

The

Bliss

CLASSIFICATION BULLETIN

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EDITORIAL

Getting there

We published the volume containing classes AY/B in November 1999 (our publishers forgot to print the date!), two and a half years ago. Since then, work on the intellectual preparation and checking of the schedules has continued apace, but the computing log-jamb has held up production and publication. As reported previously, the extremely complex set of programs we use to create the camera-ready copy of the introductions, schedules and indexes had been poorly maintained and barely documented, and it had become impossible to produce further copy to send to the publishers.

This is all changing. Paul Coates has thoroughly examined, debugged and documented the suite of programs and we are optimistic that final testing in progress will allow us to proceed with the production and publication of Class C in the fairly near future. The bookies may not be taking bets on it, but we should like to see it by the end of the year; further classes – U/V Technology, W Arts, and other sciences – are clamouring to see the light of day

Very welcome are some new members, institutional and personal, and the new Bliss on-line discussion list. Information about both appears in this issue. We have good reason to feel greatly encouraged and much more optimistic.

The Classification Research Group

For many years the Classification Research Group has devoted much of its time to discussion of aspects of BC2 – the overall sequence of classes, the “best place” for specific classes, facet analysis, criticism of draft schedules, and much more. The Association and all BC2 users owe a very great debt to the members of the CRG, as the introductions to the various published schedules regularly, but necessarily inadequately, acknowledge.

Most recently, the Group turned its attention to the future management and revision of BC2, which was discussed on Friday, 5 July. In summary, the meeting proposed that the BCA should develop a business plan. It should explore sources of funding for conceptual projects in conjunction with the UCL School of Library Archive and Information Studies, which is providing a research base for facet analytical theory. The BCA welcomes these constructive proposals, which will receive further discussion in committee. Jack Mills was asked to respond to the detailed analysis by Paul and Eric Coates of software problems and the need for potential alteration to programs. In addition, Robert Rosset offered to talk to Jack Mills and Eric Coates in order to understand and document their “modus operandi” to help to expedite the job of schedule production.

Back up!

This issue of the *Bulletin* narrowly escaped being published much later than intended. Your Editor, being lazy and relying complacently on a computer which is only about a year old, had not backed up all his files and suffered a catastrophic hard disk crash last month. Thanks to MjM Data Recovery Ltd of Letchworth, the essential files were recovered, probably saving the Editor from a breakdown too. A lesson learnt the hard way. Have you backed up *your* files?

Tony Curwen
Aberystwyth, August 2002

BLISS CLASSIFICATION ASSOCIATION

Minutes of the ANNUAL GENERAL MEETING of the Bliss Classification Association held at 2.15pm on Wednesday, 14 November 2001 in the Chadwick Building, Room 218, University College London, Gower Street, London, WC1E 6BT

Present:

Jack Mills (Personal member; BCA Chair)
Heather Lane (Sidney Sussex College, Cambridge; Hon. Secretary)
Jean Aitchison (personal member)
Simon Brackenbury (University of Southampton)
Vanda Broughton (UCL)
Steve Burgess (West Yorkshire Probation Service)
Michael Chin (Dept of Health Library)
Stella Dextre Clarke
Eric Coates (personal member)
Richard Crabtree (Senate House)
Tony Curwen (Editor, *Bliss Classification Bulletin*)
Adrian Dover (personal member)
Frank Emmott (Barnardo's)
Clive Griffiths (Worcestershire County Council)
Helen Mackin (Barnardo's)
Marion MacLeod (Fitzwilliam College, Cambridge)
Andy Pletta (personal member, USA)
J. Proudfoot (Foreign and Commonwealth Office)
Robert Rosset (Nirex)
Elizabeth Russell (personal member)
Miriam Shaughnessy (Dept of Health Library)
Meriel Spalding (Dept of Health Library)
Angela Upton (SCIE)

1. **Apologies** were received from Linda Armitage Karen Attar, Aidan Baker, Ken Best, Marie Bastienpillai, Karen Begg, J. C. Child, Mandy Guest, Angela Haselton, Wai Kirkpatrick, Jeremy Larkin, Alex Perkins, Chris Preddle, Rhona Watson, Leonard Will, Martin Williams and Ruth Winch.

2. **Minutes of the previous meeting**

The minutes were circulated. The minutes were approved and signed as a correct record.

Proposed: Tony Curwen, seconded: Marion Macleod.

3. **Matters arising**

(Item 3) A successful BC2 training course on faceted classification had been held as planned at University College London. A report is available on the web site.

(Item 5.2) The transfer of the Bowker-Saur publications list to K. G. Saur had been concluded during the year and contact had been made with the new production editor in Germany. It was hoped that any problems of distribution could be overcome, and a reprint of the Introduction & Auxiliary Schedules had been promised.

4. **Progress of BC2: Editor's report**

- 4.1 Mr Mills commented on his written report, which had been circulated to the meeting and would be appended to the minutes. *[See page 6 of this issue].*
- 4.2 Eric Coates was thanked for his continued work on indexing BC2, particularly for his comments on the consolidated alphabetical index.
- 4.3 A policy decision to commit funds to the revision of the schedule production software had been taken by the committee.
- 4.4 Mr Mills applauded the work of the Cambridge colleges that have adopted BC2 for their general collections prior to completion of the scheme. Their role in publicising BC2 to a wider academic audience was particularly valued.
- 4.5 The importance of obtaining reviews of the published schedules was emphasised once again, and members present at the meeting were encouraged to submit names of specialist journals that could be approached.
- 4.6 Following his comments, Mr Mills invited questions. The point was raised that Class Q had not been available from K. G. Saur upon request. This was almost certainly because of the transfer of stock from Bowker-Saur to Germany, and the Committee would be investigating the availability of the schedules.

5. **Schedule production**

- 5.1 Following the Hon. Secretary's report of continued problems with the schedule production software, a report had been commissioned from Mr Paul Coates of Cotangent Computing. The report was a model of clarity and indicated how the BCA might proceed. Tony Curwen proposed a vote of thanks to Mr Coates.

6. **Treasurer's report**

- 6.1 As the Hon. Treasurer was unavoidably absent, for which she apologised, Marion MacLeod presented Angela Haselton's unaudited accounts for the year to 31 July 2001, which had been circulated to the meeting.
- 6.2 The Association's finances remained healthy, with a steady income from royalties. The accounts included a substantial sum for training course fees due to UCL.
- 6.3 The accounts were currently with the Hon. Auditor and the audited version would be published in the *BC Bulletin*.
- 6.4 The BCA was actively seeking assistance from a number of sources for research funding and help with the production software.
- 6.5 Subject to a satisfactory audit, it was proposed that the accounts be **provisionally approved**. *Proposed: K. Dover; Seconded: F. Emmott.*
- 6.6 Mr Mills expressed the Association's thanks to the Hon. Treasurer for her work during the year.

7. **BC Bulletin**

- 7.1 The Chairman thanked Mr Curwen for his work on the Bulletin and invited him to make his report.
- 7.2 The Editor thanked the contributors to the 2001 edition and appealed for copy for the next issue. The deadline would be 1 May 2002.

8. Auditor's election

Ken Best was thanked for his continued help as the Association's Honorary Auditor. His re-election was *proposed* by Jean Aitchison and *seconded* by Angela Upton, and unanimously **approved**. Members are asked to notify the Treasurer of anyone who would be willing to act as Auditor in the future.

9. Committee elections

9.1 Four vacancies had arisen. Nominations had been received for Alan Thomas, Marion MacLeod and Robert Rosset. As there were no further nominations at the meeting, all three were elected by unanimous vote.

9.2 Heather Lane had served two consecutive terms as Hon. Secretary, but in the absence of any other nominees the committee proposed that she should be co-opted for a further year. The AGM gave unanimous approval.

9.3 Elizabeth Russell agreed to be co-opted for a further year, as no other nominations were forthcoming at the AGM. This left a further vacancy for a full member of the committee, and an additional co-opted member.

10. A.O.B

10.1 Any queries about BC2 received by member organisations could be forwarded to the Hon. Secretary, who would be pleased to put people in contact with one another.

10.2 Mr Mills thanked Vanda Broughton for her hospitality and for agreeing to host the meeting. As there was no further business the meeting closed at 3.30p.m.



Your Association needs You !

BLISS CLASSIFICATION ASSOCIATION

CALL FOR NOMINATIONS

The BCA is a non-profit making organisation which promotes the development and use of the Bliss Bibliographic Classification, publishes official amendments and enables contact between users of the scheme, giving them a say in its future direction. There are currently a number of vacancies for ordinary members of the BCA committee, to stand for three years from 1st January 2003.

Any nominations for membership of the committee, duly proposed and seconded by members of the BCA in good standing, and notices of motion for the AGM should be forwarded to the BCA Secretary, c/o The Library, Sidney Sussex College, Cambridge CB2 3HU no later than 1st November, or telephone Heather Lane on (01223) 338852 (e-mail librarian@sid.cam.ac.uk)

BLISS CLASSIFICATION ASSOCIATION

Consolidated Receipts and Payments for the Year Ending 31st July 2001

RECEIPTS

<u>2000</u>	Balance brought forward at 1st August	<u>2001</u>
6826.35	Deposit account	6957.60
886.24	Current account	898.45
367.84	Clubs & Societies account	370.67
	Subscriptions	
120.00	Personal	140.12
465.90	Institutional	665.99
130.85	Royalties on 2nd edition (Bowker-Saur)	56.05
55.60	Distribution from M & G (Charibond)	51.52
73.25	Alliance & Leicester share dividend	26.75
	(N/A) Payments from June 2001 Workshops	800.00
	Donations	
	(N/A) On behalf of the Directors of the BSO Panel Ltd	98.44
	(N/A) Anonymus gift	300.00
	Transfers	
(6908.10)	to Nationwide a/c from Alliance & Leicester a/c ** (N/A)	
	Interest payments	
58.00	Deposit (Alliance & Leicester) a/c	(N/A)
(N/A)	Deposit (Nationwide) a/c	116.59
<u>2.83</u>	Clubs & Societies a/c	<u>2.96</u>
<u>8986.86</u>		<u>10485.14</u>
(15894.96)		

** Nationwide a/c was opened on 1st June 2000/Alliance & Leicester a/c closed.

Current Assets at 31st July

<u>2000</u>		<u>2001</u>
800.13	Charibond (at cost)	800.13
898.45	Cash in Current account	1710.80
370.67	Cash in Societies account	373.63
6957.60	Cash in Deposit (Nationwide) account	6820.23
	644.53 Computer equipment	515.63
	<u>128.90</u> less depreciation @ 20% per annum	<u>103.13</u>
<u>515.63</u>		<u>412.50</u>
<u>9469.55</u>		<u>10117.29</u>

PAYMENTS

<u>2000</u>		<u>2001</u>
404.95 ⁽¹⁾	Committee and AGM expenses	270.38 ⁽²⁾
122.35	AGM expenses	1027.50
12.38	Stationery, postage and photocopying	27.55
85.00	Bulletin printing	85.00
135.46	BC2 expenses (computer equipment, printer paper, publicity)207.30	207.30
(6908.10) **	Transfers : from Alliance & Leicester a/c to Nationwide a/c	(N/A)

Balance in hand at 31st July

6957.60	General deposit account (Nationwide)	6820.23
898.45	General current account	1710.80
<u>370.67</u>	Clubs & Societies account	<u>373.63</u>
<u>8226.72</u>		<u>8904.66</u>
<u>8986.86</u>		<u>10522.39</u>
(15894.96) **		(10485.14) ⁽³⁾

- Notes:** (1) Includes cheque payment for £17.80 repaid in 1999/2000.
(2) Includes cheque payments of £19.80 and £17.45 issued but not cleared in 200/2001.
(3) Excluding cheques detailed in (1).
** Alliance & Leicester account was closed on 31st May 2000.

Angela Haselton
Honorary Treasurer
40c Morpeth Road
LONDON
E9 7LD

Auditor's Report

I have examined the books, bank statements and other relevant papers of the Bliss Classification Association and find the above statement of accounts to be correct.

Ken Best

Honorary Auditor
30 Cissbury Close
HORSHAM
West Sussex
RH12 5JT

PROGRESS OF BC2 IN 2001 : EDITOR'S REPORT TO THE AGM

Development of schedules & publication

Introduction & Auxiliary schedules. Our new publisher, K.G. Saur (successor to Bowker-Saur) has undertaken to publish a reprint of this volume.

Auxiliary schedule 2 (Place). An exemplary revision and massive expansion of classes TQ/TZ Pacific Ocean territories, Oceania, etc., was prepared by Anthony Curwen and is published in the current BC Bulletin.

Class C Chemistry. The disk containing the complete volume for this was sent to Sidney Sussex College (where the camera-ready copy is being prepared) by the end of 2000. Unfortunately, the handover from Colin Neilson of the chore of producing crc has proved to be the source of endless difficulties (see below) and Class C has still not been published. It is hoped, however, that the end of the tunnel is in sight and publication should be in the first half of 2002.

Class U/V Technology. Work on this, the largest class in BC2 and one of the most difficult, continued, but at a reduced pace. Eric Coates, its author, has devoted a great deal of his time to the problems of crc production and in particular to the A/Z indexes to BC2.

However, much work has been done on converting Eric's original schedules to full BC2 format and notation, including the massive classes for Construction technology and its associated classes (Environmental technology, etc) and for Transport technology. Class VH Military science and technology, the only class not scheduled in detail in Eric's original schedules, has had a detailed outline prepared and discussed at two Classification Research Group (CRG) meetings. A substantial vocabulary has been assembled for the Food & drinks technology class and for the Household arts class which follows technology proper (see BC Bulletin 2001).

Class VX/W Recreation and the Arts. Work on this large volume has occupied most of our time in the past ten months. The first part, class VX/VY Recreation is now almost completed and needs only the tightening up and finalizing of notation. The second and major part (W The Arts) is also almost complete; nearly all the work remaining relates to the finalizing of the numerous alternatives to be provided and the subsequent finalizing of all the notation. It should be completed by the end of the year and will join the queue for crc production after Chemistry.

For both VX/W and U/V our thanks go to Joy and Douglas Foskett for their valuable assistance in providing vocabulary and analysis.

Preparation of camera-ready copy for publication

This has consumed a great deal of the time of Heather Lane and Eric Coates. Heather's brave effort to get the programming problems resolved and a streamlined bundle produced with the aid of her computer colleagues at Sidney Sussex had finally to be abandoned. Paul Coates, a computer consultant with some familiarity with the highly structured and hierarchically presented output required by BC2, was commissioned to examine the software we have and to consider possible solutions to its problems. In a detailed and very clearly presented report he concluded that the software is basically adequate but that its administration urgently needs to be put on a proper footing, its source files need examination for bugs and usability defects and its structure needs strict documentation.

Although Paul has very generously given his time so far without a fee the implementation of the needed reforms obviously calls for a substantial expenditure, which may extend to the purchase

of new hardware also. BCA is prepared for this and is actively seeking for a grant or grants from responsible bodies to help it in the matter.

Editing and final corrections of crc before sending to publisher

This step has been somewhat neglected in the past in the interests of speeding up publication. The BCA Committee has now agreed to a future policy of post-crc editing and correction and Chris Preddle has agreed to take on the job, beginning with VW/X.

Publicity and increasing membership

Membership has been static for some time. Angela Haselton, Heather Lane and Marion MacLeod organized a questionnaire to go to all present and past members of BCA prior to re-establishing some of the latter to membership. An electronic version has also gone out on listlink.

We continue to produce leaflets on individual classes; one on Class H Human biology & medicine was produced by Angela Haselton and has been distributed, whilst others on Class S Law and Class AM/AX Mathematics & statistics are being prepared.

A number of articles on BC2 and faceted classification have been published, including ones by Karen Attar, Vanda Broughton and Heather Lane. Details of these will be found in a new bibliography on BC2 which has been prepared by Angela Haselton and which now appears on the BCA website.

The thorny and worrying problem of the paucity of reviews of BC2 volumes as they appear is being tackled by Jean Aitchison, who has spent considerable time on it. Jean has produced an up-to-date and comprehensive list of journals who should receive review copies or be invited to receive them with suggestions as to likely reviewers. Jean used the *Knowledge Organization Literature Review* as a basis for her study, since *Knowledge Organization* (formerly *International Classification*) has been a good friend of BC2 in the past.

The neglect of reviews of BC2 volumes in the professional press also led us to write a lengthy letter to Bob McKee, Chief Executive of the LA, which included a criticism of the deplorable decline in the teaching of classification and indexing in present-day library schools. A helpful, if cautious reply was received, in which the CE said he would feed the proposals into the LA's restructuring survey. He also said LA had modest research funds which BCA might be able to use.

A training course on the Theory and principles of faceted classification (which naturally drew extensively on BC2 as an exemplar) was held at the School of Library, Archives & Information Studies, University College London in June 2001, with Vanda Broughton, Frank Emmott and Heather Lane conducting the course. It proved very successful and BCA, inter alia, recruited three new members as a result.

Vanda Broughton attended a workshop at Caledonian University, Glasgow in June presented by the HILT research project (*High Level Thesaurus*). HILT is a fact-finding study of the possibilities of establishing a standard knowledge organization for use in searching electronic as well as conventional information stores. This is but one example of the growing awareness of the need for better selective searching strategies in electronic IR - a development in which BC2 clearly could play an important role.



The Bliss Classification Association
an association to develop and promote the
Bliss Bibliographic Classification
(Registered Charity no. 270580)

Officers and Members of the Committee 2002

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Mrs Heather Lane, *Hon. Secretary*

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Mr Richard Crabtree (*University of London Library*)

Mr Frank Emmott (*Barnardo's*)

Miss Marion MacLeod (*Fitzwilliam College, Cambridge*)

Mr Robert Rosset (*Personal member; Shell International*)

Mrs Elizabeth Russell (*Personal member; c/o Mrs H.E. Lane, Cambridge*)

Prof. Alan Thomas (*Personal member*)

Observer from UDC Consortium:

Dr Ia McIlwaine

Challenges of assembling the Government Category List

The Bliss Classification Association Lecture 2002

given by

Stella G Dextre Clarke

Preamble

An address to the Bliss Classification Association seems an odd place to introduce an approach to information seeking that is not large, not faceted, not sophisticated, not possessed of a notation, and does not embody any new fundamental insights into the structure of knowledge. The diminutive GCL (Government Category List) pales into insignificance when compared with the sophistication of BC2, and the years of intellectual effort that have been invested in the latter. So wherein lies the challenge of the GCL?

It transpires that avoiding sophistication is in itself a challenge. The classification schemes found in today's large libraries were developed in an era when the trained librarian or information officer was on hand, both to catalogue the materials and to mediate at the time of retrieval. Nowadays, with a PC on almost every desk, laymen everywhere expect to be able to find their way around the electronic collections on the networks at their fingertips. The great challenge is to give them tools that they can use without any training.

This address will describe a practical project. Although the product from it has been approved and indeed mandated for use in all UK government establishments, we should see it as a work still in progress, still capable of evolution. Interesting challenges arose from the start and each one has been addressed to the extent possible at the time. But in today's environment of fast-moving technology and user expectations, there is no such thing as a final solution and so we can expect further developments.

The context of the GCL

Making it easy for citizens to access public services and information is one of the key ambitions of the present government. Under the "Modernising Government" agenda, the Office of the e-Envoy (OeE) has the remit to develop policies and standards for achieving interoperability and information systems coherence across the public sector. The idea is that citizens of all ages, colours and persuasions should be able to go to one (electronic) door and ask for what they want in their own words, or by pointing at it. They should not have to know which government department, local authority, agency or quango is the source of the information.

"Interoperability" is a code-word for applying the standards and protocols that allow information to flow seamlessly from one system to another, retrievable and usable at any point. A large part depends on standards like XML, PDF and HTTP. Another essential element is a metadata standard, and in particular a standard for subject metadata – in other words, a controlled vocabulary.

At an early stage the OeE considered developing a pan-government thesaurus, comprising perhaps 7,000 terms to cover the whole span of government interests, to be used both in indexing (or meta-tagging, as it is often called in the Web environment) and searching. But then a fly appeared in the ointment. The resources to be made seamlessly available include hundreds and thousands, nay hundreds *of* thousands, of records, notes, web pages, memoranda, etc., that are constantly being produced in public bodies and published in print or on websites. The people who enter these documents to the various systems may be the authors of the documents and are not usually information professionals trained in using a thesaurus. How

could one possibly train all those thousands of people up and down the land to make a decent job of indexing? And how apply quality control? And supposing this hurdle were overcome and the resources all adequately indexed, what chance that those citizens of all ages and persuasions would grasp how to use the thesaurus in searching?

Regretfully it was concluded that successful implementation of a thesaurus was an unrealistic goal. Several other types of vocabulary aids were considered. In the end it was decided to go for a simple browsing tool rather than a search vocabulary. It should be something like the *Yahoo!* interface, offering users a hierarchical set of headings to choose from. This would make it more feasible for both the indexers and the searchers to apply. Thus began development of the Government Category List (GCL), which was issued in January 2002. It forms part of the government's interoperability standards, in particular the e-Government Metadata Standard (e-GMS), for mandatory application throughout the public sector.

GCL Description

To put it in a nutshell, the GCL is a polyhierarchical, high-level taxonomy of about 360 preferred terms and over 1000 additional lead-in entries, expressed in layman's language and covering the broad range of subjects on which the citizen might expect government sources to provide information and/or services. We call it a taxonomy because it is neither a traditional classification scheme nor a thesaurus, but a hybrid of the two. It is designed to support browsing rather than searching.

The GCL is an electronic creature, not a printed reference work. To get a feel for it, the best way is to look online (<http://195.224.227.150/gcl/content/>). Alternatively, download it from the GovTalk website (<http://www.govtalk.gov.uk> – log in first, then look under Interoperability and then under Metadata) as a set of HTML files for easy navigation on your own PC. PDF and Word versions are also available, but much more cumbersome to use.

How the GCL will be used

One major application of the GCL is UK Online (<http://www.ukonline.gov.uk/>), the portal already offering access to all public sector resources on the Web. The GCL has been implemented as a "Topic Index" on its Quick Find page. At the moment this Index shows relatively few entries. Since the metadata standard and the GCL have only recently been issued, not many sites have applied them yet to their metadata; therefore the UK Online team have to set up the links from GCL headings by hand and the number presented is small. But in time, the process of deriving such a directory from the GCL should be completely automatic.

Other portals too are implementing the GCL, each in its own way. Some of them are using automatic categorisation software to assign resources to the appropriate headings. Most portals will need to complement the GCL browsing facility with search tools of various types.

The e-GMS requires use of the GCL in the subject metadata of all resources, but it does not exclude application of other controlled vocabularies, as well. Some government departments and agencies already have their own thesauri, designed for the subject coverage of their own fields and audiences. The websites of these agencies will have the option of offering GCL browse facilities in combination with their own thesaurus search. We should see a number of imaginative interfaces and approaches emerging over the coming months and years.

So much for what the GCL is and is not. Now to address the challenges. Building a scheme of just 1400 terms (preferred and non-preferred) is not a large endeavour; most of the challenge, and indeed the interest, is in the planning and implementation. We'll start with the more technical aspects and work through to the less tangible; in other words, the problems will come in ascending order of difficulty.

Challenges of hierarchy

Minimizing user effort

Using any electronic interface has to be easy and intuitive, or most people simply will not do it. “Just 2 clicks and you’re there” would be a lovely promise to offer all comers. One of the great weaknesses of hierarchical browsing is that users are discouraged by a long route down through successive levels, especially when there is no certainty that what they seek will actually be there at the end. So in the GCL we tried to reduce the overall size of the scheme, cram as much as possible into every screen, shorten the hierarchical paths, place popular subjects at artificially high levels in the hierarchy, and generally minimize the number of mouse-clicks. But these measures create problems.

Keeping the overall size down reduces specificity. In other words, when the user has found the most specific category that matches his interest, typically it will be broader than he wants and the documents that really interest him will be hidden among many unwanted ones. But the penalty for increasing specificity would be to add to complexity, and perhaps push the scheme beyond the limits within which we can expect reasonable quality of indexing.

Cramming too much into one screen inhibits the user’s ability to pick out what he wants. Thus if a taxonomy shows too many siblings below any one broader heading, scanning and selecting the right one is difficult. While I have not seen any advice in the literature about the optimum number, I place my own comfort level at around 14 siblings. Fewer than 10 siblings makes “uneconomical” use of the screen; more than 20 is beyond my capacity to remember and compare the options. 12-16 seems about right; but this rule-of-thumb no doubt varies from one audience to another.

There is a certain parallel between the “rule-of-14” and Dewey’s decimal system. For the whole lifetime of the DDC, people have complained that knowledge does not naturally divide into 10 at every level; compelling it to do so imposes artificiality. Similarly with the GCL, the effort to balance the numbers at every level (especially the higher levels) has meant bending the rules of hierarchy and flying in the face of logic. The problem is exacerbated when one tries to place subjects where most people expect to find them, rather than where an academic would look for them. And further illogicalities are introduced by putting popular topics in a prominent position, to minimize the number of mouse-clicks.

For example, *Animal health* and *Plant health* have both been placed under *Plants and animals*, which in turn is under *Agriculture, environment and natural resources*. A scientist might expect to find them among applied sciences, but most of the people we asked associated these terms with agriculture. In an earlier draft, both *Animal health* and *Plant health* were placed under *Health*, where the logic looks unassailable. But people objected strongly. In the context of seeking information from the public sector, it would appear that the term *Health* is usually expected to mean *Human health*, and people just do not expect to look there for topics such as foot and mouth disease, potato blight or Dutch elm disease.

Polyhierarchy versus monohierarchy

The GCL has adopted a polyhierarchical structure in order to offer alternative hierarchical routes for finding the same subject. For example, look at the 10 top level headings in the GCL and choose the one that will lead to *Transport*. Some people may choose to look first under *Business and industry*; others will select *Arts, recreation and travel*. The choice depends partly on the original context, for example were we looking for the government’s public transport policy or were we thinking about flights for going on holiday? Different users will approach the scheme with different expectations, and so it is hard to decide which hierarchy is universally “correct”. The GCL places *Transport* in both hierarchies, so that users may find concepts by any reasonable route.

Polyhierarchy has navigational advantages and seems very familiar to people accustomed to thesauri. However, monohierarchy has advantages too. For example, in a monohierarchical scheme the same heading can be used with different meanings, and the broader headings serve as disambiguators or delimiters. Thus one could have a subheading *Funding* under *Education*, and another heading *Funding* under *Sports and recreation*, and the two would be used quite differently.

The subtle difference between poly- and mono-hierarchy is more far-reaching than meets the eye. Firstly the computer has to handle the headings correctly. With a polyhierarchical scheme, it has to know that the heading *Transport* should retrieve all the items about transport, whether they apply to business or to leisure, no matter which approach the user took to find the heading, and no matter which approach the indexers used when assigning the term. In the monohierarchical scheme, it has to do the converse. Of course, a computer will do whatever it is instructed to do. Difficulty only arises if the programmer has not understood what is required.

Herein lies the real problem of polyhierarchy – a lot of people expect monohierarchy. The latter is the fundamental approach in most library classifications, where one book is allocated to one place, and only one place. Similarly, in the directory of one's PC, the usual convention is that you can have two different documents with the same name, so long as you keep them in different folders. This sort of thinking is ingrained in the minds of many people, whether users, or indexers, or programmers, and the cultural shift to polyhierarchy causes problems all along the line.

Finding a place for "Other"

This is a very familiar problem to every would-be classifier, including the housewife tidying things up in the kitchen. Saucepans go in this cupboard; cutlery in that drawer; most things in fact do belong to a well-defined place where they can be put; but there are always a few things that don't have any place, although they definitely belong in the kitchen. Hence the common heading *Miscellaneous* or *General* or *Other* in many classification schemes.

Take the example of sports in the GCL, to name just one of the many places where this problem arises. Under the heading *Sports and recreation* we cannot list all the individual sports, because there are just too many. Including them all would conflict with the aim of keeping the scheme small. We must include some of them, such as *Football*, because they are hot topics for the government as well as the public. So one solution might be to enumerate the few sports deemed most important, then have a heading *Other sports* for all the rest. This solution might not look too bad, so long as the only view of this heading is in the directory structure, alongside its siblings. But it does not look good at all, as a metadata element on the individual document dealing with, say, hang-gliding. When that document and its metadata are exported to other networks and systems that do not use the GCL as a directory, *Other sports* or *Other anything* looks pretty weak and meaningless. Furthermore, the overall size of the GCL would increase enormously and unacceptably if one were to include an *Other* category in every group of siblings.

In the GCL we set our face against *Other*. Instead, the recommendation to indexers is to use the broader heading (*Sports and recreation* in this case) to cover concepts not enumerated as narrower headings. It means that the broader heading has to serve for miscellaneous items at a more specific level, as well as for items that deal generally with the subject.

The mappings challenge

Whenever a retrieval system relies on a controlled vocabulary, it stands or falls on the quality of indexing. If indexing is poor, users do not retrieve sensible results and the whole system falls into disrepute. In most systems, indexing has to be monitored to check quality and

consistency maintained, but there is absolutely no chance of monitoring the indexing across all bodies in the public sector.

As described above, the metadata for electronic resources will be applied at source, in every public sector agency or department where records are made or documents issued. Busy webmasters, or often the authors of the original documents, will be required to index items as these enter the system. The metadata will have to conform to the e-Government Metadata Standard (including the application of GCL terms) and will often also include index terms from the agency's own thesaurus. Persuading the staff to make an adequate job of subject indexing will not be easy, especially if it has to be done once with their own vocabulary and then again with the GCL. Therefore the job must be made as easy and error-proof as possible.

Typically, the agency's own vocabulary is designed for its own subject area and is therefore more specific than the GCL. This makes it possible, in most cases, to develop an automatic means of converting the agency's specific terms to the GCL's more general terms. Typically a mapping table or concordance is developed, showing for each agency term the nearest equivalent in the GCL. Then when a webmaster enters the subject terms from his own vocabulary, the GCL terms are added automatically.

The mapping procedure just described is in principle very simple. But to implement it in practice proves not so easy. Someone who understands about indexing and controlled vocabularies has to develop the mapping table. (And some vocabularies lend themselves to the process much more readily than others!) Someone with programming expertise has to build the table into the indexing system. Even before that, someone with a grasp of the information retrieval needs has to have bought or developed the indexing system, which nowadays is probably a "content management system" designed to handle many additional functions. Not all content management systems come with user-friendly interfaces for thesaurus browsing and term selection, never mind the additional complication of mapping to a second controlled vocabulary. So in practice a great many obstacles have to be overcome, and the endeavour requires teamwork from several people with different areas of expertise.

The communication challenges

Even within the LIS profession, the word "thesaurus" may be used for a multitude of different species, and the word "taxonomy" has by no means settled down to a standard definition. Discussion of these topics frequently leads to misunderstanding. So just to tell people what the GCL is, and how it should be used, presents difficulties.

In theory the whole world knows about the GCL, since all the related documents, and minutes and reports of the meetings at which key decisions were taken, are available on the GovTalk website, together with guidance notes on various aspects of implementation. Also on the site are the Government Interoperability Framework, the e-Government Metadata Standard, XML schemas for particular applications, a discussion forum, and in fact an enormously comprehensive collection of information that every public body needs to know to comply with the standards. In practice not everyone makes it through the cornucopia of important and valuable information to the bit about the GCL; and when they get there, they may not understand it.

If the GCL is to be successfully implemented throughout the sector (and effective retrieval is dependent on widespread implementation in the source documents), then all members of the teams mentioned above have to find, read and digest the collection of guidance documents on the website. The Office of the e-Envoy has spent a lot of time and effort on spreading the word, but there is still a long way to go. The public sector is a vast target audience.

The challenge of determining objectives

The biggest challenge of the whole GCL project was probably the original one of deciding what to do. Should it be a thesaurus or a taxonomy, or what? A search tool or a browse tool? Is it realistic for one controlled vocabulary to be effective across the range of subjects covered by government? Is a controlled vocabulary worth having in a Web environment, when most users expect technology to do the whole information retrieval job? If you do introduce a controlled vocabulary, how will you get everyone to use it? Even to address these questions, you need to gather people with specialist experience and insight.

The approach taken was to seek out a body of committed and knowledgeable stakeholders from as many as possible of the major government departments. 28 of these were represented at a workshop to consider the options and the issues. Remarkably, the decision in favour of a high-level taxonomy was unanimous. Following on from the workshop, the delegates have continued to contribute to GCL development and maintenance, and their role in procuring implementation of the scheme is vital.

Despite the observed unanimity, there is a general recognition that this is an experiment. We have yet to see the extent of the take-up throughout the sector. Only time will tell if users warm to the headings in the taxonomy. In limiting the scheme to such a small size, are we dumbing it down to the point of uselessness? We do not know, and we will not find out for some time. But there is a certain strength in encouraging the use of departmental thesauri alongside the GCL. The feedback from comparing usage of the different search facilities should guide future developments.

Conclusion

At an address to the Bliss Classification Association, one might expect to hear about novel approaches to the organisation of information, but these have been noticeably absent in my entire catalogue of challenges. Our profession has already researched and developed some very effective techniques, including classification, thesaurus indexing, analysis of facets and relationships, which will find use for decades to come. The main challenge today is to apply these techniques in a rapidly changing environment.

The GCL builds on the well-honed techniques of the past, selecting from them the elements that can be applied in today's scenario of empowered end-users, advancing technology, and an application where the indexing is distributed over hundreds of different organisations. That scenario is constantly changing, and the scheme will necessarily move on. It will be interesting to see how the challenges look in five years' time.

Further information

1. Full details of the Government's Interoperability Framework and Metadata Standard may be found on the GovTalk website at <http://www.govtalk.gov.uk/> as well as:
 - *GCL (Government Category List)* and its *Index* for downloading in PDF format or as a zipped set of HTML files. There is also a plain text version for direct loading into computer applications.
 - *GCL maintenance guide*
 - *Guide to meta-tagging with the GCL*
 - *Specialised vocabularies and the GCL*As an alternative to downloading, visit <http://195.224.227.150/gcl/content/> to navigate it directly.
2. UK Online : <http://www.ukonline.gov.uk/>. Try to see GCL implemented on the Quick Find page.

Stella Dextre Clarke is a consultant specialising in the design and implementation of knowledge structures, including thesauri and taxonomies. She has been helping the Office of the e-Envoy plan the GCL, in discussion with other government departments. She is also convenor of a BSI committee Working Group currently revising the standards for monolingual and multilingual thesauri.

Membership news

We are glad to welcome new members of the Association, both institutional and personal.

The **Lenkiewicz Foundation** has a large private collection of books, many of them very old and rare, including a number of incunables. To quote from the introductory paragraph of the official Internet site of the artist R.O. Lenkiewicz (<http://www.robertlenkiewicz.co.uk/library.asp>) "The library is considered by Robert Lenkiewicz to be the intellectual parallel to the investigations which he has himself explored in the painting projects. The gallery and the library exist in a symbiotic relationship with each other ... Insofar as the paintings represent the arts and emotions, and the library represents the sciences and intellect, it is hoped that the gulf which is usually perceived to exist between these two activities might be somewhat lessened".

The subject coverage is eclectic in the extreme, reflecting the artist's interests. Although the books will continue to be housed in their numerous special subject collections – Theology, Philosophy, The Occult, Psychology, Fascism, Death, and so on – each item will also be classified according to BC2, and listings of subject areas will be made available online as cataloguing progresses.

The web site should be visited to get a fuller of the range and extent of this collection. Nicholas Fox, Librarian/Archivist, will be testing BC2 in depth in many areas – and, we hope, should be able to contribute greatly to expansion and revision of P and other classes.

Robert Lenkiewicz died on 5 August 2002, as we were about to go to press.

Strategy & Commissioning Section, **Worcester County Council Social Services Department** has joined as another institutional member. We hope to hear more about the work of this authority in due course. Clive Griffiths from the Department attended the last AGM.

In process of joining at the time of writing is the Information Service of the **General Teaching Council for England**. The adoption of BC2 by this influential new body should give a great boost to the use of the scheme in educational institutions in England (and maybe Scotland and Wales as well!) and especially to the use of Class J. Clare Swanson writes

GTC was established nearly 2 years ago as an independent professional body for teachers with the aim of improving the standards of teaching and the quality of learning and supporting teachers' professionalism. As the GTC's first Information Services Co-ordinator it has been my role to develop library and information services to meet the needs of GTC staff and Council Members. One of my first tasks was to purchase an automated library system and start cataloguing and classifying resources to ensure that items could be located. Being a former Dewey user, my first instinct was to take the easy option and stick with this familiar classification scheme. ... When talking to a colleague in an educational research library I was introduced to Bliss and its Class J concentrating wholly on education. My colleague's enthusiasm for Bliss and some very useful conversations with members of the BCA led me to take the plunge and start to use Bliss for the classification of our small book collection. So far so good... I haven't converted back to Dewey yet!

Professor **Jonathan Furner** has joined as a personal member. Formerly of Sheffield, he is now on the teaching staff of the Department of Information Studies, University of California at Los Angeles. His teaching has evidently inspired at least one of his students to look towards BC2, as the next contribution shows.

*Last year we were pleased to welcome our new member from the United States, Andy Pletta of Minneapolis, so it was very good news indeed to learn that we have gained another, **Alex Justice**, who is also finding that Bliss is reaching the parts that other classifications cannot reach. Your Editor made contact with him by e-mail and asked him for a brief note about himself and how he came to Bliss. Here is his "brief note" in reply. This youthful enthusiasm is to be encouraged!*

Good to hear from you. As a BC2 fan in the USA, I sometimes feel a bit isolated (though it may not be much different for BC2 fans anywhere!) In fact I've been hoping the Association might start up an email list; if for no other reason than for me to pester everyone with questions

[Alex is in luck! – he must sign on to <http://www.jiscmail.ac.uk/lists/LIS-BCA.html>]

The story goes like this –

In 1998 I began the MLIS program at the University of California, Los Angeles. Coming on to the faculty at the same time was Jonathan Furner (PhD. Sheffield), a young professor from England. I was determined to write a thesis rather than finish the degree with the standard "portfolio presentation" expected of the professional program, and, having learned of Ranganathan and the Colon Classification through some assigned reading, was quite interested when Prof. Furner told me about the Classification Research Group. I guess I've always had a taste for alternative ways of doing things, and just previous to library school had developed a great interest in 20th-century UK history. So, I undertook to begin reading for a thesis on the CRG, and in due course became acquainted with BC2 and their role in it.

It was a year later, in our program's course on classification and subject access which Prof. Furner was teaching, that I really took notice. Frustrated by our classification assignments using LCC, I pulled the few BC2 schedules available off the shelf, and applied them to a subject (*Delinquent youth in Chicago in the early 1900s*) which seemed to take an inordinate amount of time in LCC. In BC2, with only my very limited beginner's understanding of classification in general, and no previous use at all of BC2, I was able to do the analysis and make the classmark in a few minutes. That made me an instant and devoted practitioner. Of course not everything since then has

been quite so easy to do – subject analysis being what it is – and my web bookmarks especially often present challenges, as does the limited range of published (& available) schedules.

When I began work full time here at Loyola Marymount University in Los Angeles, I determined to remain super-organized. My family have a terrible habit of leaving everything, especially papers and documents, lying around on any flat surfaces until all is lost in a great jumble (and I'm sure we're not alone!) Once the preoccupation with the thesis was over, I have been able to set to work at my goal of classifying everything by BC2, though so far this has mostly been limited to my office paperwork, beginning with the variety of documents one receives as a new hire. I used Class J for the most part, since our library belongs to the university and plays a vital role in the life of the educand. The challenge has been applying depth classification within the outline of Class J (what to do, for instance, with the organization chart kindly handed me by our acquisitions librarian?) I wanted to do depth classification not so much to stay organized (it would be overkill, after all, in a collection that so far occupies half a drawer of vertical files) as to "test-drive" BC2 and explore its potential. I've been very pleased so far with the results. The organization chart just mentioned, for instance, I described as *Loyola Marymount University — Libraries in education — Materials processing — Acquisition — Structure*, with the classmark: JSL M3I DLG E55 33

Anyone familiar with Class J but not having schedules for LIS may wonder how on earth I came up with such a classmark. I have a copy of the original LIS classification prepared by the CRG in the mid 1960s, with which I construct classmarks for detailed library subjects, which I then synthesize with the classmark for the LMU library system, JSL M3I DL, based on directions in Class J (though I'm really out on a limb with that, so far it

seems to work quite well). Needless to say I would be in a state of bliss if I could actually get my hands on proper BC2 drafts for LIS.

I am eager to apply BC2 to the web environment, and hope to have time soon to revive my flagging Evelyn Waugh web site linkography, this time classified. Another set of things to classify on my list are all my ProCite bibliographies on various topics. Even my notes in my datebook / organizer are subject to BC2 insofar as I've got time and schedules. Such frequently used areas of life as entertainment and personal information technology suffer from lack of schedules, others from lack of time. As my post-grad school life settles into a decent routine, it looks like more time will shortly become available.

I continue to work on CRG history, preparing for a conference in November in Philadelphia at which I'll present part of my thesis writing. I had the honor to appear on a panel with Dr. Ia McIlwaine last November at the ASIS annual convention, and it was gratifying to all of us who had come there to discuss the CRG that so many people turned out to hear the presentations. Needless to say Jack Mills, Eric Coates, D.J. Foskett, Barbara Kyle and others are names which to me have the stature usually reserved to football greats. I have developed, through my research, a strong interest in social studies and history of science and technology, and hope to pursue more research on the rise and dissemination of facet classification and the history classification for information retrieval in general.

Other info: I am a native of the US Midwest, grew up in Chicago, have lived in California for 17 years & in Hollywood / Los Angeles for four, read history at university (the same one at which I now serve as a librarian), and support Liverpool. Hopefully I'll soon be a paid-up member of ISKO. I'd of course like to do anything I can to help the speedy completion of BC2 and to explore possibilities for its implementation in whatever venues might be open to it.

Ok, that was not so brief after all, but don't be hesitant at all to pare it down to just what you need.

If you have any information on scheduled BCA meetings, I'd be very grateful to get as much advance notice as possible, as it will take a bit of extra planning on my part to get to them, as you can imagine.

[I gather that our November date for the AGM just misses the week when everyone in the United States (including Alex) is on holiday for the Thanksgiving period and free to travel. – Ed.]

Thanks again for writing. Please keep in touch. I feel a bit out of the loop, accustomed to email communication as I am now for many subjects – if anyone has any interest in that sort of thing, by all means let me know.

Alex Justice

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Readers are warmly invited to make contact with Alex at the address above.

If some of our members in the UK, not in Cambridge or London, sometimes feel professionally isolated, what must it be like for Alex in California?

— or, indeed, Andy Pletta in Minnesota for that matter: — mrpiwat@mindspring.com

**Facet analysis as a basis for digital resource management :
application of BC2 terminologies and structure in the organization of the new
UK humanities portal**

by Vanda Broughton

A current research project at the School of Library, Archive & Information Studies, University College London is seeking to utilise the BC2 vocabularies and conceptual structure to build a knowledge organization tool for a new integrated portal merging the Arts & Humanities Data Service (www.ahds.ac.uk) and the Humbul Humanities Hub (www.humbul.ac.uk). The research is a collaborative project between SLAIS and the two major digital resource gateways, and the project is being funded by the Arts and Humanities Research Board.

AHDS and Humbul are on-going government funded projects for the identification, evaluation, collection and organization of high quality digital resources in the humanities, primarily for the use of the higher education community. AHDS' remit specifically includes the visual and performing arts and archaeology in addition to traditional humanities disciplines; Humbul covers a subject field including resources in history, literature, theology and philosophy. Currently they are engaged in the development of a single humanities portal (www.portal.ac.uk) which will become operational in 2002. The aim of this new portal will be to draw in resources from the wider Web, in addition to the managed material already available via the gateways.

An important consideration was the choice of a knowledge organization tool for the new site. Document description is carried out by in-house staff at AHDS and Humbul using Dublin Core (with some local modifications). Existing means of subject organization are the Library of Congress Subject Headings and the Dewey Decimal Classification, Ed. 21, both designed for the physical organization of print-based material in a traditional library environment. AHDS also uses Art and Architecture Thesaurus and other subject specific thesauri for the indexing of the Visual Arts Database and other collections within its control. None of these entirely meets the needs of the digital material managed by the two services.

The new humanities portal requires a system that can deliver a number of functions : the accurate indexing, for retrieval purposes, of complex digital documents and objects with a range of attributes, both semantic and structural; the organization of the material into a user-friendly and easily navigable or browsable visible structure; a knowledge structure with deep levels of hierarchy and complex syntactic relationships which can accommodate those materials and allow them to be placed accurately; the potential for alternative points of access to the collection to facilitate resource discovery by a number of routes or search strategies; and a tool that has potential as a search device in negotiating the wider Web.

SLAIS has a particularly strong history in knowledge organization, classification and indexing. Its staff are actively involved in the maintenance and revision of several major systems of bibliographic classification – UDC, DDC and BSO – and an area of active research is in the development and use of faceted schemes of classification, notably BC2. We are now investigating the viability of such a scheme for the organization of the new humanities portal. Since there is not much overlap in subject content, we shall develop a faceted classification structure for religion and theology – representing Humbul's resources – and the visual arts in respect of AHDS, using the BC2 terminologies and conceptual structure to develop a pilot knowledge organization tool for the digital collections.

There are several reasons why we expect the faceted structure to be particularly successful in the handling of digital objects. The analytico-synthetic nature of the scheme means that it can

be used to tag both the intellectual and semantic content of a document and also other properties that may be sought. Within the virtual environment of the portal it will allow us to index properties of format and document type, and other similar attributes of the domain and its components. For the same reason a faceted structure is particularly suitable for the description and organization of documents/objects which have complex content and/or multiple attributes since it is possible to combine constituents in a logical and predictable fashion to any level of complexity necessary.

It is planned that the application of the faceted system will generate a complex structural arrangement of the material within the gateway, and that this will be the structure that is navigated by the end user; it will be a kind of super classified catalogue, but one in which the contents may be accessed by a number of routes. Although the classification itself will only consist of rudimentary concepts it will form the basis of a very complex n-dimensional structure when it has been applied to the digital objects, and when the classes are populated by groups of concepts in combination. The activity of document description will create a series of concept analyses or subject strings for individual documents which may then be used to structure the visual display. This structure is what will be available for browsing by the end-user. Notation may be implicit i.e. used to maintain the order of the systematic arrangement but hidden from the end-user for whom it is mainly irrelevant. It is expected that hypertext will be employed to open up the different levels of hierarchy, allowing the user to refine the search and limiting the quantity of information that is displayed at any time.

Another important area to be investigated is the way in which the regularity of the knowledge structure can be combined with display software to permute the subject strings and give alternative displays with variable lead-in points. This is a significant issue for AHDS whose complex collections require a cross-disciplinary search capability. Other possible means of initial access could be through the medium of topic or concept maps, or by the on-screen combination of terms from different areas of the classification, chosen from pop-up menus. The conceptual structure of the classification is particularly hospitable to linkages of this kind, although it should be stressed that this is probably beyond the capacity of the current project.

As the vocabulary is developed it will be maintained as a relational database using MySQL. A record will be created for each term in which any notation, scope notes, class description and thesaural and other relations will be listed. This can be used to generate the systematic display, alphabetical indexes and a working thesaurus for indexers.

In a testbed implementation for the research, AHDS and Humbul will be applying the knowledge structure to the Portal's planned metadata repository for all the digital objects in their collection. XML will be the chosen language for implementation. We believe that this is the first example of combination of a mark-up language and structured semantic description. They will also experiment with its use in cross-disciplinary browsing and retrieval of digital resources which are held outside the Portal.

This is hopefully only the first stage in the investigation of an effective tool for digital indexing; staff at the gateways are very enthusiastic about the possibilities of the faceted system and we expect later this year to be submitting further bids for funding to develop the research.

Further reading :

- Broughton, V. and Heather Lane "Classification schemes revisited : applications to Web indexing and searching" *Journal of Internet Cataloguing*, Vol. 2, 2000, no. 3-4, p.143-155.
- Broughton, V. "Faceted classification as a basis for knowledge organization in a digital environment : the Bliss Bibliographic Classification as a model for vocabulary management and the creation of multi-dimensional knowledge structures." *New Review of Hypermedia and Multimedia*, Vol. 7, 2001, p 67-102.

U Technology [OUTLINE]

This outline is provided for general information and interest, and also to set the following outline of Military Science & Technology in its broader context.

- . * Pure science aspects of an artefact go with it.
- . * Classes U2/UE can be added directly each technology. F/G are usually reserved to allow building from U & V.
- U2 . **(Common subdivisions)**
 - . . * Add to U2 numbers 2/X following AY2.
- U27 . . History of technology
- U29 A . **Social aspects** of technology, technology & society
 - . . * For impact of technology on society, see K.
- T . . Economics... Alternative technology...
 - . **(Application aspects of mathematics & natural sciences)**
 - . . * Add to U2 letters M/Y following Class A;
 - . . * Add to U3 letters AY/I from the whole scheme; e.g.
- U2M . . Mathematics in technology, engineering mathematics
- U3B . . Applied physics... (U3C) For Applied chemistry, see VL
- U47 . **Environmental aspects** of a technology
 - . . * For Environmental technology , see UX/UY.
 - . *(Agents)*
- U4A . **Equipment** in technological processes... Plant...
- U5 . . Instruments & instrumentation
 - . *(Operations)*
- U8A . **Systems engineering... Control systems...**
- U9 . **Computers...**
 - . . * For the general theory & application of computers, see 8. Class U9 takes their technology & their application to technology.
- UAE . **Technical testing...** Maintenance... Technical design..
- UB . **Production technology... Materials technology...**
 - . . * For materials production & processing, see VL.
- UCM . **Materials handling, mechanical handling...** Packaging...
 - . *(Products)*
- UE . **Energy technology** (general)... **Nuclear technology...**
- UG . Electrotechnology... Thermal engineering...
- UM . **Mechanical engineering... Acoustic** technology...
- UO . **Construction** technology... **Civil engineering...**
- US . . Building technology & architecture
 - . . . * For architecture in its aesthetic & historical aspects, see WHS (in Applied arts)
- UV . **Landscape architecture... Physical planning...**
- UX . **Environmental** technology... **Safety** technology...
- VA . **Transport** technology... Road... Railway...
- VD . . Water transport... VF Air... VG Space transport
- VH** . **Military science & technology**
- VI . **Mineral extraction...** Mining... Oil & gas wells...
 - . . * For petroleum refining, see VO.
- VL . **Process industrial technology**
- VLH . . Chemical technology... Chemical engineering...
- VLL . . . Chemical agents... Industrial chemicals...
- VM . . . Biotechnology... Fermentation...
- VNJ . . . Technology of particular groups of chemicals
 - * Fine & heavy chemicals, inorganic & organic.
- VO Petroleum... Polymers... Pharmaceuticals..
- VSM Ceramics... Metals... Wood... Textiles..
- VT . **Manufacture & technology of specific products**
 - . . * Products not scheduled in U/V.
- VU . **Useful arts & personal services. . Household management.. Catering...**

VH Military science & technology [OUTLINE]

- . * The use of organized force by one political entity (usually a nation state) in an attempt to impose its will on another and the reciprocal defensive force which may be used by the entity attacked.
- . * This class concerns only the technical means whereby force is exercised. The work of soldiers is distinguished as sharply as possible from that of politicians; nearly all the operations, processes, instruments, etc., are the concern primarily of the military.
- . * For the political systems and policies which determine if, where and when the force is used, see RPV/RQL.
- VH2 . **Common Subdivisions**
- VH2 7 . . * Taken from Technology class U2/UE.
- VH2 7 . . History
- . . . * For the history of particular wars, campaigns and battles, see VHY and the notes there.
- 92 . . Biography
- 9K . . Social aspects
- 9KW . . . Customs & folklore
- 9R . . . Political aspects... International law...
. . . *Application aspects of mathematics & science*
- VH2 M . . . Mathematics... Statistics...
- VH3 B . . . Physics... Medicine... Psychology...
- K . . Research & development
- L . . Theory of warfare... Games theory...
- Q . . Organization & management
- VH4 7 . . Environmental aspects
- . . . Pollution... Public health & safety...
- . **Agents of warfare**
- VHH B . . Armed forces
- . . . * This class takes works on general organization; for combat operations, see VHS/VHW.
- C . . Personnel
- Selection... Recruitment... Mobilization...
- Training... Discipline... Conditions of service
- Living conditions, service life
- Equipment (other than weaponry)... Uniforms...
- VHI Organization
- Ranks, hierarchy of authority
- Formations
- * See VHS/VHW for specific forms; e.g. Army - Regiments.
- *Special kinds of personnel*
- Ethnic minorities... Women...
- VHI N . . Non-combatant services
- . . . * For catering services, see VHJ H...
- . . . Medical... Religious... Entertainment...
- . . Facilities, resources
- . . . Logistics, organization of resources
- Procurement...
- VHJ . . . Military engineering
- * For field engineering, see VHW J.
- * Add 4/E following U, e.g.

- VH *Military science & technology*
 - . *Agents of warfare*
 - . . *Facilities, resources*
- VHJ . . . *Military engineering*
 - * *Add 4/E following U, e.g.*
- VHJ 5 *Instrumentation... Computer applications...*
- AJ *Maintenance, repair, replacement...*
- B *Production technology*
- H . . . *Bases, depots*
 - . . . *Supplies, materiel, munitions*
 - . . . *Food, catering services*
 - . . . *Transport, troop movement... Vehicles... Animals...*
- M . . . *Communication facilities*
 - *Intelligence, information gathering... Secret service...*
 - *Propaganda*
- . **Operations**
 - . . * *For civil defence, see land warfare VHW QN*
- VHK . *Warfare, combat*
- VMK 3H . . . *Medical services during combat: Field hospitals...*
- 3I . . . *Psychology of combat*
- H . . . *Rules of war, rules of engagement*
 - * *For political policies on these, see RP...*
 - *Treatment of particular kinds of persons*
 - *Prisoners of war... Civilians... Refugees...*
 - *Crimes against humanity... Atrocities...*
- S . . . *Strategy & tactics*
- VHL B . . . *Elements in operations*
 - *Subversion, coups... Raids... Sabotage...*
 - *Blockades... Occupation of enemy territory...*
- O *Offensive operations... Defensive operations...*
- R *(Special to a factor in combat)*
 - . . . *By scale of conflict*
- T *Campaigns... Battles... National wars... Global...*
- VHM B . . . *Instruments of war*
 - *Information (in combat)... Signals...*
 - *Reconnaissance...*
- I *Psychological warfare (in combat)*
- VHN *Weapons, arms, armaments, munitions, ordnance*
- VHN 3B *Physics: Ballistics...*
 - *Operations on: Fire control...*
 - *Parts: Ammunition...*
 - *Kinds*
- H *Small... Large...*
 - *Weapons other than explosives*
 - *Small arms: Swords... Large: Siege engines...*
 - *Weapons using explosives*
- P *Guns (in general)*
 - *Small arms, firearms*
 - *Ammunition: Cartridges... Bullets...*
 - *Kinds: Rifles... Machine guns...*
- S *Large: Artillery*
 - *Fire control systems*
 - *Automated... Radar...*
 - *Object of control*
 - *Fire direction... Target range...*
 - *Kinds of artillery*

- VH *Military science & technology*
 - . *Operations*
- VHK . . *Warfare, combat*
- VHM B . . . *Instruments of war*
- VHN *Weapons*
- VHN P *Guns*
- VHN S *Large: Artillery*
 - *Kinds*

- VHO B *Large guns, cannon*
 - *Ammunition: Shells... Shrapnel...*
 - * For nuclear ammunition, see
 - VHO S.
 - *Parts: Recoil system... Barrel...*
 - *Kinds of cannon*
 - *Field guns... Mortars...*
 - *By special action or function*
 - *Anti-tank... Anti-aircraft...*
 - *Rocket systems (guns)...*
 - *Airborne weapons...*
 - *Missiles... SAM... SSM...*
- VHO S *Weapons of mass destruction*
 - *Nuclear... Chemical... Biological...*

- *Instruments by mobility of delivery*
- VHP B *Human & other animal*
 - * Largely confined to land warfare (VHW).
- G *Combat vehicles... Tank warfare...*
- H *(Special to a medium)*
- X *(From another medium)*
 - * E.g. air cover for land forces.

- VHQ B *(Structures supporting operations)*
 - * See e.g., Land warfare - Forts, etc.

- . . . *Kinds of warfare by special tactics*
- T . . . *Terrorism... Suicide missions...*
 - * Organized system of intimidation by incurring
 - extreme fear, especially in the civilian
 - population.
- U . . . *Guerrilla warfare...*

- . . . *Kinds of warfare by special terrains or conditions*
- V . . . *Winter operations... Arctic...*
- VHR . . . *Populated areas...*
 - * For Civil defence, see Land warfare VHW.

- . . . *Kinds of warfare by major environmental media*
- VHR V . . . *Combined operations*
 - * Coordinated use of land, sea and air forces.
 - Formations: Commandos... Marines...

- VHS . . . **Air warfare**
 - . . . ** *The filing order Air... Sea... Land... assumes that the ultimate objective is control of territory & population, and so air & sea power are both ultimately agents of land warfare.*
 - Personnel: Aircrew... Ground staff...
 - Formations: Wings... Squadrons...
 - Bases: Air stations... Airfields...

VH	Military science & technology
	. Operations
VHK	. . Warfare, combat
VHS	. . . Air warfare
VHS P	. . . . Armed vehicles
	. . . . . Warplanes
	. . . . . * Add from VF Air transport technology; e.g.
	. . . . . By propulsion: Gliders... Jet... Rocket...
	. . . . . By speed: Subsonic... Supersonic...
	. . . . . By take-off & landing characteristics:
	. . . . . . Short & vertical take-off...
	. . . . . . Swing wing... Rotating wing...
	. . . . . . Helicopters...
	. . . . . . By lift: Lighter than air... Balloons...
	. . . . . . By function:
	. . . . . . Fighters... Bombers... Observer aircraft...
	. . . . . . Freight aircraft... Troop carriers...
VHT	. . . Space warfare
VHV	. . . Naval warfare
VHV N	. . . . Weapons: Torpedoes... Anti-submarine...
PG	. . . . Warships, fighting ships
PJ	. . . . . Properties: Tonnage... Speed...
PL	. . . . . Parts: Propulsion systems... Armour...
PQ	. . . . . Kinds
	. . . . . By non-offensive role:
PSF	. . . . . . Troopships... Supply ships... Armed merchantmen...
PT	. . . . . . Not mechanically propelled: Sailing ships...
PV	. . . . . . Mechanically propelled:
	. . . . . . Battleships... Destroyers...
	. . . . . . Torpedo boats... Aircraft carriers...
	. . . . . . Escort vessels... Minesweepers...
PX	. . . . . Combat vehicles from other media
	. . . . . Naval aircraft
	. . . . . Special structures
QB	. . . . . Minefields... Artificial harbours..
	. . . . . Naval warfare by special terrains
QN	. . . . . Underwater: Submarines... Rivers:
	. . . . . Gunboats...
VHW	. . . Land warfare
	. . . . Armed forces
	. . . . . Formations: Armies... Divisions...
	. . . . . Regiments...
VHW J	. . . . Military engineering
K	. . . . Warfare, combat
PL	. . . . . By mobility of delivery
	. . . . . Infantry... Cavalry... Tank corps...
PX	. . . . . Using forces of other media
	. . . . . Air support... Parachute drops...
	. . . . . Naval support...
	. . . . . Special structures
QB	. . . . . Transport facilities... Pontoon bridges...
QF	. . . . . Fortifications... Fortresses, castles
QFN	. . . . . Weapons: Siege engines...
	. . . . . Parts:
	. . . . . . Fieldworks, earthworks

- VH *Military science & technology*
- . *Operations*
- VHK . . *Warfare, combat*
- VHW . . . *Land warfare*
- K *Warfare, combat*
- *Special structures*
- QF *Fortifications... Fortresses, castles*
- QFN *Weapons: Siege engines...*
- *Parts:*
- *Fieldworks, earthworks*
- *Trenches... Moats...*
- *Ramparts...*
- *Walls... Bastions... Parapets...*
- *Keep... Gates...*
- *Spaces within forts & castles:*
- *Dungeons... Arsenal...*
- VHW QT *Warfare in special terrains*
- *Floodlands... Deserts... Jungle...*
- QY *Populated areas*
- R *Civil defence*
- ** As responsibility of the military.*
- R47 E *Public health & safety*
- *Evacuation... Shelters...*
- *By hazard protected from*
- *Bombing... Fire...*
- *Nuclear attack...*
- *Chemical... Biological...*
- *Street warfare...*
- . . . *Kinds of warfare by special objectives*
- VHX *International police action... UN forces...*
- . . . *Postwar military operations*
- VHX . . . *Disarmament of defeated enemy... Occupation...*
- . . . *Policing by armed forces...*
- VHY . **Military history of particular wars, battles**
- * Most of the literature on particular wars goes under History, where alternatives are provided for collecting purely military studies under a class Military history as a kind of history.
- ** *This location is debatable; as a technology, does the use of particular tactics, weapons, etc in a given situation represent a demonstration of those tactics, etc? So should particular wars, etc should be cited after the problem?*
- WHY C . . . * Add letters C/Z from Schedule 2; e.g.
- CZ . . *Ancient history*
- . . *Medieval & modern history*
- . . . *Twentieth century*
- *World War 1, Great War*
- *World War 2*

Amendments to BC2

CLASS AY General Science

- p. 7 AY2 9A Social aspects of science; society & science
Amend the entire section from AY2 9A to AY2 9L as follows:
- AY2 9N Social aspects of science; society & science
* Add to AY2 9N letters E/J following K9.
* Add to AY2 9NK numbers & letters 9K/9Z, A/Y following K at K9Q/KY.
* A selection of concepts is given here for convenience.
- AY2 9NE F . Forecasting
9NE P . Science policy
. . Organizations
9NE P5 . . . Policy-making bodies
9NE P5J Government
9NG . . Planning and development in science
9NK 9QG . Ideologies
9NK A . Social system of science, science system
9NK BV . . Science culture
9NK C . . Social processes in science
9NK CE . . . Science input to society
9NK FD . . Attitudes to science
9NK HK . . Rewards in science
9NK HKM . . . Awards and medals in science
. Hostility
9NK IG . . Antiscience
. Communities
9NK LK . . Scientific community
9NK LKF B . . Institutionalization of science
. . . . Informal structures
9NK LKP M Invisible colleges
9NK SLM . . Non-literate societies
9NK KW . Custom, folklore & mythology in science
9O . Other aspects of society
* Add to AY2 9O letters L/O from the main classification if applicable.
* Add to AY2 9 letters P/Y from the main classification, e.g.
9P . . Religion in science
[+ existing schedule as far as AY2 9TQ; then]
9U Technology in science
9UX B . Environmental technology in science
- p. 13 AY4 38N By form of interfering energy
Amend 'Add' instruction to read:
* Add to AY4 38N letters A/W following B
- p. 18 AY6 X . . . Chemical techniques
Amend 'Add' instruction and examples to read:
* Add to AY6 X numbers & letters 8/S following C; e.g.
X9A Chemical analysis (techniques)
XCE Electrochemical techniques
XCE G Electrolytic techniques

Class B Physics

- p. 37 BMP N Strong interactions
Align with BMP J Electroweak forces
- p. 66 BGR Gravitation, gravity
Add note:
 * For gravitation and bulk matter (BR), use BRG XR
- p. 97 BPX T Fissile nuclides
Following this, add:
 U Radioactive series, decay series,
 radioactive chain
 * Succession of nuclides, each of
 which transforms by decay into the next
 until a stable nuclide results.
 * For Neptunium series, see Chemistry
 CAB PXY
 V Thorium-232 series
 W Uranium-235 series, Actinium series
 X Uranium 238 series, Uranium series,
 Uranium-Radium series
- p. 99 BRB . . Mechanics
Change classmark to BRB B
- p.104 BRG Y Electrical & mechanical properties
Add preceding and aligned with this:
 XR Gravitation
 * Add to BRG XR numbers & letters 2/L following
 BGR.
- p.111 BRN States of matter
Delete first note ("new file ... 27.8.98")
- p.135 BVJ *At top of second column, amend classmarks in
 first two lines of schedule to read:*
 BVJ Magnetism
 BVJ 3 . Magnetically ordered systems, magnetic
 materials

CLASS K Society

The following amendments are consequent upon the publication of classes A and T

- p. 2 K5M . Mathematics and statistics
Amend 'Add' instruction to read:
 * Add to K5 letters M/X following A in AM/AX -
 e.g. Estimation K5X D
- K67 . Philosophical concepts in methodology
Amend 'Add' instruction to read:
 * Add to K67 letters A/J following A in AA/AJ -
 e.g. Epistemology K67 GR

- p. 3 K6M Models, theoretical models
 . (Types of models)
 . . (Mathematics & statistics)
 Amend 'Add' instruction and examples to read:
 . . . * Add to K6M letters M/X following A in AM/AX
 A selection is given for convenience:
 K6M M . . . Mathematical models
 (Graph theory)
 See Structural models K6N ST
 X . . . Statistical models
 XG . . . Probabilistic models
 XN . . . Stochastic models
 XO Markov models
 XPD Diffusion models
 XPX Games theory
- p. 9 K89 . Statistical analysis
 Amend 'Add' instruction and examples to read:
 . . * Add to K89 letters A/Y following AX in AXA/AXY
- K89 F . . Tests of significance [unchanged]
 G . . Probability theory [unchanged]
 H . . . Random variables [unchanged]
 K . . . Univariate analysis [unchanged]
 LV . . . Bivariate analysis [unchanged]
 SS . . . Multivariate analysis
 ST Discriminant analysis
 SV Factor analysis [unchanged]
 T . . . Analysis of variance [unchanged]
 UC . . . Correlation & Regression analysis [unch'd]
 UE Correlation analysis [corrected spelling]
 UN Regression analysis
 XFS T . . . Cluster analysis
- p.44 KIC R . Resolution of conflicts
 Amend KIC R/KIC X to read:
- KIC J . Resolution of conflicts
 . . . * Add to KIC letters K/V following TLG in
 TLG K/TLG V
 A selection of major concepts is repeated here:
 N . . Discussion
 P . . Consultation
 R . . Negotiation
 RHW K . . . Bargaining
 T . . Conciliation
 U . . . Mediation
 V . . Arbitration
- p.45 KII . . Protest
 Amend 'Add' instruction and examples to read:
 Add to KII letters K/U following TLJ in
 TLJ K/TLJ U as far as the concepts apply.
 A selection is given here to show scope:
 KII RR . . . Demonstrations
 RS Marches
 RX . . . Stoppages of work
 S . . . Strikes
 ST Picketing
 SV Occupation of premises, sit-ins

The penultimate page –

AGM 2002

The BCA Annual General Meeting and Annual Lecture will be held on **Friday, 22 November 2002** in the Durning Lawrence Library, Senate House, University of London, at 2.15 p.m.

This year's guest speaker will be **Leonard Will** (Willpower Information Management Consultants) who will speak on *Facets of the future : subject organisation in the Internet age*.

All are welcome. Please inform the Hon. Secretary (librarian@sid.cam.ac.uk) if you would like to attend.

Broughton abroad

In July Vanda Broughton gave a paper (together with Mike Fraser from Humbul) in Tübingen at the joint conference of the Association for Literary and Linguistic Computing and the Association for Computers and the Humanities. A similar presentation was made at the ISKO conference in Grenada earlier in the month. Both dealt with the application of facet analysis to the indexing of digital objects using BC2 as the basis of the indexing language. There is much interest in this area of research.

Preddle the poet

Chris Preddle, well known in Bliss circles as a former long-serving member of the Committee and Librarian of NCH Action for Children and the editor of the 1994 revision of Class Q, is now very happily living in Yorkshire (in *Last of the Summer Wine* country) and “completely retired”, i.e., so busy that he doesn't know where the time goes ... Fortunately for us, he has the time and has accepted the commission to proof-read forthcoming BC2 schedules.

Revealing other talents, he won the Biscuit Poetry Prize 2001 and has published *Bonobos*, a slim volume of verse. Here is the poem from which the collection takes its title:

The Holme Moss television transmitter mast,
balanced *en pointe* in a skirt
of guyropes, oversees this valley, our tutelary
big-top tentpole on top of the moor.

Its constant solicitude for us is expressed
by its ever-flashing warning lights. At night
they illuminate the skyline like artillery
in a silent newsfilm of the First World War.

We seem less and less to need the bland
Formula-feed it broadcasts. I wonder why, until
I catch sight of us in the wardrobe's

full-length mirror, where we stand
holding and petting and grooming each other like those peaceable
sexy apes of the Congo river, the gentle Bonobos.

Bonobos is available at £5.99 post free from Biscuit Publishing, PO Box 123 Washington, Newcastle-upon-Tyne NE37 2YW.

(I have to say that I would never have thought of Chris as ape-like, but I think I know what he means! More, please, Chris. – *Ed.*)



<http://www.sid.cam.ac.uk/bca/bcahome.htm>

(* that TrueType font is Surfer!)



It's for anyone interested in the Bliss Bibliographic Classification – that means you! – and can be used in many ways, for example

- to disseminate information about the BCA
- to foster interest in faceted classification and its uses
- to submit or answer queries about the application of BC2
- to suggest amendments and corrections to it
- to make contacts with other users
- to seek research opportunities and collaborators

and more besides. Just use your imagination!

LIS-BCA is hosted on the JISCmail list. Don't wait : go to

<http://www.jiscmail.ac.uk/lists/LIS-BCA.html>

today and sign up. Please bring this to the attention of your colleagues and also other Bliss users who may be known to you, including non-members of the Association. The list is open to all.

For more information, contact Heather Lane, who is the LIS-BCA owner.

