# U!A SOFTWARE CONCERNS

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## BACKGROUND

The Union of International Associations, founded in Brussels in 1907, is an international non-profit research institute, serving as a **clearing house for information on international organizations** and their preoccupations. It is funded by sale of publications and contracted research services. Work has been computerized since 1974. Data management is now based on a 20-station Novell Netware 3.11 network accessing a 1.2 gigabyte data base for which software was specially developed in an Advanced Revelation environment to constitute a hybrid text database. In 1986 the publication production portion of the system received the first Printing World Award for "the most innovative application of computers in typesetting".

The UIA maintains a comprehensive database on international organizations, the issues with which they are concerned and the relationships between them. This information is output in the form of reference books, especially the 3-volume *Yearbook of International Organizations* and the *Encyclopedia of World Problems and Human Potential* The production chain involves a UK-based photocomposition service and a German-based publisher and distribution service. The books and information are sold world-wide, primarily to government agencies, research libraries and the travel industry. The UIA publications are the standard data source for research on international organizations.

The UIA seeks to exploit its advantage in data quality by developing **new types of information product focussed on the mapping and visualization of the networks of relationships** between issues and between organizations. These products require development of software which would transfer the existing relational data into graphically representable form - emphasizing comprehensibility.

Aside from any disk-based products, the hardcopy products would provide users with new ways of understanding the complex networks of issues with which the international community of organizations is concerned - both as **a guide to policy formulation and as a guide to accessing information** in more conventional forms. The software would offer additional advantages, as a mapping product in its own right, as well as permitting researchers to manage data on complex networks of bodies and issues in new ways.

The information challenge of the 1990s, as recently highlighted in a report on the plans of Dun and Bradstreet for the development of their own information policies {*International Herald Tribune,* 18 Feb 1989) is that, despite computerization and telecommunications, organizations are suffering more from information overload than from information capacity. *"Thus the successful information companies of the 1990s may not be those that gather new data, but those that get existing facts to customers in the most useful form."* The Union of International Associations has itself contributed to research on these issues through its participation in the programme of the Tokyo-based United Nations University on "Information Overload and Information Underuse", and in presentations to various international conferences.

**THE CHALLENGE**

The conventional approach to databases, and to the reference books produced from them, is to focus on individual entries. The user is not assisted in understanding the pattern of relationships between entries, other than by fairly crude grouping of entries into categories. There is thus a vital distinction between the capacity to "look up" information, as typified by use of a telephone directory, and **portraying the pattern of relationships between bodies, concepts or issues,** as typified by systems charts, PERT charts, subway maps and mind maps. It is such maps which help the user to ask more insightful questions that are less dependent on initial biases.

Editorial researchers need to be able to graphically represent the networks of relationships they are endeavouring to clarify. This is in part strongly related to mind-mapping. Without such a tool, editors have to produce extensive mind maps in manual form before building up or modifying the network of relationships. Ideally it should be possible to communicate such maps to key resource people to obtain **insightful feedback** which is not so easily evoked or indicated in normal text presentations.

The **needs of end-users** of information products increasingly resemble those of editorial researchers - especially in interactive environments. End-users are no longer content to be unable to update erroneous information or append comments.

**AUGMENTED HYPERTEXT EDITING**

UIA databases are maintained through constant re-editing in the light of new information from international organizations. The entities described may be organizations, world problems, strategies, values, or concepts. The conventional approach of "entity equals record" of course applies in the case of entities which are well-defined, stable and unambiguously named. In many cases the UIA is however dealing with **fuzzy or incomplete information,** only vaguely related to clear subject categories. It is up to the editor to identify an entity by a naming process which may only be provisional. In this sense **entities have varying degrees of "stability".**

The real challenge lies in **editing evolving networks of entities,** especially where material in one entity record may have to be moved to another. In the case of world problems, for example, an entity may be named by a collection of from 1 to 10 phrases, each of which captures aspects of it. But the editing process, in response to new information or insights, may call for some of those naming phrases to be split off into a new problem entity - possibly a broader problem, a narrower problem, or a sister problem. Portions of the descriptive text may also need to be moved. Corresponding to this splitting operation, there is of course a merging operation by which entities are fused together. The pattern of cross-references between entities may also be modified in a similar manner.

Control of the actual movement of text is of course a standard feature of any text processor. These facilities have already been augmented by allowing the UIA editors to embed **"live" cross-references in the text.** Thus an entity's descriptive text may have many links to other entities (possibly in other databases) present as editable "text". Any changes in the cross-references are updated in the distant entities when the text is saved (as in any relational database).

# Method: conceptual processes summarized

| | |
|---|---|
| 1 .a  Detecting/Finding/Scanning - accumulating variants - eymptoms/pre-problems | EliminatIng/Rejecting/Filtering - nonproblems (cases, solutions, theories, events, projects) |
| 2.a  Clustering/Grouping - combining synonyms, aspects, duplicates - tidying-up variants | Splitting/Distinguishing - combining synonyms, aspects, duplicates - tldying-up variants |
| 3.a  Responding to sources - sensitivity to where people are - what people identify with - accept unforeseen categories | Detachment from fashionable - reservations concerning solution/value hype - articulating value dimension - clarifying value qualifiers as ordering principle |
| 4.a Sharpening names/keywords - renaming / negativizlng - de-hyping/de-solutlonizing - what is the problem the solution is designed to remedy - alternative names to facilitate location | Broadening / Balancing - inserting anthropocentric terms where Implicity - opening possibility of non anthropocentric equivalent. - opening up sets /series - Is there a complementary problem |
| 5.a Naming more general problems - naming clusters - creating intermediary problems to group/label sub-clusters | Determining level of specificity - appropriate cut-off points at bottom of hierarchies - what should only be covered at a more general level |
| 6.a Elaborating description - sharp, not waffly. - appropriate amount - transfer aspects of mega-problem texts to sub-problems | 6.b Caring for poorly articulated and Inadequately documented problems |

Figure 1. Problem entries: conceptual processes

| | |
|---|---|
| 1 .a  Detecting/Finding/Scanning - recognized relationships | 1.b Eliminating/Rejecting/Filtering - misconceived relationships - too vague, too specific |
| 2.a Forming hierarchy - tidying up | 2 b Distinguishing hierarchies - splitting off branches |
| 3.a Shifting level to more general relationships | 3.b Shifting level to more specific relationships |
| 4.a  Inserting implicit relationships | 4.b Eliminating erroneous relationships |
| 5.a  Responding to necessity of ordering clusters - appropriate cut-off points - adjusting from minimal to optimal ordering | 5.b Avoiding excessive imposition of simplistic ordering |
| 6.a  Cross-referencing responsible organizations | 6.b Cross-referencing bibliographic sources |

Figure 2. Problem relationships: conceptual processes

The UIA is concerned to develop the **software framework to guide the editor in making more perceptive judgements** about how the network can best be refined in the light of new information. These judgements involve a sense of hierarchy (broader, narrower) and a sense of functional relationships (aggravated, reduced by, etc) between entities. Hierarchies may not be simple tree structures. An entity may be grouped under several broader categories. Special problems include avoiding redundant links and inserting links to previously isolated entities which may not be readily identifiable in the database through any keywords in common with the portion of the network on which the editor is working.

This "hypertext editing"[1] process is as much art as science and can only developed with experience and natural aptitude. What is currently sought is a way of **augmenting the** conceptual skills of **the** editor. These can perhaps best be described through one or more metaphors:

> (a) Knitting: there is a definite sense of knitting together entities into patterns. The challenge for the editor is to hold and refine that pattern in relation to entities that might or might not be drawn into it. To be able to visualize the pattern would be of great value.

> (b) Gardening: there is a sense of planting entities over a conceptual space in an aesthetic and functional relationship to one another. Entities and networks may be pruned or given scaffolding on which to develop when new information becomes available.

> (c) Ecological succession: there is a sense in which the database is always evolving and never complete. At any time, the entities are arranged and related like plants and animals within an ecosystem. But the relationships are changing continually - "hardy" pioneer entities providing niches for more specialized and subtle entities, the entire system elaborating in diversity and complexity as time goes on. The challenge for the editor is to optimize the degree of integrity and system resilience in anticipation of unforseeable future developments.

Clearly such hypertext editing is a new kind of skill which will be basic to the development of many future databases and their multimedia access. Many of the required features are relevant to the access needs of sophisticated end-users.

**NETWORK MAPPING**

Because of the overwhelming volume of data, it is becoming increasingly clear that conventional means of presenting such data do not respond adequately to the needs of an important category of users. Users associated with the policy elaboration process need new information tools which help them to get an **overview of the maze of data.** Options need to be presented for discussion in terms of a context of explicitly interrelated issues - in contrast with the present tendency to disguise this complexity by reducing it to a linear agenda of issues.

One approach is to conclude that users need **"maps" of the pathways between text entries,** especially in complex subject areas. Such maps provide a sense of context which is lost in many hierarchical presentations of data in linear text form. It is only from such maps that users can quickly obtain an adequate overview of data in an unfamiliar area to guide their efficient use of conventional information tools. Such maps are of value precisely because they

are richer than simple hierarchically structured thesauri.

This project is concerned with presentations of information which will be possible once a particular computer software problem has been adequately solved. The problem can be illustrated by three examples:

(a) Traffic network mapping: If a database contained entries on 300 subway stations (or airports, or bus stops) and their direct route links to one another, what is required is a software package to construct one or more possible maps of the resulting network. The important point is to be able to optimize the comprehensibility of such maps with minimum manual intervention in the construction process.

(b) HyperCard stack mapping: With the widely acclaimed introduction of the Apple hypercard, whereby complex networks of relationships between database records can be handled, the problem remains of mapping the pattern of relationships in the resulting hypercard stack. The individual entries may be said to constitute "data", but it is the pattern of relationships   between them which constitutes "knowledge" and "intelligence"

(c)  Mind-mapping:  This  is a technique currently  being strongly  promoted  in management training and time-management courses. It consists of manually drawing circles to represent key ideas, objectives or activities and then interlinking them in networks of relationships. There is a clear need for a software package to facilitate this process. This could take the form of a non-hierarchical form of the standard outline package to manage chapter headings of a report, in which the graphic element is emphasized. There are some resemblances to project scheduling software except that here the emphasis is on relating concepts.

## EDITING NETWORK MAPS

The capacity to **edit networks as graphic visual representations** would offer many advantages, provided that such changes are integrated back into the database.

This facility represents a combination of the "hypertext editing" and "networking mapping" facilities described above. As in CAD, PCB, CASE and other design packages, the editor is dealing with relationships in a visualized form, as opposed to linear text. The editor "draws" in new relationships, moves relationships, or deletes them.

Whether as editor or end-user, related facilities would be the **use of the network map as an index,** permitting the user to navigate through the network. Text relating to particular nodes could be called up when required, and then edited or annotated according to access rights.

## NETWORK ANALYSIS AS A CONCEPTUAL AID

When dealing with networks consisting of thousands of entities and relationships, it is extremely difficult for an editor to detect redundant links. Routines can be designed to analyze the network around an anchor point for **different types of redundancy,** but the results to date have proved difficult to interpret because they cannot as yet be related to a visual map.

The techniques of network analysis have been extensively developed. The challenge is to relate the results of such analysis to the needs of users of a database on a network of entities. What for example might be its **significance from a policy perspective** - especially where redundant links or absent links have budgetary implications?

Working under conditions of incomplete and fuzzy information, editors can be confronted with information on what appears to be a new class of entity. In the case of a "world problem", for example, this is usually signalled by a new class of "negative operator" defining the problematic nature of the problem. There may be a whole class of problems based on an existing operator such as "unethical" (eg "unethical physicians", etc). But a possible new operator such as "incompetent" may suggest a parallel class (eg "incompetent physicians" etc). There is a case for editorial (and user) tools **to** generate classes **of** entities **experimentally** to determine their effect on the database - and to eliminate them if necessary. With problems it is as much the pattern created by these negative operators which structures the database as the pattern of subjects.

## CONCEPT TRACKING IN CONFERENCES

One way to explore future possibilities for electronic and non-electronic conferencing is to consider the implications of various possible marriages between modes of information:

**1. Text and Data:** The classic separation between text processing and data processing has severely impeded the evolution of conferencing. A fruitful marriage would allow users their current freedom of expression but would also enable them to navigate more effectively through the maze of messages. Various approaches could be taken. An outline facility would structure lengthy communications so that users could explore them to different depths using an onion-skin approach. Of particular interest would be to code such levels to indicate their relevance to the core message (e.g. background or context, argument or justification, precedents, counter-arguments, action implications, explanatory or learning mode material, anecdotal illustrations, etc). Archiving could then be done selectively, gradually reducing to the core concept only. On the other hand, a **hypertext facility** would obviously empower users in new and interesting ways.

The issue in both cases is how to code levels of the text and embed hypertext links in the text as part of the message generation process. This is an extension of the classic problem of how to motivate authors to provide abstracts. The long-term solution is to **shift the focus of attention from the text to the representation of the knowledge implied by the text.** A transitional solution is to develop what might be called a "text compressor" or "concept processor" based on artificial intelligence procedures.

As has been repeatedly noted, the desk-top publishing revolution and its conferencing parallel will more than overwhelm a saturated readership. Desk-top readers do not accomplish what we would like their name to imply. They do not help us to filter and comprehend the content. Some form of text analysis and restructuring by a concept processor is required to mine the conceptual ore from what needs to be dumped or filed at a lower priority level. The most practical approach would to provide users with a minimum facility which they could adapt and tune to their personal idiosyncrasies. Users could of course view and edit the structured product generated from their own outgoing communications. Such a processor might usefully be related to the need for machine-assisted translation.

**2. Data and Graphics:** There are two challenges here:

(a) enabling a group of users to address the emerging articulation on a shared map (possibly with personal overlays, etc);

(b) escaping the conceptual straitjacket of packages based on a directed graph or tree structure in order to use an associative structure (on which alternative tree structures can be temporarily imposed).

It is worth noting that a heroic attempt was made to do just this by Stafford Beer and Gordon Pask at the first international conference of the Society for General Systems Research (London, 1979) before the PC era. Both concept maps and participant network maps were produced and used to orient discussion. Such experiments would be infinitely easier now and many refinements could be incorporated. Stafford Beer is currently extending this work with new protocols for specialized conferences based on tensegrity structures. Mind mapping software is now available on PC - but anchored to a single initial concept.

3. **Comment:** The absence of such tools is an indication of the priorities of conferencing at this time. Questions such as the following need to be asked:

(a) Why is it that participants in a conference have experienced no need to represent the conceptual structure which they are collectively attempting to articulate?

(b) Is it that participants are satisfied with the schematic representation in an agenda or programme? Or is it that they prefer a discursive mode in which the structure is implied or left ambiguous?

(c) Why is it that in the academic analysis of social networks almost no attention has been devoted to the graphical problems of representing complex networks - despite the extensive manipulation of data on them.

(d) Why is it that in the current enthusiasm with hypertext, no effort is made to provide the user with a map of the hypertext pathways between the set of frames? It is almost as though a hypertext stack was designed like a rat maze, which the user has to explore like the rat, without any sense of perspective. Learning is the process whereby the rat builds up its own mental model. The map of the relations in a relational database is not considered as valuable information to orient new forms of inquiry or modification of the pattern of relations. It can be argued that it is that map which constitutes knowledge, in contrast to information.

There is every possibility that users have different preferred cognitive modes (possibly under different circumstances) and that it remains important to cater flexibly for those who feel constrained by particular structures.

One possible reason for the relative lack of interest in conferencing systems in the international community is that in the present form they do not reflect the dynamics of factional interaction. The action is perceived as being elsewhere. Even the texts produced can be viewed as conceptual shells discarded by a dynamic beast that has moved elsewhere. The consensus-mania pervading explicit conferences forces the real, tension-filled, business of factional wheeling and dealing into other arenas - if only the corridors and bars outside meeting rooms or in one-to-one messaging. This clearly suggests the need for handling the public-private interface more flexibly, veiling and unveiling explicit structure when

appropriate. The conferencing of the future may yet prove to be a conceptual dance of the seven veils !

**STRUCTURAL OUTLINERS AND CONCEPTUAL SCAFFOLDING**

We no longer believe that our society has the collective ability to organize collaborative projects of a type capable of making the breakthroughs called for. It is our suspicion that the challenge calls for quite another approach that makes greater, and more imaginative, use of the information tools that our society has created in order to counteract the tendency for collaboration to become tokenistic. Failing that, projects run the significant risk of being undermined by dynamics with which many are already all too familiar.

**1. Conceptual keystones:** Many documents of fundamental importance to patterns of collaboration within societies, organizations and groups (or even to an individual's creative processes) are based on **sets of principles, values, qualities, policies, initiatives or other points** (eg declarations, charters, action plans). These are usually listed out as a numbered sequence, possibly with nested sub-points. The conventional method of producing such documents favours (and reinforces) linear thinking at a time when non-linear, contextually-oriented approaches are often believed to be more appropriate to ensure higher levels of integration amongst the elements of the set.

The project aims to facilitate the ability to envisage viable configurations of functions based on structures more complex than those reinforced by hierarchical organization charts. It responds to the need for potential collaborators to design **"conceptual keystones"** essential to the coherence and viability of unforeseen coalition possibilities in difficult situations of governance.

**2. Structural outliner:** This project suggests the need for a **computer-based structural "outliner"** to facilitate a non-linear approach to the creative production of such "conceptual keystones". The need for a more integrative approach may be seen in the occasional efforts to group conceptual elements, basic to a strategy, into a table, a pie-chart, a diagram, or even into a form of mandala. Although currently simplistic, the structure provides **an integrative perspective that links a variety of disparate, but complementary, elements** that together ensure the viability of the larger pattern.

This project therefore focuses initially on the design of computer software (possibly adapting an existing package) for which an appropriate database is then developed in collaboration with a number of bodies. The intention is then to use these tools to provide a "catalytic context" from which **new patterns of group and institutional action** could emerge. The principal output would not therefore be any form of "report" but rather a piece of software (possibly a prototype). It is the dissemination of this software, ultimately through commercial channels, which would enable many people to explore the tool as a "collaboration enhancing" device. In this sense the real objective of the project is new forms of collaboration. In subsequent use the database would be receptive to user-enhancement, notably to patterns of concepts from non-western cultures.

Its claim to originality would lie in its ability to open up (and mid-wife) new and alternative patterns of collaboration - especially across discipline and faction boundaries. In creating this device, the purpose of inter-institutional collaboration would be to enrich its scope (as represented by the database) and explore opportunities it opened up (specifically in relation to institutional arrangements for sustainable development).

In the light of a number of collaborative international exercises (and notably the design of a collaborative process culminating in the Inter-Sectoral Dialogue in Rio de Janeiro on the occasion of the Earth Summit), it is legitimate to consider whether there is not a strategically more appropriate approach to encourage imaginative, interdisciplinary work of relevance to the policy

3. **Conceptual scaffolding:** As with the construction of any building, **there is a basic need for "scaffolding" to hold the conceptual and organizational elements in place, especially during the early phases of "imaginative, interdisciplinary" interconnection.** It may be argued that it is the lack of this scaffolding feature which prevents many potentially useful initiatives from "getting off the ground" - and staying up. And the more complex the psych-social structure, and the more communication space it spans, the greater the need for more complex scaffolding.

A typical function of scaffolding in a conference is to provide a framework within which complementary perspectives can be articulated, especially when there is a major tension between them. When Concept A is formulated, the scaffolding holds a space for Concept B to counter-balance it Such scaffolding is even more essential when more than two concepts have to be held in balance. As with buildings, the scaffolding provides a protection against disruptive forces in the conference process. A typical disruptive force in a contemporary conference might focus narrowly on "industry is exploitative", when the larger issue is to provide a sustainable framework in which to balance the exploitative characteristics of industry against the socio-economic benefits that it provides in the light of environmental constraints. The more complex the balance, the more vulnerable is the conference to disruptive forces.

**The challenge is how to allow different category structures, and the groups advocating them, to mesh before their incompatibilities tear each other apart.** This is a major issue when dealing with the strong, creative, and often idiosyncratic, personalities (and groups) whose collaboration is ideally required. It is seen in its most dramatic form in the Middle East peace process and in negotiations among the warring parties in Yugoslavia. The apparently disproportionate importance attached to "table layout" in any negotiation procedure is a physical indication of the nature of the conceptual challenge.

Failure to respond to this issue leads to project outputs whose only real integrative feature is the physical binding of a document containing unrelateable "integrative" contributions - however skilfully worded the introduction may be (In German: Buchbindersynthese!).

The scaffolding required not only has implications for elaboration of new structures. It also **supports the learning processes** through which others subsequently come to grasp the scope of such structures as viable alternatives to the simpler conventional patterns that have proven so inadequate to the challenges of the times.

4. Scaffolding **possibilities:** Many of the geometric operations basic to fruitful exploration of such a structural outliner are detailed in a classic study by Robert Williams: *The Geometrical Foundation of Natural Structure; a source hook of design* (New York, Dover, 1979). Part 3 of that work details 10 principal methods through which polygons and polyhedra can be generated or have identity changes. These include: vertex motion, fold, reciprocation, truncation, rotation-translation, augmentation-deletion, fistulation, distortion, dissection, symmetry integration. It is such operations which are required to explore transformations between structures whose features are used to carry the conceptual (and

even symbolic) significance basic to any new patterns of collaboration.

Structurally an agenda or a conference programme, even a multi-track program, is rather simple - even simplistic - especially when considered in relation to the complex ecology of problems and organizations which are supposedly to be interrelated effectively through it Is it any wonder that conferences are relatively ineffective at coming to grips with complex issues? What is being attempted is in defiance of Ashby's Law of Requisite Variety.

The issue is therefore how to enable users to collectively design more complex forms of conceptual scaffolding to hold in place embryonic or unstable concepts until other concepts can be fitted into the pattern to lock them into place. Ideally, of course, it is the conferencing software which should provide such scaffolding. And, like the scaffolding for buildings, it should be adjustable to different structural configurations as the building grows.

Four forms of scaffolding are especially interesting:

> (a) Symmetrical structures
>
> (b) Tensegrity structures
>
> (c) Resonance hybrids
>
> (d) Embedding data in images

5. **Dynamic scaffolding and structural transformation:** The need for conceptual scaffolding is clear given the kinds of complexity with which society has to work. The challenge of making the more complex structures comprehensible is also clear - those most appropriate to the challenge of sustainable development may be beyond the ability of any single human mind to grasp. But **any form of development implies structural transformation.** Whilst transforming simplistic structures like conference agendas and organization charts may pose little challenge, the transformation of the complex structures described earlier are quite another matter.

The process of conceptual or social transformation appears to call for a form of **dynamic scaffolding** which provides some form of continuity - from stage to stage - through the transformation process. What we are looking for is a form of scaffolding onto which the conference's insights can be mapped at Stage I. The relationships in this mapping would then be stretched or changed in the transformation to Stage II, which might be some very different kind of structure - suggesting new kinds of relationships between the concepts so bound (and between their proponents in the conference).

There are few examples of this kind of structure:

> (a) Image transformation or "morphing"
>
> (b) Vector equilibrium

**FURTHER POSSIBILITIES**

The issue of **on-line access** has not been discussed since at this point in time this is primarily constrained by hardware and costs. The more fundamental issues are those of knowledge organization.

Many of the features discussed above lend themselves to implementation in the interactive **multi-media environments** currently being developed on CD. Clearly other forms of information can be held and accessed via the structured networks described.

Additionally it should not be forgotten that the kind of data lends itself to useful investigation of the **conceptual potential of virtual reality technology** in navigating and reconfiguring the complexity of such networks. It is not too far-fetched to foresee the possibility of hypertext editing within the virtual reality environments which are rapidly becoming available. There may be advantages for an editor in being able to "physically" manipulate relationships. The ultimate challenge is one of comprehending increasingly complex data sets. Virtual reality should not be neglected as a possibility.

REFERENCES **(UiA)**

UNION OF INTERNATIONAL ASSOCIATIONS (UIA)
- 1976: Yearbook of World Problems and Human Potential. Brussels, UIA, 1st ed. 1976.

- 1991: Encyclopedia of World Problems and Human Potential. Munchen, Saur, 3rd ed. 1991, 2 vols. (1994 edition in preparation)

- 1992: Whos Who in International Organizations. Munchen, Saur, 2 vols., 1st ed.

- 1993: Yearbook of International Organizations. Munchen, Saur, 3 vols, 30th ed

JUDGE, A.J.N.:

- 1970: Development of trans-disciplinary conceptual aids. Brussels, Union of International Associations, 13 p. (co-authored with Jere Clark of the Center for Interdisciplinary Creativity, Southern Connecticut State College)

-1971: Relationship between Elements of Knowledge: use of computer systems to facilitate construction, comprehension and comparison of the concept thesauri of different schools of thought. Brussels, Union of International Associations (Working Paper 3 of the Committee on Conceptual and Terminological Analysis of the International Political Science Association)

-1971: Information Systems and Inter-organizational Space. In: [Annals of the American Academy of Political and Social Science] 1971, 193, pp. 47-64. Special issue on social development.

-1977: Knowledge-representation in a computer-supported environment. International Classification, 4, 2, 1977, pp 76-81.

- 1977: A Meeting-related Information Exchange Facility Within a Computer Conferencing Environment. 22 p, annexes. (Report prepared in response to a request from an Ad Hoc Meeting on Conference Information Systems held on the initiative of the Committee for Information on Science and Technology (CIDSI) of the Commission of the European Communities, Luxembourg, September 1977).

- 1978: Mapping Possibilities in Response to Information Needs of Science Policy-making for Development. Brussels, Union of International Associations, 4 p. annexes. (Report prepared for the science advisor to the Commonwealth Secretary General in partial fulfillment of a consultancy assignment under the Commonwealth Fund for Technical Co-operation). Restructured version appears as: Information Mapping for Development in: [Transnational Associations].

- 1979: Implementing Principles by Balancing Configurations of Functions: a tensegrity organization approach. Transnational Associations, 31, 1979, 12, pp 587-591.

-1979: Representation, Comprehension and Communication of Sets: the role of number, in: [international Classification] 3 parts. Part 1: 5, 3, 1978, pp. 126-133. Part 2: 6, 1, 1979, pp. 16-25. Part 3: 6, 2, 1979, pp. 92-103. Also in: [Patterns of Conceptual Integration]. Collection of papers presented at meetings of the Goals, Processes and Indicators of Development project of the United Nations University, 1978-82. Also circulated in a pre-publication form by the UN University as HASDR-GIPID-22/UNUP-133, 1980.

- 1980: Integrative Dimensions of Concept Sets: transformations with minimal distortion between implicitness and explicitness of set representation according to constraints on communicability. In: [Patterns of Conceptual Integration] Brussels, Union of International Associations, 1984.

- 1980: Patterns of N-foldness: comparison of integrated multi-set concept schemes as forms of presentation. In: [Patterns of Conceptual Integration] Brussels, Union of International Associations, 1984.

-1982: The future of comprehension; conceptual birdcages and functional basket-weaving. Transnational Associations, 34, 6, pp 400-4.

- 1982: Utilisation of International Documentation: introductory report for Panel III. In: [Th Dimitrov (Ed). International Documents for the 80's; their role and use] (Proceedings of the Second World Symposium on International Documentation (Brussels, 1980). New York, Uniflo, 1982. Abridged version reprinted under the title: Societal Learning and the Erosion of Collective Memory. (The report is based on a critique of the Club of Rome report: No Limits to Learning).

- 1984: Patterns of Conceptual Integration, Brussels, Union of International Associations, 296 p., UIA Publ. 259. (Collection of papers presented at meetings of the Goals, Processes and Indicators of Development project of the United Nations University (1978-1982)).

- 1984: Forms of Presentation and the Future of Comprehension. Brussels, Union of International Associations, 232 p. UIA Publ. 261. (Collection of papers mainly presented to the Forms of Presentation sub-project of the Goals, Processes and Indicators of Development project of the United Nations University (1978-1982)).

- 1984: The Territory Construed as a Map: in search of radical design innovations in the representation of human activities and their relationships. In: [Forms of Presentation and the Future of Comprehension] Brussels, Union of international Associations, 1984, pp. 112-121.

- 1984: Policy Alternation for Development. Papers arising from work in connection with the Goals, Processes and Indicators of Development Project of the United Nations University (1978-1982). Brussels, UIA, 230 p.

- 1986: Comprehension of Appropriateness : Project on Economic Aspects of Human Development (EAHD) of the Regional and Global Studies Division of the United Nations University. Paper for Rome workshop, September 1986. Brussels, UIA.

- 1986: Alternation between Variable Geometries; a brokership style for the United Nations as a guarantee of requisite variety. In: Bardonnet, D (Ed). The Adaptation of Structures and Methods at the United Nations (Proceedings of a workshop, The Hague, 1985 of the Hague Academy of International Law and the United Nations University). Dordrecht, Nijhoff, 1986

-1987: Governance through Metaphor: Project on Economic Aspects of Human Development (EAHD) of the Regional and Global Studies Division of the United Nations University. Paper for Geneva workshop, June 1987. Brussels, UIA.

- 1987: Reflections on Associative Constraints and Possibilities in an Information Society. Transnational Associations, 38, 1987, 3, pp 168-181

- 1988: Metaphoric Revolution : in quest of a manifesto for governance through metaphor. Paper prepared for the 10th World Conference of the World Future Studies Federation (Beijing, Sept 1988), under the auspices of the China Association for Science and Technology. Group 8: Changing political institutions. Brussels, UIA, s.p.

- 1989: Innovative Global Management through Metaphor, Paper prepared for The Conference on Social Innovation in Global Management, organized by the Weatherhead School of Management, Case Western, Reserve University, 1989. Brussels, UIA

- 1990: Through Metaphor to a Sustainable Ecology of Development Policies. In: Trzyna, T C and Gotelli, I (Eds): The Power of Convening; collaborative policy forums for sustainable development. Sacramento CA, California Institute of Public Affairs, 1990, pp. 64-81.

-1990: Transformative conferencing; the re-enchantmentof networking through conceptware. (Paper for 5th Conference of the Electronic Networking Association, San Francisco, 1990, 14 p.).

- 1991: Recontextualizing Social Problems through Metaphor: transcending the "switch" metaphor. Paper prepared for the International Conference on Demography Issues and Sustainable Development organized by Development Alternatives (New Delhi, 1990). in: Transnational Associations, 43, 1991, 1, pp 37-46

- 1991: The Aesthetics of Governance...in the Year 2491. Futures, 23, May 1991, 4, pp 426-436

- 1991: Transformative conferencing: concepts, notes and papers on problems and possibilities on the new frontier of high-risk gatherings concerning social development (grouping pre-1991 materials). (1991, 218 p.)

- 1991: Guiding metaphors and configuring choices (Paper commissioned by the Development Administration division of the United Nations Department of Technical Cooperation for Development to be published in a collection of papers "Tools for Critical Choice by Top Decision Makers") (1991, 23 p.)

- 1991: Research network on catalytic imagery for governance in impossible situations (1991, 20 p.)

- 1991: Metaphors as transdisciplinary vehicles of the future (Paper for Conference on Science and Tradition: Transdisciplinary Perspectives on the way to the 21st Century, 1991). In: Congress Proceedings, Paris, UITF, 1991.

-1992: Participant Interaction Messaging; proposal for a low-cost on-site conference communication medium (submitted

**to organizers of the 1992 Earth Summit). (1992, 37 p.)**

- **1992: Higher orders of inter-sectoral "consensus"; clarification of formal possibilities (1992, 40 p.)**

- **1992: Configuring globally and contending locally: shaping the global network of local bargains by decoding and mapping Earth Summit inter-sectoral issues (Served as principal background document to the Inter-sectoral Dialogue prior to the Global Forum in Rio de Janeiro). (1992, 56 p.)**

- **1992: Visualizing relationship networks: international, interdisciplinary, inter-sectoral (collection of pre-1991 papers). (1992, 60 p.)**

- **1992: Catalyzation of new patterns of collaboration using a PC-based structural outliner as an imaging scaffold (1992,**

**- 1993: Metaphor as an unexplored catalytic language for global governance (Paper for 13th World Conference of the World Futures Studies Federation, Turku, August 1993 for session on: Theories, methods and practices of futures studies).**

REFERENCES

AIDA, S et al. The Science and Praxis of Complexity (Contributions to the symposium held at Montpellier, 1984). Tokyo, United Nations University, 1985

ALEXANDER, Christopher (et al). A Pattern Language: towns, buildings, construction. New York, Oxford University Press, 1977

ATKIN, Ron. Combinatorial Connectivities in Social Systems; an application of simplicial complex structures to the study of large organizations. Basel, Birkhauser Verlag, 1977.

ATKIN, Ron. Multidimensional Man; can man live in 3-dimensional space? London, Penguin, 1981

BARLOW, H, BLAKEMORE, C and WESTON-SMITH, M. Images and Understanding. Cambridge, Calbridsge University Press, 1990

BU2AN, Tony. Use Both Sides of Your Brain. New York, E P Dutton, 1977

CARD, S K; ROBERTSON, G and MACKINLAY, J D. The Information Visualizer; an information workspace. Palo Alto, Xerox Palo Alto Research Center, (1991?)

GALLON, Michel, LAW, J and RIP, Arie. Mapping the Dynamics of Science and Technology; sociology of science in the real world. London, Macmillan, 1986

Centre for Educational Research and Innovation. Interdisciplinarity; problems of teaching and research in universities. Paris, OECD, 1972.

ENGELBART, Douglas. Augmenting Human Intellect; a conceptual framework. Menlo Park, Stanford Research Institute, 1962 (AFOSR-3223)

FAIRCHILD, K M, et al. SemNet: three-dimensional graphic representations of large knowledge bases, in: R Guindon (Ed). Cognitive Science and its Applications for Human-Computer Interaction. New Jersey, Erlbaum, 1988

FULLER, R Buckminster. Synergetics; explorations in the geometry of thinking. New York, Collier, 2 vols 1975/1982

GARFIELD, Eugene. Discipline-oriented citation indexes and data bases: bridging the interdisciplinary gap via multidisciplinary input. Current Contents, 1981, 3, pp 5-8.

GARDNER, Howard. Frames of Mind; the theory of multiple intelligences. New York, Basic Books, 1983.

GENTNER, Dedre and GENTNER Donald. Flowing Waters or Teeming Crowds: mental models of electricity. In: D Gentner and A L Stevens (Eds). Mental Models. Hillsdale NJ, Lawrence Erlbaum, 1982

HERDEG, Walter. Graphis Diagrams; the graphic visualization of abstract data. Zurich, Graphis Press, 1974 HEELAN,

Patrick A. Space-Perception and the Philosophy of Science. Berkeley, University of California Press, 1988 HELSEL,

Sandra Kand ROTH, J P (Ed). Virtual Reality; theory, practice and promise. Westport, Meckler, 1990

HORN, Robert E. Mapping Hypertext: the analysis, organization, and display of knowledge for the next generation of on-line text and graphics. Waltham MA, Information Mapping, 1989

JANTSCH, E. Towards interdisciplinarity and transdisciplinarity in education and innovation. In: Centre for Educational Research and Innovation. Interdisciplinarity; problems of teaching and research in universities. Paris, OECD, 1972.

KLAPP, Orrin. Opening and Closing; strategies of information adaptation in society. Cambridge, Cambridge University Press, 1978

KLEIN, Julie Thompson. Interdisciplinarity; history, theory and practice. Detroit, Wayne State University, 1990, bibl. (pp 231-325)

LAKOFF, George. Women, Fire and Dangerous Things; what categories reveal about the human mind. Chicago, University of Chicago Press, 1987

**-14-**

LAKOFF, George and JOHNSON, Mark. Metaphors We Live By. Chicago, University of Chicago Press, 1980

LASWELL, Harold. The Transition towards more Sophisticated Procedures, in: D B Bobrow and J L Scwartz (Eds). Computers and the Policy-making Community; applications to international relations. Englewood Cliffs, Prentice Hall, 1968, pp 307-314

LEVIN, Lennartand LIND, ingemar(Ed). Inter-Disciplinarity Revisited;: re-assessing the concept in the light of institutional experience. Stocklhom, OECD / Swedish National Board of Universities and Colleges, Linkoping University, 1985

MACKINLAY, J D. Automating the Design of Graphical Presentations of Relational Information. ACM Transactions on Graphics, 5, April 1986, 2, pp 110-141

MACKINLAY J D, ROBERTSON, G G and CARD, S K. The Perspective Wall: detail and context smoothly integrated. ACM CHI '91 Conference on Human Factors in Computing Systems. New York, ACM, 1991

MARCUS, Solomon. Why expressive and suggestive metaphors in the scientific language? Revue Romaine de Linguistique Theorique et Appliquee, 27, 1990, 1, pp 25-42

MICHON, John A. How to connect a library with a mind. In: C Reedijk, C K Henry and W R H Koops (Eds). Large Libraries and New Technological Developments. Munchen, Saur, 1984, pp 137-152

MILLER, Arthur I. Imagery in Scientific Thought; creating 20th century physics. Cambridge, MIT Press, 1986

MILLER, Eugene F. Metaphor and political knowledge. American Political Science Review, 73, 1979, pp 155-170.

MORGAN, Gareth. Images of Organization. London, Sage, 1986

NUDLER, Oscar. On conflicts and metaphors: toward an extended rationality (Paper prepared for the Seminar on Needs Theory, Center for Conflict Analysis and Resolution, George Mason University, Fairfax VA, 1988).

ORTONY, Andrew (Ed). Metaphor and Thought. Cambridge, Cambridge University Press, 1979

PALMADE, Guy. Interdisciplinary et Ideologies. Paris, Anthropos, 1977

RAVETZ, J R. Usable Knowledge, Usable Ignorance: incomplete science with policy implications. In: W C Clark and R E Munn (Eds). Sustainable Development of the Biosphere. Cambridge, Cambridge University Press, 1986, pp 415-432

RUSSELL Peter. The Brain Book. London, Routledge and Kegan Paul, 1979

SCHON, Donald A. Generative Metaphor; a perspective on problem-setting in social policy. In: Andrew Ortony (Ed): Metaphor and Thought. Cambridge, Cambridge University Press, 1979, pp 254-283

**PROVISIONAL SPECIFICATIONS FOR A PC-BASED "STRUCTURAL OUTLINER"**

The aim is **to** facilitate the ability of users to envisage viable configurations of functions based on structures more complex than those reinforced by hierarchical organization charts. Use of the software results in the design of "conceptual keystones" essential to the viability of unforeseen coalitions.

It is envisaged that the proposed PC-based structural outliner would be used in **a** manner somewhat similar to the conventional text outliners and mind-mapping aids. However the software would offer many ways of configuring the evolving set of elements within **a** variety of non-linear structural frameworks, whether in two or three dimensions. The geometric and symmetric properties of these would be used to suggest levels of coherence and integration absent from conventional hierarchical structures.

### User approaches

The user would be offered a number of ways of building up the conceptual "keystone". In each case, the result would take the form of a geometric (and normally symmetrical) structure in two or three dimensions with elements of text attached to its features:

> Text points (to be converted via template or rules into structure)
> User chosen
> > - tiling as in Wordperfect tables (to be converted)
> > - empty library shape (to be filled)
> > - filled library shape (to be edited / altered)
> User drawn
> > - shape (to be filled)
> > - mind map (to be optimized into a shape or structure)

Structural **and** patterning templates

The user would be able to draw upon a library of structures and symmetric designs:

> Library of conventional structures
> > Tables (Matrices) in 2D and 3D
> > Polygons
> > Polyhedra
>
> Library of other structures Tensegrities
> > Traditional forms (mandalas, etc)

## Text processor

Two main modes can be envisaged:

> Attach text to directly to structural features (and move text items between structural locations)
> Convert text (outliner) points into features (lines, sides, volumes, great circles) of selected shapes

Both of these exist in simpler form in conventional text outliners

Thesaurus links

The thesaurus would be designed to provide facilities beyond those usually provided by such a function.

Complements: Its main function would be to facilitate selection of complementary sets of terms, depending on the size of the set with which the user was working. With respect to a single element set, the synonym function is all that is called for. As usual, synonyms and antonyms are required for what amounts to two element sets. But what is also required is the ability to process items in 3-part, 4-part, and N-part sets.

Broader / Narrower: The thesaurus would also be used to enable identification of terms corresponding to broader or narrower concepts, especially the contextual terms appropriate to the set as a whole.

Traditional sets: This feature would enable users to browse relevant traditional sets of differing numbers of elements corresponding to the size of the set being worked (tertiaries, quaternaries, etc).

Academic sets: This feature would offer access to sets elaborated in contemporary academic studies.

User modified: The user would of course need to be able to amend the thesaurus in the light of specialized interests and evaluation of the library versions. The user would build up a library of complementary sets reflecting his/her specialized concerns and sense of the balance between the elements.

Restructuring (by rules, by library, or by indications)

Text reveal / hide: This feature would suppress or reveal the text associated with particular structural features.

Structure hide / nest / pack / simplify: This feature (as in text outliners) would be used to conceal levels of detail. In the case of complex structures, this would be achieved by a transformative reduction to a simpler structure (eg from a complex polyhedron to a simpler polyhedron). This reduction would conceal the text associated with the suppressed detail.

Structure reveal / unpack / complexify: This feature would unfold levels of structural detail. A simple structure could thus be unfolded (from a simple polyhedron to a complex polyhedron). This could follow a previously chosen transformation pathway or offer transformative options at each stage. In an edit mode, text could then be input directly (or called in from the thesaurus) into the different facets of the revealed structure.

Other features:
    Optimize existing
    Duals
    Propose alternatives
    Indicate complementaries
    Switch from 2D to 3D presentation
    Rotation
    Contextualize
    Potential complementaries
    Structural families / periodic tables
    User additions / indications

**indexing /Access**

Text **to** structured

Templates

User additions to index

Structural relationships (via features or globally)
Common keywords (via index)
Geometrical similarities / isomorphisms
User indicated associations

## Applications

The major emphasis in each of the following cases is to enable the user to articulate **a** complex pattern whilst maintaining a sense of coherence and ensuring a configuration of functional checks and balances.

Functional units in organizations
Organization chart
Complementarity and balance of functions
Lines of communication

Principles in a declaration Articles Complementarity
and balance of principles

Action plan or policy
Policy elements Highlighting
policy integration

Classification system (books, information, etc)
Filing codes Tracking disparate interests

Mind mapping
Clarifying systems
Creativity
Philosophical organization
Integrating incoherent patterns

Exploring structural transformation pathways
Introduction of new elements Restructuring
(simplification / complexification)

# UNION OF INTERNATIONAL ASSOCIATIONS:  PROFILE

## 1. Aims
Facilitate the evolution of the activities of the world-wide network of non-profit organizations, especially non-governmental or voluntary associations.
- Promote understanding of how international bodies represent valid interests in every field of human activity or belief, whether scientific, religious, artistic, educational, trade or labour.
- Enabie these initiatives to develop and counterbalance each other, creatively in response to world problems, by collecting information on these bodies and their interrelationships.
- Make such information available to them, and to others who may benefit from this network.
- Experiment with more meaningful and action-oriented ways of presenting such information as a catalyst for the emergence of more appropriate organizations.
- Promote research on the legal, administrative and other problems common to these international associations, especially in their contacts with governmental bodies.
To these ends, contact is maintained with a wide variety of bodies in both East and West, developed and developing countries.

## 2. Historical background
Founded in Brussels in 1907 as the Central Office of International Associations, the UIA became a federation under the present name in 1910 at the 1st World Congress of International Associations. Activities were closely associated with the institut international de bibliographie, which later became the International Federation for Documentation. Its work contributed to the creation of the League of Nations and the International Institute of Intellectual Cooperation (the precedessor of UNESCO). During the 1920s, the UIA created an International University, the first of its kind.

## 3. Current status
The Statutes were modified in 1951 to give the UIA the character of an Institute with a world focus, having individuals as full members. !t is an independent, non-governmental, non-profit body which is a-political in character. Its programmes are totally oriented toward the community of international associations whose actions they are designed to facilitate, whether through special studies or through new uses of information. The UIA is registered under the Belgian law of 25th October 1919 as an international association with scientific aims.

## 4. Finance
The UIA is more than 95 percent self-financed, through the sale of publications which it produces and through membership subscriptions. The balance is made up from grants from a number of official and private bodies. The annual budget is approximately US$ 725,000.

## 5. Administration
The UIA General Assembly elects an Executive Council of 21 every 2 years. The programme, under the direction of the Secretary-General, is carried out by the Secretariat in Brussels.

## 6. Working languages
Working languages of the UIA are English and French, although information is received in many languages. Most publications are produced in English. The *Yearbook of International Organizations* is indexed in all languages used by international organizations.

## 7. Full Members
Individuals, whose total number may not exceed 250, are elected by the UIA General Assembly which they constitute. Members are elected on the basis of their interest and activity in international organizations, usually demonstrated by an active role in such a body over an extended period of time. They include diplomats, international civil servants, association executives, professors of international relations and directors of foundations. Members do not pay annual dues, but as trustees it is expected that they will further the interests of the UIA in their particular sphere of activity. Members are currently located in 35 countries on all continents.

## 8. Associate Members
Any corporate bodies or individuals interested in the aims and activities of the UIA and wishing to associate themselves with its work by payment of an annual membership fee. Members include a wide range of organizations, foundations, government agencies and commercial enterprises and are entitled to preferential use of UIA services. Membership subject to approval by the Executive Council.

## 9. Corresponding Organizations
The UIA is controlled by its individual members, although its work is almost entirely with the complete range of international organizations through publications and correspondence. For those international organizations who wish to be more closely associated with this work, without any commitment of "membership", a category of "Corresponding Organizations" is provided by the UIA Statutes.

## 10. Collaboration with inter-governmental organizations
The UIA has Consultative Relations with UNESCO, UN/ECOSOC, and ILO. It collaborates with FAO, the Council of Europe, UNITAR, and the Commonwealth Science Council. It is one of the research institutes in the network of the UN University. A special ECOSOC resolution establishes cooperation between the United Nations and the UIA for the preparation of the *Yearbook of International Organizations,* for which contact is maintained with over 1,000 intergovernmental bodies. A French edition was produced with the assistance of the Agence pour la cooperation culturelle et technique.

## 11. Relationship with international associations
Contact is maintained with over 13,000 international non-governmental organizations eligible for inclusion in the *Yearbook of International Organizations.* Special links exist to UIA Corresponding Organizations, to the federations of international organizations established in Belgium (FAIB), France (UOIF), and Geneva (FUG), to the conferences of consultative NGOs for ECOSOC and UNESCO, to bodies using its secretariat facilities, or to those with which it has co-publishing arrangements.

## 12. Activities
Mainly centred on processing of information on an in-house data network to produce a variety of reference regular publications (see overleaf). A periodical *Transnational Associations* (6 per year) includes studies and surveys of international networks of organizations and their concerns. A variety of other studies and reports are produced (write for information). An international centre with shared facilities for Brussels-based organizations was opened in 1983.

# UNION OF INTERNATIONAL ASSOCIATIONS (UIA)

## YEARBOOK OF INTERNATIONAL ORGANIZATIONS

Munchen, New Providence, London, Paris: Saur, 1993. 30th ed. 3 vols., 1993/94. ISBN 3-598-22216-5.

• Vol.1 Organization Descriptions and Cross-references. 30th ed. 1993/94, ca. 1800 p., ISBN 3-598-22217-3. (annual)

• **Organization descriptions (30,491 entries): The non-profit organizations included may be intergovernmental, non-governmental, or mixed in character. They cover every field of human activity. Descriptions, in alphabetical order of title, vary in length from several lines to several pages. They include the following types: universal and regional international organizations; semi-autonomous bodies; networks, etc; internationally-oriented national bodies; and others.**
• **Contents of descriptions: The descriptions, based almost entirely on data supplied by the organizations themselves, include: names in all relevant languages; principal and secondary addresses; main activities and programmes; personnel and finances; technical and regional commissions; history, goals, structure; inter-organizational links; membership by country; publications.**
**Integrated into the alphabetic sequence of descriptions are cross-references to organizations that provides the most detailed available means of identifying international bodies via various languages.**

♦ Vol.2 International Organization Participation: Country Directory of Secretariats and Membership (Geographic Volume). 11th ed. 1993/94, ca. 1800 p., ISBN 3-598-22218-1. (annual) **Countries are listed giving:**
**Secretariats: the international organizations which maintain headquarters or other offices in that country. Address are given in each case**
**Membership: the international organizations which have members in that country. For each organization listed, the international heaquarters address is given, in whatever country that is located**

♦ Vo!.3 Global Action Networks: Classified Directory with Subject Index (Subject Volume). 11th ed. 1993/94, ca. 1800 p., ISBN 3-598-22219-X. (annual) **Classified by subject and region. Over 23,000 international organizations are listed by subject according to their principal preoccupations. Subjects are grouped into both general and detailed categories. The classification scheme highlights functional relationships between distinct preoccupations. The Index includes: keywords from organization names; former names in various languages; subject categories in various languages; personal names of principal executive officers**

## INTERNATIONAL ASSOCIATION STATUTES SERIES
MQnchen, New York, London, Paris : Saur, 1988. Vol.1. 1 ed. 600 p, 30 cm. ISBN 3-598-21671-8 (irregular) **The first volume includes the official texts of 393 statutes of international nongovernmental organizations described in Sections A, B, C of the Yearbook of International Organizations, namely bodies with membership in countries in at least two continents.**

## ENCYCLOPEDIA OF WORLD PROBLEMS AND HUMAN POTENTIAL
Munchen, New York, London, Paris: Saur, 1991. 3rd ed., 2 vols, 2140 p., ISBN 3-598-10842-7. (irregular)

**The Encyclopedia (fourth edition mid-1994) is a comprehensive source of information on some 13,000 "world problems" that have been recognized, on how they are perceived to be interrelated (80,000 problem relationships), and on the human resources available to challenge them.**

**Volume I is devoted to world problem descriptions. Many are seldom, if ever, described elsewhere in specific or precise terms. Much of the information derives from the United Nations and other intergovernmental agencies, as well as from the many international nongovernmental organizations in the companion Yearbook of International Organizations. Considerable effort has gone into identifying and juxtaposing the conflicting perceptions and priorities in all fields of human activity (from the material to the spiritual) which constitute the dynamic reality of world society. Such information is usually difficult to extract from research literature stressing theories, administrative documents justifying programmes, political manifestos defending ideological positions, or from media commentaries focussing on current events.**

**Detailed sections in Volume II cover human development (4,000 entries); integrative knowledge (700 entries); metaphors and patterns (450 entries); transformative approaches (300 entries); and human values and wisdom (2,300 entries). These draw attention to a variety of alternative insights into the ways in which human development and the world problematique mutually inhibit, enable, and provoke each other.**

## INTERNATIONAL CONGRESS CALENDAR (quarterly)
Brussels: 33rd ed. 1993. 4 vol/year. 30 cm. ISSN 0538-6349. **The International Congress Calendar is intended as a convenient reference work for anyone seeking information on international events. From the 23rd edition (1983) the Calendar appears quarterly. Each of the four volumes is self-contained including indexes. Amendments and additions occurring between volumes are specially indicated so that every issue contains the most up-to-date information on international events. Again, this year events listed In the Calendar have increased considerably. All the information on these events is derived from primary sources, i.e. the organizations themselves through regular questionnaire mailings. The proven structure of the Calendar remains unchanged, ensuring convenient access to all events by means of. a geographical section, a chronological section and a subject/organizations index.**

## WHO'S WHO IN INTERNATIONAL ORGANIZATIONS
MQnchen, New York, London, Paris: Saur 1992. 3 vols, ISBN 3-598-10908-3. (irregular)
**This new Who's Who in International Organizations is an indispensable reference work for all international non-governmental and intergovernmental organizations, journalists, libraries, universities and research institutes. This 3 volume set contains approximately 12,000 biographies of eminent individuals from organizations in every field of human endeavour. Intergovernmental organizations; international non-governmental, non-profit bodies; international committees, centres, institutes; informal networks; and national groups concerned with international issues are represented.**