linear" policies are perceived as phases.

In searching for appropriate metaphors to illustrate the need for cycles of policies, there is a certain appropriateness to using a process which has traditionally been considered basic to sustaining the productivity of the land, namely crop rotation. The rotation of agricultural crops is an interesting "earthy" practice to explore in the light of the mind-set which it has required of farmers for several thousand years.

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In searching for appropriate metaphors to illustrate the need for cycles of policies, there is a certain appropriateness to using a process which has traditionally been considered basic to sustaining the productivity of the land, namely crop rotation. The rotation of agricultural crops is an interesting "earthy" practice to explore in the light of the mind-set which it has required of farmers for several thousand years.

Crop rotation is the alternation of different crops in the same field in some (more or less) regular sequence. It differs from the haphazard change of crops from time to time, in that a deliberately chosen set of crops is grown in succession in cycles over a period of years. Rotations may be of any length, being dependent on soil, climate, and crop. They are commonly of 3 to 7 years duration, usually with 4 crops (some of which may be grown twice in succession). The different crop rotations on each of the fields of the set making up the farm as a whole constitute a "crop rotation system" when integrated optimally. Long before crop rotation became a science, practice demonstrated that crop yields decline if the same crop is grown continuously in the same place. There are therefore many benefits, both direct and indirect to be obtained from good rotational cycles.

(a) Control of pests: With each crop grown the emergence of characteristic weeds, insects and diseases is facilitated. Changing to another crop inhibits the spread of such pests which would otherwise become uncontrollable.

(b) Maintenance of organic matter: Some crops deplete the organic matter in the soil, other increase it.

(c) Maintenance of soil nitrogen supply: No single cropping system will ordinarily maintain the nitrogen supply unless leguminous crops are alternated with others.

(d) Economy of labour: Several crops may be grown in succession with only one soil preparation (ploughing). For example: the land is ploughed for maize, the maize stubble is disked for wheat, then grass and clover are seeded in the wheat.

(e) Protection of soil: It was once believed necessary to leave land fallow for part of the cycle. Now it is known that a proper rotation of crops, with due attention to maintaining the balance of nutrients, is more successful than leaving the land bare and exposed to leaching and erosion.

(f) Complete use of soil: By alternation between deep and shallow-rooted crops the soil may be utilized more completely.

(g) Balanced use of plant nutrients: When appropriately alternated, crops reduce the different nutrient materials of the soil in more desirable proportions.

(h) Orderly farming: Work is more evenly distributed throughout the year. The farm layout is usually simplified and costs of production are reduced. The rushed work characteristic of haphazard cropping is avoided.

(i) Risk reduction: Risks are distributed among several crops as a guarantee against complete failure.

There is a striking parallel between the rotation of crops and the succession of (governmental) policies applied in a society. The contrast is also striking because of the essentially haphazard switch between "right" and "left" policies. There is little explicit awareness of the need for any rotation to correct for negative consequences ("pests") encouraged by each and to replenish the resources of society ("nutrients", "soil structure") which each policy so characteristically depletes.

There is no awareness, for example, of the number of distinct policies or modes of organization through which it is useful to rotate. Nor is it known how many such distinct cycles are necessary for an optimally integrated world society in which the temporary failure of one paradigm or mode of organization, due to adverse circumstances (disaster), is compensated by the success of others. It is also interesting that during a period of increasing complaints regarding cultural homogenization ("monoculture"), voters are either confronted with single-party systems or are frustrated by the lack of real choice between the alternatives offered.

There is something to be learnt from the mind-sets and social organizations associated with the stages in the history of crop rotation which evolved, beyond the slash-and-burn stage, through a 2-year crop-fallow rotation, to more complex 3 and 4-year rotations. Given the widespread sense of increasing impoverishment of the quality-of-life, consideration of crop rotation may clarify ways of thinking about what is being depleted, how to counteract this process, and the nature of the resources that are so vainly (and expensively) used as "fertilizer" and "pesticide" to keep the system going in the short-term. The "yield" to be maximized is presumably human and social development. The concern is whether current approaches are a dangerous "policy monoculture" trap.

3. Configuration of incommensurable policies as a resonance hybrid

In a world community characterized by distinct and often opposing views, the possibility of interrelating them so as to form the basis for an overarching structure, without denying the distinctness of those structures, can be usefully illustrated by a concept from chemistry. Chemical resonance hybrids are in fact basic to the molecular structures characteristic of living organisms.

Some chemical molecules cannot be satisfactorily described by a single configuration of bonded atoms. The theory of resonance is concerned with the representation of such molecules by a dynamic combination of several alternative structures, rather than by any one alone. The molecule is then conceived as "resonating" among the several structures and is said to be a "resonance hybrid" of them. The classic example is the benzene molecule (see Figure 2) with 6 carbon atoms. This is one of the basic components of many larger molecules essential to life. Its cyclic form only became credible when Kekulé showed that it oscillated between structures A and B. Linus Pauling later showed that it in fact alternates between all five forms above (and as such requires less energy than for any one of them).

This insight could be used in designing, describing or operating organizations, especially fragile coalitions or volatile meetings, and in giving form to complex agreements and policy configurations which would otherwise not exist. It may provide a key to the successful "marriage" between hierarchies and networks, or between centrally-planned and market-economies. It could also be used to interrelate alternative definitions (or theories, paradigms, policies, etc), especially where none of them is completely satisfactory in isolation. The underlying significance -- in contrast to the essentially unsustainable significance of each in isolation -- emerges through the resonance between the set of alternatives.

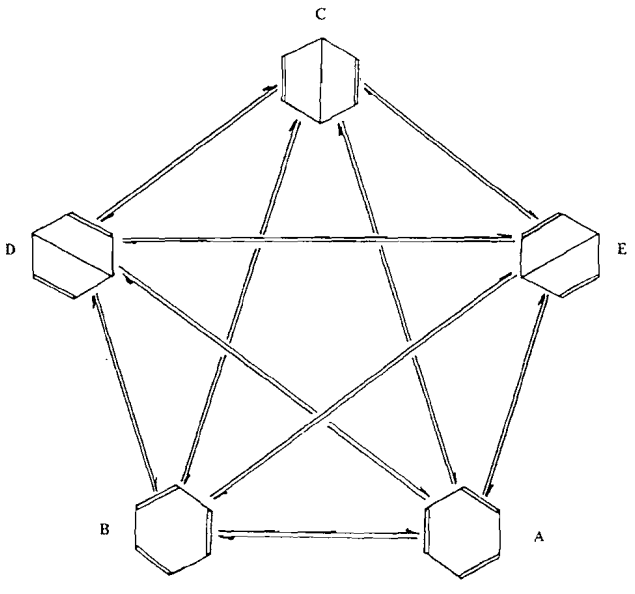

Figure 2: Resonance hybrid: alternation between distinct structures

REFRAMING PROBLEMS AS METAPHORS

It is useful to challenge the thinking trap of "problem-solving". The approach to problems may then be reframed by asking what a problem is "trying to tell us" -- or, better still, is the problem as understood in effect a metaphor for something we would prefer not to understand? From this perspective "institutionalized" problems may in effect be a sort of metaphorical euphemism -- a package which it is better not to unwrap. Problems are not only nasty in themselves, they are also nasty in what they imply about ourselves -- however saintly we might wish to appear as disinterested change agents, victims or innocent bystanders. Consider the following:

1. Substance abuse (including drugs and alcohol)
Is it too trite to suggest that substance abuse is signalling a desperate need for different modes of thinking, feeling and experience than those sanctioned by a society governed by antiquated thinking patterns which have been only too effectively institutionalized in "acceptable" modes of work and leisure? Again, since many in key positions in such institutions also use drugs or alcohol "to relax", what should be learnt from the level of stress -- and schizophrenia -- at which the prevailing mode of thought is requiring them to function? Is substance abuse not effectively offering a remedy for the imaginal deficiency and mechanistic patterning characteristic of "acceptable" individual and collective behaviour? And consequently would not substance abuse become less necessary if society acknowledged more imaginative opportunities? What is the incidence of substance abuse in cultures whose languages make very extensive use of metaphor? Too what extent is it useful to perceive our relation to the prevailing thinking pattern as a form of "addiction" -- a habit that we do not know how to kick?

2. Unemployment (including underemployment and absenteeism)
It is no longer fruitful to argue that a significant proportion of unemployment is simply due to laziness, reluctance to learn new skills, lack of initiative or lack of opportunities. Is it possible that the prevailing mode of thinking is inhibiting peoples ability to imagine new forms of action of value to others, encouraging people to perceive existing employment opportunities as worthless both to themselves and to others, as well as impoverishing the manner in which people consider what to do with their lives? Is unemployment telling us that much of the work on offer is not worth doing -- and that much which is done is pointless? This would certainly be consistent with many criticisms of the consumer society and of industrial exploitation of the environment. Perhaps it is also saying that what we value doing, or are obliged to do, is not appropriately valued (as "work") in an economic system governed by an inadequate mode of thinking. This would certainly be consistent with the debate about the economic value of housework. Contrasting employment with recreation (as opposed to unemployment) is somewhat ironic in that unimaginative leisure opportunities are increasingly incapable of offering "re-creation". Is the level of unemployment also indicating that we really do not know to what society could usefully devote its human resources? Worse still, is it indicating that we have dissociated the challenges to human society from opportunities for "work" because of the way such challenges are perceived within the prevailing pattern of thinking?

3. Ignorance (including functional illiteracy)
Is the level of ignorance, even in industrialized countries, telling us that much of the knowledge on which that judgement is based is not worth learning? This concern has certainly been expressed in debates about existing curricula. Is it suggesting that for their psychic survival people are educating themselves along pathways which are not considered meaningful, or indicative of intelligence, within the prevailing pattern of thinking? This is suggested by the immense resources devoted to music and to "alternative" therapies and belief systems. Is it suggesting that people feel deprived of an imaginal education, faced with the formal (even rote) learning so frequently considered most appropriate (especially "to the needs of industry")? This is suggested by the enthusiasm for graphics, cartoon books, science fiction, fantasy and the archetypal portrayal of cult figures in music. Is our concern with the ignorance of many concealing the fact that those with most expertise and power are really quite ignorant about how to navigate through current and future crises?

4. Homelessness
Is the lack of appropriate shelter, even in industrialized countries, indicating that with our current pattern of thinking we are ineffective in our ability to provide, construct, or acquire cognitive and affective frameworks to shelter us appropriately from the turbulence of the times? This would be consistent with concerns about alienation in modern society. It would also follow from the recognition that many traditional frameworks and belief systems have been torn down or discredited. Even where people are well sheltered, it is often in houses or apartments which reflect an impoverishment of architectural imagination as reinforced by unimaginative building regulations and construction economics. Are our imaginative lives so impoverished by the media that the ability to provide a hospitable "interior decoration" for our psyches has been degraded?

5. Illness
Disease as a metaphor has been explored, especially by Susan Sontag. Nevertheless the preoccupation of the World Health Organization with "Heath for all by the Year 2000" fails to address the increasing prevalence of stress, neurosis and personality disorder -- especially in industrialized countries. Just as the range of individual diseases provides admirable metaphors for a taxonomic study of the world problematique, so it might also be used to explore the diseases of the imagination and of imaginal deficiency.

6. Hunger (including malnutrition)
At the time of writing some 4 million people are threatened with death by starvation in Ethiopia alone. Is this problem not signalling the existence of a subtler and more widespread form of deprivation -- a malnutrition of the psyche and a spiritual hunger which we are even less capable of addressing? This would be consistent with concern about the artificiality and superficiality of experience offered in the emerging "information society" or "global village" -- and with the desperate attempts to increase the level of "realism" by increasing the quantity and degrading quality of violence portrayed in the media. To what extent are our imaginations appropriately nourished at this time -- despite the surfeit of imaginative material available.?

7. Wastage (including environmental degradation)
Is our insensitivity to the processes of wastage and pollution, for which we are individually responsible, signalling the existence of an indifference to the "salubrity" of our imaginative lives? This would be consistent with the concern expressed by some non-western cultures and constituencies at the indifference to "spiritual purity". There is little consensus on what is or is not healthy for the psyche -- just as we are no longer clear, with the increasing scope of pollution, to what extent which foodstuffs are safe. The depletion of natural resources associated with wastage calls for reflection on the possibility that western-inspired culture is depleting its psychic resources in ways that we have yet to understand? Can the imaginative resources of a culture be depleted to a point of "bankruptcy" and how can such resources be conserved and "recycled"? Do empires fall through imaginative failure?

8. Corruption (including crime)
A major criticism of the development aid process is that the resources are diverted away from those most in need, despite agreements to prevent this. Various forms of bribery or "commission" are a common feature, even in industrialized countries. In any position (including intergovernmental agencies), people endeavour to obtain perks and privileges for themselves, for relatives or for friends -- whether this is limited to pilferage of office supplies, extended into the imposition of a "socially acceptable taxation" (or "sweetner") on any transactions which they control, or developed into a full-blown criminal activity. What can be learnt from this degree of self-interest and the associated rule-breaking propensity? Is this an indication that people cannot survive within the mechanistic regulations which emerge from the current pattern of thinking -- or at least choose not to do so, and feel free not to do so when possible? This would be consistent with the admiration for people who can get things done despite the rules, because they are capable of imagining more subtle opportunities. To what extent is corruption associated with a more creative world view -- as reflected in the term "creative accounting"?

REFRAMING INTER-SECTORAL COOPERATION THROUGH METAPHOR

The following set of metaphors endeavours to highlight the range of mind-sets through which cooperation has been so enthusiastically pursued in the last 30 years -- with questionable success. Fundamental problems associated with each are briefly noted. The metaphors provide contrasting windows through which the imagination can explore the ways in which people, groups, factions and governments organize meetings, projects and long-term cooperation to improve the condition of the world.

1. Networking and Teleconferencing
Cooperation may be understood as networking -- the sending and receiving of messages amongst a network of people, groups and institutions within the "global village". This bypasses the conventional difficulties of communicating through and between different levels of organizational hierarchies and opens the doors to new opportunities for cooperation. **Problem:** Despite initial enthusiasm, such exchanges tend to evolve either into chatting, soliloquies or ("under strong leadership") narrow technical exchanges. They rely on mutual appreciation -- there is only limited capacity for management of conflict. Tension and negative feedback are designed out -- networks become incestuous and ineffectual. If the non-viability of a network is recognized, it decays into token exchanges or is abandoned -- possibly to give rise to another. There is little provision for collective learning -- insight and wisdom are not accumulated.

2. Revolution
Cooperation arises when we "bury our differences" in a revolutionary struggle to bury some common enemy, usually a group of people responsible for an iniquitous social structure or for an erroneous belief system. Self-interest, normally the principal obstacle to successful cooperation is transmuted into self-righteousness in a "holy war". **Problem:** In order to mobilize successfully for such a war, systems of restraint have to be abandoned. Once abandoned, there is no check on extreme violence (which may be non-physical) or exploitation by those able to manipulate the situation to their own ends -- in the name of the common cause. There is almost no capacity to distinguish what should be kept from what should be abandoned. Collective learning results only after collective revulsion at the pain and bloodshed and after recognition of the true colours of those who thrive on their necessity.

3. Trade and Development
Cooperation, especially for some French-speaking governments, is equivalent to development -- or the policies and procedures through which it is brought about. In practice this means evolving terms of trade -- "let's trade" -- perceived as mutually beneficial, whatever the constraints and recognized inequities under the agreement. **Problem:** As in the simplest deal, there is considerable scope within the terms of the agreement, for poor quality, unserviceable, obsolescent or hazardous goods. Purchases on credit may be such as to place the purchaser in semi-permanent bondage. The seller may over-sell, ensuring the placement of essentially inappropriate products which create more difficulties than they resolve. The weaker party may be persuaded by a skilled negotiator to part with assets of considerable value, especially when there is pressure to sacrifice long-term benefits to short-term relief. Those dealing on both sides may be more interested in how they benefit personally (kick-backs, career advancement), irrespective of the longer-term consequences to those whose interests they are supposed to represent. Collective learning only results when it is recognized who benefits systematically from such deals and who is systematically impoverished by them.

4. Sexual Intercourse
At its best "making love" is one of the principal examples of effective cooperation between people -- "make love, not war". It calls for sensitivity, initiative and receptivity, and enhances mutual respect. Ideally it ranges from the reassuring to the transforming, and through such dynamics a new generation is conceived. **Problem:** As has been well-publicized, there are many far from ideal ways in which people engage in sex, from brutal domination by one partner through various exploitative sexual games -- not to mention the implications of prostitution, pornography or what some choose to perceive as perversion. It is questionable how often partners are mutually satisfied by such cooperation. Considerable emphasis is placed on preliminary techniques for arousing interest, on short-term "performance", on the level of personal "pay-off" (such as the quality and quantity of orgasms), and on avoiding any long-term consequences. "Safe-sex" is advocated to avoid mutual infection and contraception is practised to avoid the conception of any product from the union -- except amongst those without the means to care for such issue. In the unfortunate event of effective conception, considerable means are deployed to ensure abortion or disposal of the issue by other means. Every effort is made by the majority to avoid any tangible consequences of such acts of cooperation -- whilst a minority goes to great lengths to rectify infertility -- through artificial insemination and the use of surrogates.

5. Environmental ecosystems
The ecosystems interlinking flora and fauna are a valued example of how different species can cooperate -- the ideal of symbiosis is a much favoured model. The Gaia Hypothesis is explored as a model for cooperation at the global scale. Such insights are fundamental to the "green" movement. **Problem:** In the less challenging interpretation, humankind is to be seen as a single species whose members should cooperate as peacefully as those of any other species. This loses sight of the hierarchical "pecking order" obtaining within most such species and the dominance of one or other sex. It loses sight of the competition for territory and exclusion from herds. And, except as the dominant species, it loses sight of the consequences of being part of a food chain. In a more challenging interpretation, humankind forms a multiplicity of species -- not so much by race as by vocation, specialization, ideology or culture. In this case food chains, if only in the form of information, raise many questions -- such as why the factions of the green movement are unsuccessful in functioning symbiotically, and instead draw attention to the other (seven), less symbiotic, forms of interaction between species. In perhaps the most challenging interpretation, each person constitutes an ecosystem of roles and mind-sets, which interweave amongst themselves and with others -- raising questions about who (or what) it is that cooperates.

6. Drama and Opera
A dramatic work can be construed as a design for cooperation -- in which the actors cooperate in exploring themes and dramatic moments which play off each other to bring out certain qualities and insights. For the integrity of the work there is necessarily a deep commitment to ensuring the effectiveness of such cooperation. **Problem:** Even within a dramatic work, a distinction is made between those having minor roles and the stars who have a fundamental need to be set above the others. And, despite increasing exploration into ways of reducing the separation between actors and "audience", whether within a theatre, on television or in the street, there remains a basic distinction between the dramatic reality and that no longer governed by a particular work -- from which the audience is drawn. In effect actors play at cooperating -- as do many who pretend to cooperate -- in contrast to the often less than cooperative relationships obtaining between them off the stage. What is to be said of the basic commitment to "seduce" the audience, who are paying in order to be captured, at least temporarily, by the reality presented. There is also the question as to whether effective cooperation must necessarily be scripted or directed, or at least to what degree actors can improvise. If "all the world's a stage", are there many scripts, and what does that say about cooperation and the need for its direction ?

7. Sharing in spirit
When spiritual values predominate, whether in an established religious tradition, a sect, a charismatic movement, or a religious community, then self-interest as an inhibitor of cooperation is bypassed. Cooperation becomes a sharing in spirit -- in the name of such as Christ, Allah, Buddha, Gaia, or of their enlightened representatives. People are "born again" into a new mode of interaction. **Problem:** Difficulties arise when the priorities are not clear and different factions emerge favouring distinct strategies. Everything then depends on the manner in which the spiritual values

are interpreted and articulated. Groups become vulnerable to skilled operators who can successfully manipulate peoples' relationship to their evolving understanding of spiritual values. It becomes difficult to distinguish between skilled "supervision" for the good of the whole (as part of a spiritual journey) and skilled manipulation at the expense of those who accept the process -- for the benefit of the "disciples" who lead it. An important device used in this process is the stress on some external threat, its insidious influence on those within the group, and the need to maintain a strong "non-cooperative" relationship with those who can be named as vehicles of it -- especially when they follow other practices.

8. Building

Cooperation may be seen as "building together". Emphasis is placed on the tangible, if not on construction in its most concrete sense, whether houses, barns, schools, clinics or community amenities. It may take the form of major projects (joint ventures) such as dams, aircraft, defence systems or satellites. Or it may take the form of building communication networks or distribution networks. Differences are necessarily resolved in the practicalities of ensuring the viability of whatever is constructed -- the process may even be facilitated by common membership in some group such as the freemasons for whom building and architecture are fundamental symbols. **Problem:** Difficulties arise from the easy association with the economic, financial and political interests which approve or underwrite such projects and are involved in their subsequent exploitation. Once their interest has been aroused, it becomes difficult to dissociate such vested interests from any larger purpose for which the cooperative project was conceived. Such interests are totally insensitive (except under legislative constraint) to such issues as the inappropriateness of the project, wastage of scarce resources, or any negative social impact -- which are denied or viewed as unfortunate necessities. Each project is viewed in isolation (often ignoring the resources needed for its upkeep), irrespective of its unfortunate impact on other projects -- thus corrupting the purpose of the original concept. This leads to a legacy of silting dams, uninhabitable buildings, inappropriate monoculture, inoperable factories, obsolete weaponry and abandoned community projects.

9. Games and Teamwork

Games necessarily involve significant cooperation between the players, whether the games take the form of board games, competitive or team sports, or war games. In team games, cooperation operates in one way amongst those of the same team and in another in relationship to the opposing team(s). Successful business and military strategy is developed through a strong awareness of the importance of teamwork in relation to opposing teams. Within a team, explicit recognition is given to the role of each and the manner in which they should be able to support and substitute for each other in the event of crisis. Special attention is given by each to "marking the opposite number" in the opposing team. Each must endeavour to know the games his opponents (and his team mates) endeavour to play. **Problem:** In their least challenging form it is questionable whether games are a useful model of all but the most sterile form of cooperation -- as when two people hit a ball over a net purely for entertainment. Teams are built in order to win a continuing series of games -- not just a single game. As a result both teams and their members shift their focus increasingly to the way in which their status is measured in series or league tables. Increasing those measurements becomes the objective of the game -- whether it be the statistics of ball players or teams, the number of police convictions, bodycounts from military operations, or financial indicators of corporations. Gamesmanship, and questionable devices for increasing convictions and bodycounts, become the rule. The decay of the Olympic spirit, under the influence of politicization, commercialism, medal counting, and the pressure to improve performance with drugs, bears witness to the vulnerability of this approach to cooperation.

10. Celebration

People cooperate through gathering together in some ceremonial, for a celebration, or for a "happening". This form of cooperation may be extended through media events such as Live Aid, Hands Across America, or a World Run. It may take the form of celebrating achievements such as the 40th Anniversary of the United Nations, or the annual celebration of "days", such as One Earth. It may also fulfil a psychologically important ritual or liturgical function within the life of a group -- rekindling enthusiasm and commitment, and reinforcing a sense of community. **Problem:** The great attention aroused by such events, particularly through the media, easily creates the impression that some lasting cooperation has been achieved -- bypassing the obstacles confronted by conventional initiatives. Such events legitimately build hopes and create visions of what might be, but they delude when presented as cooperation of other than the most ephemeral kind. In contrast to the sacrifices normally demanded by any significant cooperation, participants have little to lose by being seen to attend or contribute briefly to a happening. Such events salve consciences, draining resources away from longer-term projects. Symbols of achievement parade as realities, disguising healthy responses to non-achievement.

11. Rule of law

The elaboration of agreements and networks of regulations binding the relationship between social actors is cooperation in one of its most lasting forms. Much effort is devoted to formulating resolutions, declarations of shared principles, and multilateral treaties -- as a means of evolving the framework of law, whether national or international. The stream of regulations from the EEC is a prime example. **Problem:** Much of the effort devoted to articulating such instruments is in response to the need for visible symbols of achievement at the time they were voted or signed -- whether for public relations purposes or to justify participation in a meeting. Many such instruments remain dead letters -- and indeed many are only produced for valid short-term effect, as reminders of what ought to be done. Treaties either fail to enter into force for lack of ratifications, or only govern the behaviour of a minority of potential parties, or are systematically violated, in the letter or in the spirit. Little provision is made for enforcement of obligations. Little is learnt from the lack of commitment to last year's resolutions in the throes of articulating those for this year.

12. Conspiracy of elites

Real cooperation may be seen as associated with the unpublicized, long-term working relationships between elites of whatever kind. This may range from a group of community "elders", through "old boy networks" or "nomenklatura", through academic "invisible colleges", to semi-secret societies such as the freemasons and Opus Dei. It may be cultivated in closed meetings (Trilateral Commission, Bilderberg Group) and by secret diplomacy. It may be articulated in secret agreements, whether between governments, classified research establishments, intelligence agencies, corporations, crime syndicates or revolutionary groups. It may take a seemingly innocent form in conspiracies of the spiritually "initiated" or of like-minded social change agents (the "Aquarian Conspiracy"). ***Problem:*** The successes of this form enhance complacency amongst the elites -- the belief that their power and insight provide adequate social guidance -- as well as encouraging non-elites in this same belief, thus disempowering them. The difficulty with such forms is that there are no checks ensuring that the self-selected participants act in the interest of the wider community rather than their own -- as with cartels and organized crime. Consequently groups such as the freemasons and Opus Dei must check each others excesses in continuing battles hidden from the public eye. Invisible colleges must engage in primitive skirmishes to deprive each other of larger shares of scarce resources. Such groups are often poorly equipped to regulate the excesses of their members, as the publicized excesses of the insider traders, the freemasons, and irresponsible researchers make clear.

The challenge for the 1990s may involve not so much abandoning any one of these mind-sets but rather of learning how to avoid being trapped within any such metaphor as providing "the one solution". In each case there is a need to see through the veils of opportunistic reporting and media hype establishing claims of successful cooperation. The danger is one of being deluded by semblances of cooperation and symbols portrayed as achievements. Their current status constitutes a re-emergence of idolatry -- the perfection and worship of new forms of "golden calf". Such idols of cooperation should not disguise the questionable value of efficient rearrangement of the deck-chairs on the Titanic or of effective use of a tea cup in bailing out a life-boat being swamped in heavy seas.

Is the bitter lesson to be learnt from the last 30 years that: **Until we understand how we -- "the enlightened cooperators" -- are part of the problem, we cannot understand the nature of the solution required ?**

INTER-PERSONAL STRATEGIC DILEMMAS OF PARTICIPATION IN A SUSTAINABLE INTER-SECTORAL MEETING

IFCD44B

Privileged function / Constrained function	Group Security P	Group Health W	Group Education L	Group Productivity T	Group Environment E	Group Regulation R	Roles	Problems ?
Group Security/Peace Vulnerable sectors Women/Youth P	Sacrifice of one sectoral group for another? PP	Sacrifice group development for well-being of sector WP	Sacrifice group development for sectoral learning LP	Sacrifice group development for sector prod. benefits? TP	Sacrifice group development for group environment? EP	Sacrifice group development for sectoral equity? RP		
Group Health Sense of utility Quality of action Role fulfilment W	Sacrifice key sectoral role for group development? PW	Sacrifice of one form of group health for another? WW	Sacrifice group health for sectoral learning? LW	Sacrifice group health for sectoral prod. benefits? TW	Sacrifice group health for group environment? EW	Sacrifice group health for sectoral equity? RW		
Group Learning Insight capture ? Culture Information exchange L	Sacrifice sector learning for group growth? PL	Sacrifice sectoral learning for group health? WL	Sacrifice of one form of learning for another? LL	Sacrifice group learning for sectoral prod. benefits? TL	Sacrifice group learning for group environment? EL	Sacrifice group learning for sectoral equity? RL		
Group Productivity Addedvalue/Technique Deal making/Cultiv. Energy resources T	Sacrifice sectoral productivity for group develop.? PT	Sacrifice sectoral productivity for group health? WT	Sacrifice sectoral prod. for group learning? LT	Sacrifice of one form of group productivity for another? TT	Sacrifice of group productivity for environment? ET	Sacrifice of group productivity for sector equity? RT		
Group Environment Sector 'ecosystems' Factional coalitions Group design E	Sacrifice sectoral environment for group develop.? PE	Sacrifice sector ennvironment for group health? WE	Sacrifice sectoral environment for group learning? EE	Sacrifice sector environment for group prod. benefits? TE	Sacrifice of one environmental benefit for another? EE	Sacrifice group environment for sector equity? RE		
Group Regulation Governance Justice/Order/Equity Obligation Mgt. R	Sacrifice sectoral equity for group development? PR	Sacrifice sectoral equity for group health? WR	Sacrifice sectoral equity for group learning? LR	Sacrifice sector equity for group productivity benefits? TR	Sacrifice sectoral equity for group environment? ER	Sacrifice of one form of sectoral equity for another? RR		

- Column and row headings correspond to major clusters of functions essential to the sustainable development of a meeting
- Words used to label the scope of clusters are necessarily inadequate at the level of generality indicated.
- The clusters could be "unpacked" to give more columns and rows. Cluster label words would then become more specifically appropriate.
- The cells of the table indicate fundamental dilemmas of participation in a sustainable meeting
- Sacrifices must be made in the process of change and transformation. The dilemma is the level of the sacrifice that is appropriate.
- Sustainability is determined by the balance between the various forms of sacrifice and the constraints that they impose on one another.
- The columns/rows can be thought of in terms of values, logics or languages which successively confront each other.

EARTH SUMMIT AS A NATURAL ECOLOGICAL SYSTEM

What would the Earth Summit look like if it were a natural ecological system? How could it embody/integrate sustainability throughout its being? Would this maximise the contributions it can make to sustainable development in a global context (applying the images of microcosm/macrocosm, pattern creation, "do it once and it is done for ever", Mao's exemplary commune, "walking your talk").

As it currently stands, the most obvious comparisons for the Rio conference are to a botanic garden, zoo or circus - a managed, semi-natural system designed to maximise rarity, display, the exotic, the fragile, diversity of form; but low on interactive complexity, not a true living system, low on necessity and purpose, complexity of interaction, and contextual relationship with whole. Its psyche is artificial, depauperate, arid, "deforested", to use some terms from nature.

What are the characteristics of a full-featured ecological system? Two are basic:

> **Structure is a network**. Information flows in all directions (materials, energy, influence). It is open. There is no unnecessary blockage or movement. Action is initiated at appropriate nodes. Feedback is integrated, and the whole and any part is self-organising.
>
> **Process is a cycle.** Build up and break down. Anabolic (synthesis/recomposition) and catabolic (decay/decomposition) halves of the circle. There is a structural cycling of components from simplicity through complexity and back again.

Why is it that the structures we humans build are limiting the flows of resources?. Necessary feedback loops which would regulate over-consumption, over-population, and waste are absent. Action and influence are linear instead of radial.

We hear that thinking is the problem. Emotions are the problem. Actions are the problem. What have we created with our uncompleted thoughts, feelings and activity?

Decomposition cycle
We have forgotten the decomposing half of the cycle. We build nuclear power stations and leave it to the next generation to clean up. When will we give the same time and attention to the shitty part of the work? When will we honour our garbage collectors, love earthworms and vultures?

We are stuck in the first part of the cycle. Immature children. Doing, acting. Making things and leaving the mess. Frenetic oscillation on this side of the cycle.

Blocked on the other side. The down side leads to simplification, return to chaos. We approach the down-slope and pull back. Fear, pain. Rats continually getting an unpleasant electric shock become ill. How much individual illness, social ill-health, is the result of overexposure to psychological/spiritual pain, or the avoidance of pain?

Avoidance of cycle completion
Different types of pain. Fear of pain. Anxiety - fear of the void, of decay and death. One useful aspect comparable to meditation and other techniques is to accustom ourselves to emptiness. Initiation ceremonies and sacred rites teach the reality of pain, and the ability to move through the pain and get on the other side. Many therapies also help to get us through.

Krishnamurti asked what would happen if we could complete a thought. Took it to its very end. What would happen if we could complete our emotions, our actions. Took them full cycle.

The ending of time? Karmic (repetitive patterns) time. Why do some people take fifteen years to "know" something when another never has to learn, simply knows? and vice versa? Another said that "Time is what occurs when you need a learning experience". Time is what it takes for us to "know" something. If your head hears something and understands its meaning, then you have to "incarnate" a learning experience so you can also "know" its truth. But if your heart understands it, you know instantaneously, there is no need for experience, there is no time.