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# Interrelationships between 64 Complementary Approaches to Sustainable Development

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Tentative names become evident if the cursor is placed over each.
Clicking on them provides access to descriptions of them (as explained below).
7 Equivalent maps are available for: Dialogue / Vision / Conference / Policy / Network / Community / Lifestyle
*This paper is a contribution to reflection on viable strategies for sustainable development on the occasion of the*
*UN World Summit on Sustainable Development (Johannesburg, 2002)*
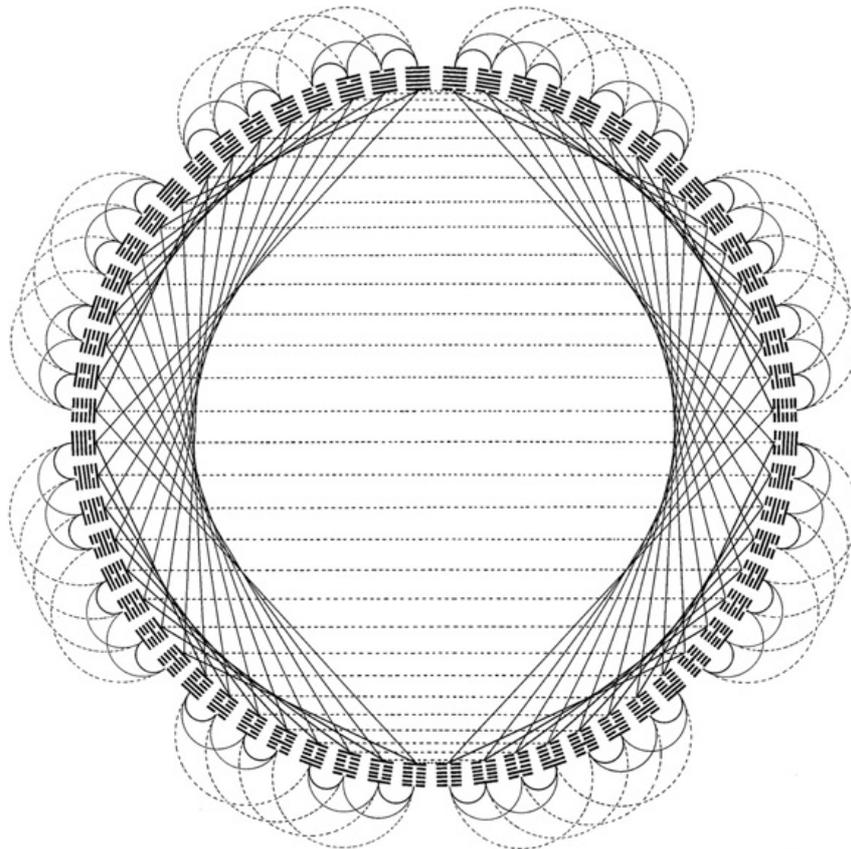


**Instructions:** *Putting the cursor on any hexagram in the above diagram will bring up in a window the significance of the hexagram*. [*NB: The window is best displayed in the browser Internet Explorer*]. For example, a text such as "DDDDDE: Enterprise / Awareness" may be shown as one approach to sustainable development. This is explained in Table 1 below. Any line leading away from the selected hexagram will link to a second hexagram -- signifying another approach into which the first will tend to transform. The text also includes a number and the name of a metaphor. *Clicking on any hexagram will bring up the text* corresponding to that metaphor -- which explains the significance of that particular approach in terms of lifestyle sustainability.

## Explanation

The diagram above constitutes a very tentative exercise in distinguishing 64 complementary approaches to sustainable development -- presented here in a circular arrangement to emphasize their complementarity. Each approach is indicated by a hexagram composed of 6 lines. The lines of a hexagram may be *broken* or *unbroken* and as such are indicative of the fundamental polarity between "development"

and "environment". An *unbroken* line signals a "developmental" (D) perspective. A *broken* line signals an "environmental" (E) perspective. Such lines occur in various combinations in each hexagram. The circular diagram as a whole may therefore be understood as an array of approaches -- each denoted using a simple binary coding system.

In the hexagram, the original polarity ("development / environment") is presented as made up of 2 trigrams which each describe commonly understood -- but contrasting -- forms of "sustainable development" as indicated in Table 1.

| Code | Composition of trigram | | | Approaches to sustainable development (tentative keywords) |
|---|---|---|---|---|
| | Level 3 | Level 2 | Level 1 | |
| DDD (Enterprise) | development / | development / | development | **enterprise** initiatives typical of business (industry and commerce), industrial agriculture (agribusiness) and aquaculture, monoculture, unconstrained exploitation of environmental resources ('slash-and-burn'), 'green-field' development, land clearance, 'economic bottom-line' |
| DDE (Awareness) | development / | development / | environment | demonstrating environmental **awareness**, corporate environmental reporting, environmental symbolism, "pro-environment" positioning partnerships, environmental tokenism ("greenwash") |
| DED (Ecoefficiency) | development / | environment / | development | **ecoefficiency**, DfE principles, environmental management, corporate environmental responsibility, ISO 14000, environmental impact analysis (EIA), "cradle-to-grave" / life cycle analysis (LCA), 'environmental bottom line', conserving resources |
| DEE (Responsibility) | development / | environment / | environment | industrial ecology, ecotourism, environmental monitoring, environmental assessment, bioregionalism, 'triple bottom line', 'brown-field' development, 'producer **responsibility**', product stewardship, watershed development, ethical investment |
| EDD (Clean-up) | environment / | development / | development | precautionary principle, **clean-up** technologies, community renewal, urban environment renewal, non-polluting technologies, biotechnology, carbon credits, community land trusts |
| EDE (Ecodesign) | environment / | development / | environment | **ecodesign**, ecobuilding, biomachines, green machines, biofuels, intermediate technology, eco-preneur, reducing environmental footprint, organic agriculture, sustainable lifestyles, indigenous knowledge |
| EED (Downscaling) | environment / | environment / | development | voluntary simplicity, **downscaling** lifestyles, ecovillages, alternative currencies (LETS), permaculture, agro-ecology, local self-sufficiency, 'small is beautiful', 'right livelihood', breeding rare species, conserving nature, environmental stewardship |
| EEE (Deep-eco) | environment / | environment / | environment | deep ecology ("**deep-eco**"), population reduction, no-go wilderness reserves, 'earth first', sacred groves, old forest preservation |

Table 1: Eight basic approaches to sustainable development

**Trigrams**

In the above table, the first three rows are characteristic of what is commonly designated as "brown-ware" and the last three as "green-ware". The examples given are indicative and may in practice be associated with more than one row, especially through their politicization -- and the 'spin' initiatives of their proponents or opponents (also giving rise to pejorative terms such as 'greenwash'). So-called 'Type 2' (post-*Agenda 21*) multi-stakeholder development partnerships may, for example, be associated with DDE, DED and DEE. The indications in the table are all

very tentative and were developed with the assistance of Nadia McLaren (In the Global Village: options for moving beyond Binge, Whinge, Cringe or Stinge in local green accounting, 1999). A single term in each group of tentative descriptors has been arbitrarily highlighted to facilitate reference within the circular arrangement. Hyperlinked terms offer descriptions from within the strategies database of the Encyclopedia of World Problems and Human Potential.

Comprehending the interdependencies of this set of 8 trigrams calls for **richer metaphorical sets to emphasize the complementarity and dynamics between these eight corresponding styles of "sustainable development"**. This counteracts the dangerous tendency to promote a single style and marginalize all others.

Each trigram in Table 1 embodies 3 'levels'. These are usefully understood as a means of encoding the dynamics between several kinds of level associated with the development/environment debate indicated in Table 2. Examples of different ways of interpreting these levels (A, B, and C) are tentatively presented. In each interpretation: Level 1 is the most immediately accessible to experience; Level 2 is a less tangible contextual response; and Level 3 is the least immediately evident (whether in terms of space or time). This suggests a useful contrast between 'environment' as what is experienced **here-and-now** (Level 1) and 'development' as a concept of how things may be in process of transformation **over time** (and on a larger scale) in the light of visions, benchmarks, plans, resolutions, and promises whose

realization cannot be immediately verified (Level 3).

| Table 2: Understandings of different levels of sustainable development | | | |
|---|---|---|---|
| Interpretations | Level 3 | Level 2 | Level 1 |
| A | larger extended community (national, regional, global) | local known community (family, peer group, network) | individual |
| B | conceptual / ethical / ideological | emotional / public opinion | practical / concrete |
| C | 'developmental' | 'social' | 'environmental' |

As a set, the eight trigrams may be considered an adequately complex representation of the varieties of sustainable development -- particularly in comparison with a smaller set of four 'digrams', or the original 'development / environment' polarity. However it is useful to pursue the exercise further by combining any two of the trigrams to create the larger set of 64 hexagrams in the circular diagram above. Note this omits intermediary sets of 16 or 32 forms of sustainable development which may be preferable for some purposes.

**Hexagrams**
In the circular diagram above any two of the trigrams in Table 1 above (eg DDD and DDE) may be combined together to form a single more complex approach to sustainable development. So DDD/DDE would signify *Enterprise / Awareness*. For this example, the first (*Enterprise*), being above, may then be understood as operating on a **macro-level** and the second (*Awareness*) on a **micro-level**. Alternatively the first may be understood as the **overt** presentation of the approach, whereas the second may be understood as a more **covert**, underlying attitude to that approach. Elsewhere amongst the 64, would be another approach, DDE/DDD signifying *Awareness / Enterprise* -- in which the relationship is reversed. Some terms offered as examples in Table 1 may prove to be more uniquely associated with particular hexagrams.

Within the circular arrangement, the hexagrams are clustered around the ring in terms of the lower (inner) trigram. Thus the eight hexagrams with *Enterprise* (DDD) as the lower trigram are together (see top left).

In an effort to reflect explicitly the social dimension of the 'development / environment' dynamic, the 6-line hexagram may also be interpreted as 3 sets of 2 lines. The lowest set corresponding to Level 1 of Table 2, the middle set to Level 2, and the upper set to Level 3. In each hexagram, the 'development / environment' polarity might then be understood as being uniquely played out at the most tangible and concrete level (Level 1), at the social or opinion level (Level 2), and at the ideological or developmental level (Level 3).

An extended discussion of this kind of framework is provided by C. J. Lofting (*Initial Eight Categories: the properties and methods of personal and social identification*, 2002-2003).

**Transformations**
**With the 6-line hexagrams, 64 approaches to sustainable development can be encoded. Each approach may, in practice, transform into other approaches identified by following the lines from each hexagram to another hexagram. This transformation is a consequence of the inherent instabilities in any approach pursued in isolation -- for an excessive period of time. Such instability results from the build up of stresses, inconsistencies and "contradictions" in the implementation of the approach -- and the need to adapt to negative feedback from the environment. The instability may also result from the emergence of new insights (including technical breakthroughs) that reframe the older approach as less attractive.**

**Each line leading from a hexagram signals a switch from a "development" (D) to "environment" (E) perspective (or the reverse) -- in one of the component lines of the hexagram.**
**For example DDDDD will tend to change to DDDDD*E* (or to *E*DDDDD).**

**Such a change might be usefully understood as being the result of recognition of emergence of inconsistencies and alternatives as indicated in Table 3 below. These might arise at the macro or micro levels. Note that the change might either be experienced as a positive breakthrough (whether in practical, emotional, or conceptual terms) or as some form of failure transforming the situation in ways that might be perceived negatively.**

| Table 3: Examples of transformations | | Macro-level change ('global') | | Micro-level change ('local') | |
|---|---|---|---|---|---|
| Levels | Possible emergent (in)consistencies and recognition of (preferable) alternatives | From | To | From | To |
| 3 | Conceptual / Ethical / Ideological / Doubt / Certainty / Conversion / Vision / Realization / Conviction | *D*DDDDD | *E*DDDDD | DDD*D*DD | DDD*E*DD |
| 2 | Emotional / Opinion / Fashion / (De)motivation / Enthusiasm / Repugnance | E*E*EEEE | E*D*EEEE | EEEE*E*E | EEEE*D*E |
| 1 | Practical / Concrete / Obstacles / Disaster / Technical breakthrough | DD*D*EEE | DD*E*EEE | DDDDEE*E* | DDDDEE*D* |

**The circular arrangement only shows changes arising from the shift in a single line. Clearly more complex patterns are possible if at the micro-level, for example, practical, emotional and conceptual inconsistencies emerge together. In which case the change would be of the form EEE*EEE* to EEE*DDD* (or the reverse). Such complex changes might be considered less**

probable.

Together -- through the manner in which the approaches transform into one another -- they show how sustainable development is made up of a rich set of complementary approaches. These are often seen as mutually antagonistic by their respective proponents. Development, to be sustainable, is dependent on the dynamic between all the approaches whereby they correct for each others' inadequacies in complex interweaving cycles. It is the pattern of changes between the 64 modes that is the essence of a development that is sustainable. It is such change that is sustainable -- not any particular mode.

Types of transformation

Of special relevance is the insight that the above framework may offer into the types of transformation between different styles of sustainable development -- basically 'how' to shift from one mode to another. This is best clarified in the following Table 4 of transformations between the trigram representation of the 8 basic styles of sustainable development identified in Table 1.

| Table 4: Types of transformations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| . | . | **DDD** | **DDE** | **DED** | **DEE** | **EDD** | **EDE** | **EED** | **EEE** |
| . | . | Enterprise | Awareness | Ecoefficiency | Responsibility | Clean-up | Ecodesign | Downscaling | Deep-eco |
| **DDD** | Enterprise | **0** | **1-1** | **1-2** | **2-1/2** | **1-3** | **2-1/3** | **2-2/3** | **3-1/2/3** |
| **DDE** | Awareness | **1-1** | **0** | **2-1/2** | **1-2** | **2-1/3** | **1-3** | **3-1/2/3** | **2-2/3** |
| **DED** | Ecoefficiency | **1-2** | **2-1/2** | **0** | **1-1** | **2-2/3** | **3-1/2/3** | **1-3** | **2-1/3** |
| **DEE** | Responsibility | **2-1/2** | **1-2** | **1-1** | **0** | **3-1/2/3** | **2-2/3** | **2-1/3** | **1-3** |
| **EDD** | Clean-up | **1-3** | **2-1/3** | **2-2/3** | **3-1/2/3** | **0** | **1-1** | **1-2** | **2-1/2** |
| **EDE** | Ecodesign | **2-1/3** | **1-3** | **3-1/2/3** | **2-2/3** | **1-1** | **0** | **2-1/2** | **1-2** |
| **EED** | Downscaling | **2-2/3** | **3-1/2/3** | **1-3** | **2-1/3** | **1-2** | **2-1/2** | **0** | **1-1** |
| **EEE** | Deep-eco | **3-1/2/3** | **2-2/3** | **2-1/3** | **1-3** | **2-1/2** | **1-2** | **1-1** | **0** |

Table 4 indicates the type and complexity of the transformation from one mode of sustainable development to another in the light of the framework presented earlier. The first figure in any cell indicates how many 'levels' (from Table 3) have to change to ensure the transformation. So, for example, to get from *Enterprise* (DDD) to *Awareness* (DDE), only one level needs to change, and it is the most concrete level (Level 1), as indicated by the second number -- hence the indication of '1-1' in the cell. However to get from *Enterprise* (DDD) to *Deep-eco* (EEE) -- obviously one of the most challenging transformations -- all three levels need to change (concrete, opinion, and conceptual) -- hence the indication of '3-1/2/3' in the cell. Cells of similar coding have been given the same colour to facilitate detection of pathways of different ease (and probability) between modes of development.

This indication of a possible three-level process recalls the work of Kathleen L. Valley and Angela T. Keros (*It takes two: Social distance and improvisations in negotiations*, 2002) who demonstrate that negotiators turn to three dynamic processes -- trust-testing, process clarification, and emotional punctuation -- when they have difficulty moving the interaction toward a coherent, mutually agreed upon improvisation.

One merit of the presentation in Table 4 is the suggestions it offers to organized efforts (media campaigns, etc) to move from one mode to another, namely whether they can focus only on the concrete (Level 1), or whether they need to involve motivation and opinion (Level 2), for example. Similarly it helps to indicate the constraints on transformational efforts that focus only on the conceptual (Level 3), for example. Similarly the presentation also suggests the ways in which a particular mode of sustainable development might become unstable and decay into another mode -- perhaps by being simultaneously challenged on the concrete and conceptual levels (Levels 1 and 3).

The presentation in Table 4 focuses only on the trigrams and, according to earlier arguments, this may be understood to apply generically both at the micro-level ('local') and on the macro-level ('global'). An equivalent, but much more complex table (64 x 64 = 4096 cells), would be needed to indicate the possible transformations -- if each of the 64 combinations of global and local sustainable development were considered (eg DDDDDD to DDDDDE). Clearly the transformation from global-and-local *Enterprise* (*DDDDDD*) to global-and-local *Deep-eco* (eg *EEEEEE*) would then involve 6 changes. There would be 3 at the macro-level (Levels 1-3: concrete, opinion, concept) and 3 at the micro-level (Levels 1-3: concrete, opinion, concept). Therefore, to avoid this complexity in the circular arrangement, it only shows the single line transformations.

But again, it should be stressed, the purpose of this approach is to demonstrate the interpendencies of the 64 approaches to sustainable development rather than to imply that any single mode is a preferred goal. It is facilitating the dynamic between them, according to circumstances, that is the preferred goal.

## Embodying approaches to sustainable development in performance art

The description above is expressed in a form that is far from the forms of presentation favoured by many. This also implies that it is dissociated from forms that may have mnemonic value. The classic circular arrangement of 8 trigrams is in fact reminiscent of the notations used for dance. It is therefore interesting to look at international Laban dance notation [more], notably its use of the following basic schema with which any dance movement can then be described:

| Dance movement according to Laban notation |
|---|
| |
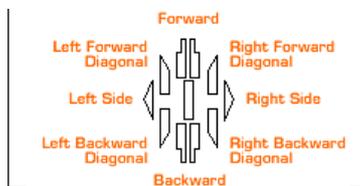
The interesting question is whether the varieties of sustainable development lend themselves to expression through dance movements that can emphasize the transitions between different forms. Of particular significance is the way the component symbols can be shaded to signify the 'level' of the movement. For example, low level is with a bent leg, middle level is with a straight leg, and high level is up on the toes. Some traditions, such as that represented by the *Rg Veda* or Balinese culture, have used dance to illustrate what might now be described as 'sustainable development'.

## Conclusions and reservations

The emphasis here has been on the possibility of a binary coding system -- embodying the fundamental incompatibility between development and environment -- which could shift the development/environment debate into a different framework. More prosaically it offers a classification system of forms of sustainable development. It has been stressed that many of the terms used as examples, or for easy reference in the tables, merit further reflection with a view to the substitution of others that are more appropriate or less susceptible to misinterpretation. Although of course it is difficult to locate a single term to capture a complex approach. The ideal would be an interactive facility to enable users to substitute their own preferred labels.

Since social dynamics are considered to be asymmetrical and result in a Markovian process, the logical symmetry of the pathways might well be dismissed as an ideal. An explanatory note on the plurality of approaches determined by time, place, challenges, resources and circumstance would help clarify the unpredictable complexities of the transitions.

More consideration needs to be given to the relationship between any hexagram and the form of sustainable development it represents. Of special interest is how the framework 'holds' the negative ('decay') -- or positive ('evolution') -- transformation of one mode of sustainable development into another -- and the extent to which the pathways indicated are meaningful. The explanatory metaphors associated with each also call for much more reflection. Whatever the weaknesses, however, it offers an unusual way of interrelating incommensurable strategic commitments at different levels of society.

Generically, an approach of this kind may also be of value in articulating the range of options in other highly polarized situations -- notably in the case of intractable territorial conflicts, such as in the Middle East. The approach renders explicit a pattern of intermediary epistemological styles that effectively mediate between those associated with the polarized extremes. Such intermediary styles, and the associated modes of social organization, may also be vital as a means of offering transition pathways between incompatible extremes such as 'western civilization' and 'indigenous societies' (as proposed elsewhere in the case of Australian Aborigines). However it would also be interesting to explore in the case of other 'divides' such as female-male, young-old, ignorant-knowledgeable, etc.

## Related papers

Dysfunctional cycles and spirals: web resources on "breaking the cycle". 2002 (https://www.laetusinpraesens.org/docs/cycles.php)

Psychology of sustainability: embodying cyclic environmental processes. 2002 (https://www.laetusinpraesens.org/docs/psychsus.php)

From statics to dynamics in sustainable community: navigating through chaos by playing on polarities as attitude correctors. 1998 (https://www.laetusinpraesens.org/docs/statics.php)

Discovering richer patterns of comprehension to reframe polarization. 1998 (https://www.laetusinpraesens.org/docs/territ.php)

Typology of 12 complementary strategies essential to sustainable development. 1998 (https://www.laetusinpraesens.org/docs/learnstr.php)

Sacralization of hyperlink geometry. 1997 (https://www.laetusinpraesens.org/docs/hypgeos.php)

Sustainable development: a system of 14 complementary concepts. 1994 (https://www.laetusinpraesens.org/docs/susdvmet.php)

Configuring strategic dilemmas in intersectoral dialogue. 1992 (dilemmas) [table] [spherical net]

Patterning transformative change -- for sustainable dialogue, vision, conference, policy, network, community and lifestyle (https://www.laetusinpraesens.org/docs/ching00a.php)

Alternating between complementary conditions -- for sustainable dialogue, vision, conference, policy, network, community and lifestyle (https://www.laetusinpraesens.org/docs/ching00b.php)

Interrelating incompatible viewpoints -- for sustainable dialogue, vision, conference, policy, network, community and lifestyle (https://www.laetusinpraesens.org/docs/ching00c.php)