

Ranganathan revisited: facets for the future
ISKO UK meeting, London, November 5th, 2007

“Classic” vs. “freely” faceted classification



Claudio Gnoli
(*ISKO Italy & University of Pavia*)



Faceted classification

Ranganathan devised *facets* as a method to create classmarks by **synthesis** of simpler elements



Faceted classification

- ∇ institutions
- 4d ruled by: law of torts
- 8sh concerned with: wildlife

- ∇8sh4d institutions concerned with wildlife
ruled by law of torts

Free classification

Alternatively, synthesis can be done by simple juxtaposition of concepts:

v institutions

sh wildlife

v sh institutions (in some relation with) wildlife

Free classification

This technique has been called *free classification* by Jean-Claude Gardin

[Free classifications and faceted classifications: their exploitation with computers, in Classification research: proc. int. conf. Elsinore 1964, Munksgaard, Copenhagen, 1965, p. 161-176]

It works like *phase relationships* in classifications like UDC and Colon:

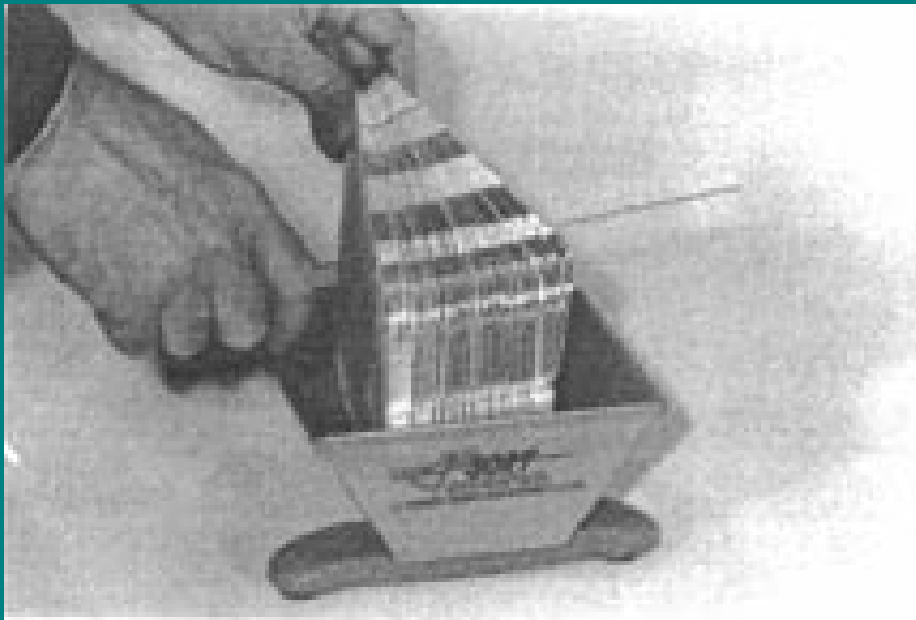
3:572.028

v8sh faceted classification uses *facets*

while

v sh free classification uses *phases*

Free classification



The first examples
were used for
punched cards

e.g. Brisch Building
classification (1926):

13 35 538 thermal properties : steel : refrigerators

[Kyle, *Special libraries*, 47 (1956), 100-105]

Free classification

It also suits computer applications, as each concept can be retrieved separately by searching for the corresponding notation.




“wildlife”



Sh



Free classification

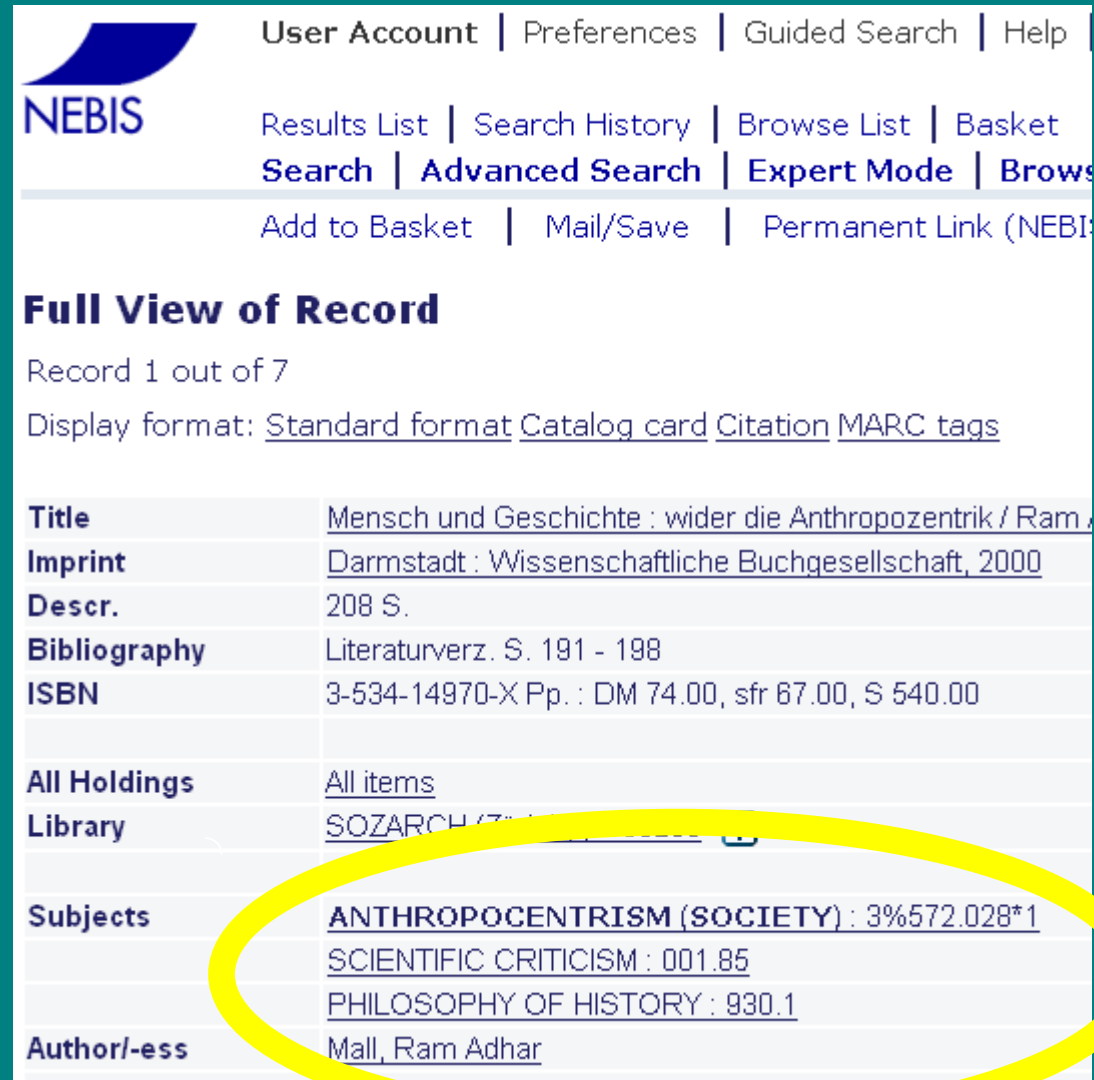
	Sh	wildlife
	Sh Ksr	wildlife: rivers
	U Sh	economy: wildlife
	V Sh	institutions: wildlife
	Xg Sh	painting: wildlife

Results can be sorted systematically

Free classification

Traditional classifications (DDC, UDC) can be used in this way for retrieval purposes, by assigning multiple classes to a document

Example:
NEBIS opac [Pika]



The screenshot shows the NEBIS opac interface. At the top, there is a navigation bar with links for 'User Account', 'Preferences', 'Guided Search', and 'Help'. Below this, the NEBIS logo is visible, followed by links for 'Results List', 'Search History', 'Browse List', and 'Basket'. A secondary navigation bar includes 'Search', 'Advanced Search', 'Expert Mode', and 'Browse'. Below these are links for 'Add to Basket', 'Mail/Save', and 'Permanent Link (NEBIS)'. The main content area is titled 'Full View of Record' and shows 'Record 1 out of 7'. It offers display format options: 'Standard format', 'Catalog card', 'Citation', and 'MARC tags'. The record details are as follows:

Title	<u>Mensch und Geschichte : wider die Anthropozentrik / Ram</u>
Imprint	<u>Darmstadt : Wissenschaftliche Buchgesellschaft, 2000</u>
Descr.	208 S.
Bibliography	Literaturverz. S. 191 - 198
ISBN	3-534-14970-X Pp. : DM 74.00, sfr 67.00, S 540.00
All Holdings	<u>All items</u>
Library	<u>SOZARCH (7)</u>
Subjects	<u>ANTHROPOCENTRISM (SOCIETY) : 3%572.028*1</u> <u>SCIENTIFIC CRITICISM : 001.85</u> <u>PHILOSOPHY OF HISTORY : 930.1</u>
Author/-ess	<u>Mall, Ram Adhar</u>

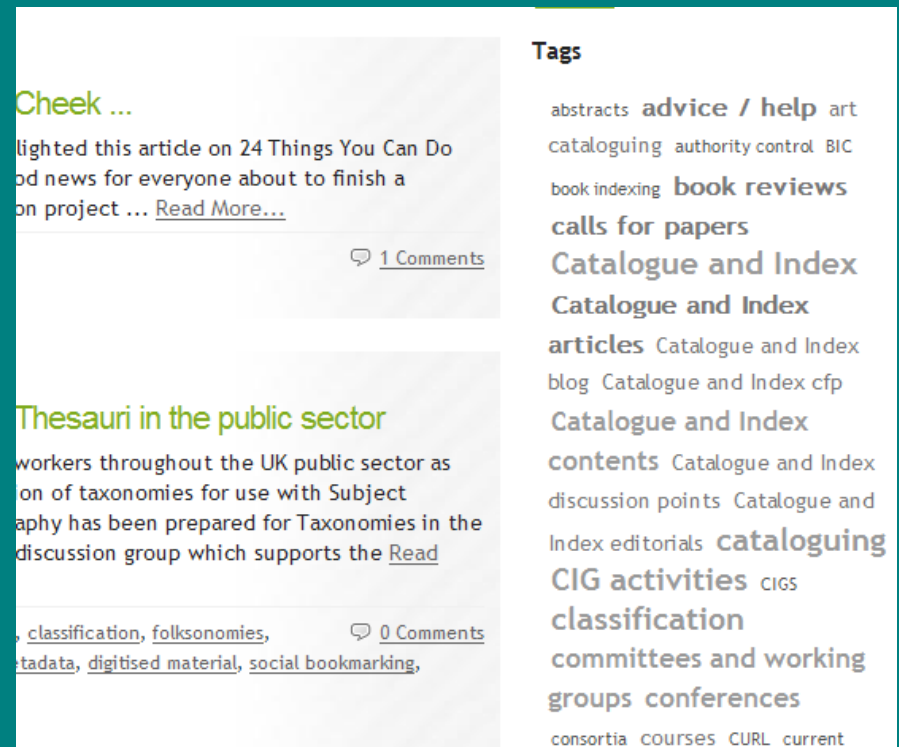
A yellow circle highlights the subject terms in the 'Subjects' field.

Free classification

This is also what *keyword* indexing does

(though items are sorted alphabetically rather than systematically)

A fashionable version of keywords are *folksonomies*



The screenshot shows a website interface with two article snippets and a 'Tags' sidebar. The first article snippet is titled 'Cheek ...' and mentions 'highlighted this article on 24 Things You Can Do'. The second article snippet is titled 'Thesauri in the public sector' and mentions 'workers throughout the UK public sector as'. The 'Tags' sidebar lists various terms such as 'abstracts', 'advice / help', 'art', 'cataloguing', 'authority control', 'BIC', 'book indexing', 'book reviews', 'calls for papers', 'Catalogue and Index', 'Catalogue and Index articles', 'Catalogue and Index blog', 'Catalogue and Index cfp', 'Catalogue and Index contents', 'Catalogue and Index discussion points', 'Catalogue and Index editorials', 'cataloguing', 'CIG activities', 'CIGS', 'classification', 'committees and working groups', 'conferences', 'consortia', 'courses', 'CURL', and 'current'.

Cheek ...
highlighted this article on 24 Things You Can Do
od news for everyone about to finish a
on project ... [Read More...](#)
[1 Comments](#)

Thesauri in the public sector
workers throughout the UK public sector as
on of taxonomies for use with Subject
aphy has been prepared for Taxonomies in the
discussion group which supports the [Read](#)
[classification](#), [folksonomies](#),
[metadata](#), [digitised material](#), [social bookmarking](#),
[0 Comments](#)

Tags
abstracts **advice / help** art
cataloguing authority control BIC
book indexing **book reviews**
calls for papers
Catalogue and Index
Catalogue and Index
articles Catalogue and Index
blog Catalogue and Index cfp
Catalogue and Index
contents Catalogue and Index
discussion points Catalogue and
Index editorials **cataloguing**
CIG activities CIGS
classification
committees and working
groups conferences
consortia courses CURL current

Free classification

drawback: the kind of relationship between concepts is not expressed, though sometimes it can be relevant...

dogs : postmen : bites

???

especially in the “soft sciences” [Austin]

So, why not joining the merits of
free classification with those of
faceted classification ?

The resulting monster is...



...Freely faceted classification

[Derek Austin, The CRG research into a **freely faceted** scheme, in *Classification in the 1970s: a second look*, edited by Arthur Maltby, Bingley, London, 1976, p. 158-194]

NB: Ranganathan and his Indian scholars use “freely faceted classification” in a slightly different sense

[Ranganathan 1967, *Prolegomena*, section CY

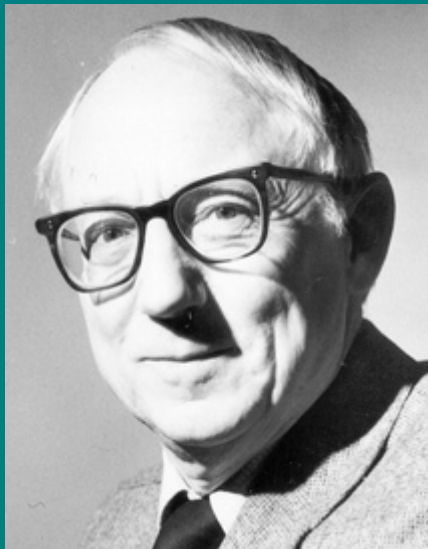
Wali & Koul 1972, *Development of notation in freely faceted classification: a case study*, *Herald in library science*, 11, n. 1, p. 30-43]

Freely faceted classification

Developed within NATO-granted
CRG research for a new general scheme

mainly by

Douglas Foskett and Derek Austin



source: Vickery

photo
wanted...

then partially evolved
into the PRECIS verbal system

Freely faceted classification

- Any concept has a constant notation, and
- can be combined with any other
- by expressing the kind of relationship.
- Concepts are not bound to disciplinary classes, but organized in classes of phenomena.

[Austin 1969, Prospects for a new general classification,
J. librarianship, 1, n. 3, p. 149-169]

FFC: constant notation

sh2a wildlife in Atlantic ocean

sh7n wildlife used as food

Tni60sh vessels damaged by wildlife

v8sh institutions dealing with wildlife

xg8sh painting of wildlife

FFC: free combinations

Tni60sh vessels damaged by wildlife

Sh60tni wildlife damaged by vessels

the notions of *facet* and of *phase*
here tend to merge...

FFC: citation order

Facets of the same relevance are cited in a standard citation order (like in classic FC)

but focus facets can be promoted to the leading positions (like in Nuovo Soggettario)

sh7n2a wildlife used for food in Atlantic

sh2a7n Atlantic wildlife, used for food

FFC: integrative levels

E atoms
F molecules
L cells
M organisms
N populations
R communities
W cultures
...



*increasing
organization*

The heresy

Disciplines !



or phenomena...



sources: Hajdu Barat, Gnoli

The León manifesto

- interdisciplinarity
- requires some new KOS
- based on phenomena
- allowing to shift between perspectives
- by analytico-synthetic techniques



Existing freely faceted verbal indexing systems

- relational indexing [Farradane, 1950s]
- Syntol [Gardin, 1960s]
- PRECIS [Austin, 1970s]
- POPSI [Bhattacharyya, 1980s]



ILC project

ISKO Italia. Integrative level classification

[Home page](#)

[Iscrizione](#)


[Documenti](#)















[Bibliografia](#)

[Collegamenti](#)

ILC. Draft of the scheme

under development











main classes: (select  to expand)

A	forms	
B	[simple entities]	
C	spaces	
D	particles	
E	atoms	
F	molecules	
G	bulk matter	
I	celestial objects	
J	rocks	
K	landforms	
L	cells	
M	organisms	
N	populations	
O	instincts	

search by *verbal caption*:

browse by *notation*:

browse *facets of category*:

0	in modality	
1	at time	
2	in place	
3	through process	
4	made of element	
5	with organ	
6	from origin	
7	to destination	
8	about referent	
9	of kind	

FFC problems

More freedom requires more skills...

Users want simple notation (a virtue of DDC and BC2)

Austin concluded that FFC was good for IR, while mark-and-park systems were good for shelving

⇒ two separate systems?!

Possible solutions

- Indexers can be helped by semi-automatrical classification, and
- assisted by visual interfaces

Expanded class

🔍	KAaeey	England
🔍	Quemi	English language
🔍	VnAaae	England
🔍	W9emi	English
🔍	Ynv9j	English school

Move to another main class: [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#)
[P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) or

or insert a term and do a new

Possible solutions

- Notation can be shortened by extra-defined foci

25 [Ny] in *environment*

Nyc oceanic environment

25c in oceanic environment

Possible solutions

- only using letters, digits, and brackets

Abcd9e (5fg) 8h



A property of free/FFC

items with more facets are more retrievable (by one facet or another)

⇒ paradoxically, specialized documents tend to be retrieved more often

⇒ a balanced cataloguing policy is needed

Testing



the BioAcoustic Reference Database

by [CIBRA: Centro interdisciplinare di Bioacustica e ricerche ambientali](#)
at the University of Pavia, in collaboration with [ISKO Italia](#)

Freely faceted search interface

choose **facets**:

[only part of the records are classified!]

taxon of senders: (anyone)

- insects other invertebrates
- ray-finned fish amphibians reptiles birds
- mammals
 - cetaceans marine mammals
 - bats elephants
 - primates humans

function: (anyone)

- localization alarm threat
- courtship individual recognition social contact

signal structure: (not relevant) analyzed

region: (anyone)

...and/or type the surname of an **author**:

...and/or a word/phrase in the **title**:

...and limit to publication dates

between and

...then

and wait some seconds

The bibliographic database currently consists of 3294 records. It covers bioacoustics mainly of whales and

Testing

The database is feeded with papers actually used by the CIBRA staff in bioacoustic research, in both field recording and signal processing



Testing

Q9vtnspm3h2pc1ka15 = signals, from sperm whale, acoustic, in Gulf of Alaska, at 2000-2009, in
Mellinger D.K., Stafford K.M., Fox C.G. 2004
Seasonal occurrence of sperm whale (*Physeter macrocephalus*) sounds in the Gulf of Alaska, 1999-2001 *Marine Mammal Science*, 20 (1), 48-62
[74.1000 PDF, id 137]

Q9vtnspm95A3h = signals, from sperm whale, of some structure, acoustic
Walter M. X. Zimmer, Peter T. Madsen, Valeria Teloni, Mark P. Johnson, Peter Tyack 2005
Off-axis effects on the multipulse structure of sperm whale usual clicks with implications for echolocation sound production *JASA* 118 (5), 3337-3347
[74.0000 JASA 118 (5) 3337_1, id 3282]

R91n3Mqvtni = social welfare, children, through delphinidae
Garret P.M. 2003
Swimming with dolphins: the assessment framework, new labour and new tools for social work with children and families *British Journal of Social Work*, 33, 441-463
[80.1039 PDF, id 80]

Testing

Verbal captions
are synthesized
from notation
by a PHP script



```
    }  
else  
{  
    $xx = ereg("^([0-9]{1,})", $facets[$j], $indicator);  
    $category[$j] = $indicator[0];  
    $indicatorlength = strlen($category[$j]);  
    // echo $indicatorlength ;  
    $focus[$j] = '' ;  
    $focus[$j] = substr($facets[$j], $indicatorlength);  
    // echo "focus=".$focus[$j];  
  
    $focus[$j] = ereg_replace("[\ (\)]", "", $focus[$j]) ;  
  
    $and = 0;  
    if (ereg(".*\&.*", $focus[$j]))  
    {  
        $focusand[0] = ""; $focusand[1] = ""; $focusand[2] = "" ;  
        $focusand = preg_split("\&", $focus[$j]);  
        $countand = count($focusand);  
        $and = 1 ;  
    };  
  
    // $focus[$j] = ereg_replace("!", "", $focus[$j]);  
    $span = 0;  
    if (ereg(".*!.*", $focus[$j]))  
    {  
        $focusspan[0] = ""; $focusspan[1] = "" ;  
        $focusspan = preg_split("\!", $focus[$j]);  
        // echo "span:".$focusspan[0] ;  
        $countspan = count($focusspan);  
        $span = 1 ;  
    };  
};
```

Testing

The indexer
can edit the
classmark and
dynamically see
the caption
he is producing

BioAcoustic Reference Database

Record editing

Lammers M.O., Au W.W.L. 2003

Directionality in the whistles of Hawaiian spinner dolphins (*Stenella longirostris*): a signal feature to cue direction of movement?

Marine Mammal Science, 19 (2), 249-264

[74.1001 PDF, id 2]

[look in ILC](#) [update ILC](#)

signals, from spinner dolphin, localisation, acoustic, in some directions

submit and look the resulting caption

FFC problems

“Guidelines on the applications of the environment protection and biodiversity conservation act to interactions between offshore operations and larger cetaceans”

```
v8sh(9w48Mqvtn(902o68t(3)25c))4d
```

Much facet nesting becomes problematic even for the PHP script...

Taming complexity

v4d8 sh9w48 Mqvtn902o68t(3)25c

Ending facets refer to
the whole subsequent phase,
avoiding most brackets

...Middle way between
freely faceted and
free classification

Possible solutions

The system can be used
at various degrees of complexity,
from purely free to fully faceted,
according to the needs.

Websites: *free classification*

Specialized literature: *freely faceted cl.*

Classification flavours

	<i>by: disciplines/subjects</i>	<i>phenomena/objects</i>
enumerative	DDC, LCC	SC
faceted	CC, BC2, ICC	
freely faceted	UDC	NATO, ILC
free	opacs	Brisch, KM, websites

Further dimensions:

- **paradigmatic facets** (clustering, classifying, thesauri) *vs.* **syntagmatic facets** (matching, classing, subject headings)
- **universal vs. local**

Towards a typology [Slavic & Gnoli pers. comm.]

ILC people: Claudio Gnoli, Mela Bosch, Viviana Doldi, Hong Mei, Gabriele Merli, Marcella Patania, Roberto Poli, Rick Szostak, Lorena Zuccolo

CIBRA people: Gianni Pavan, Elisabetta Bernuzzi, Claudio Fossati, Michele Manghi, Marco Priano

Published reports:

Gnoli & Poli 2004, Levels of reality and levels of representation, *Knowl org* 31, 3, 151-160

Gnoli & Merli 2005, Notazione e interfaccia di ricerca per una classificazione a livelli, *AIDA informazioni*, 23, 1-2, 57-72

Hong 2005, A phenomenon approach to faceted classification, 53th conf Japan Soc LIS

Gnoli 2006, The meaning of facets in nondisciplinary classifications, proc 9th ISKO conf, Vienna, 11-18

Gnoli & Hong 2006, Freely faceted classification for Web-based information retrieval, *New rev hypermedia & multimedia*, 12, 1, 63-81

Gnoli, Bosch & Mazzocchi 2007, A new relationship for multidisciplinary knowledge organization systems: dependence, proc 8th ISKO Spain conf, León, 399-409

Gnoli, Pavan, Bernuzzi, Merli & Priano 2007, Freely faceted classification for the BioAcoustic Reference Database, poster 21th IBAC conf, Pavia

Gnoli, Merli, Pavan, Bernuzzi & Priano submitted, Freely faceted classification for a Web-based bibliographic archive, ISKO D conference, Konstanz, 20-22 Feb 2008

Website: www.iskoi.org/ilc

advertisement

Axiomathes 18 (2008)

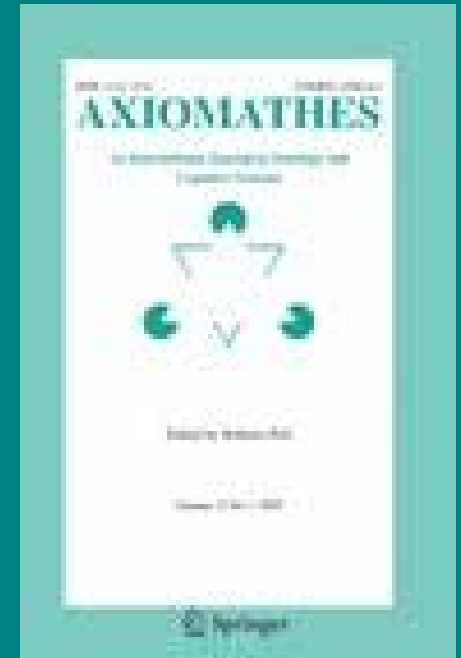
editor-in-chief Roberto Poli

published by Springer

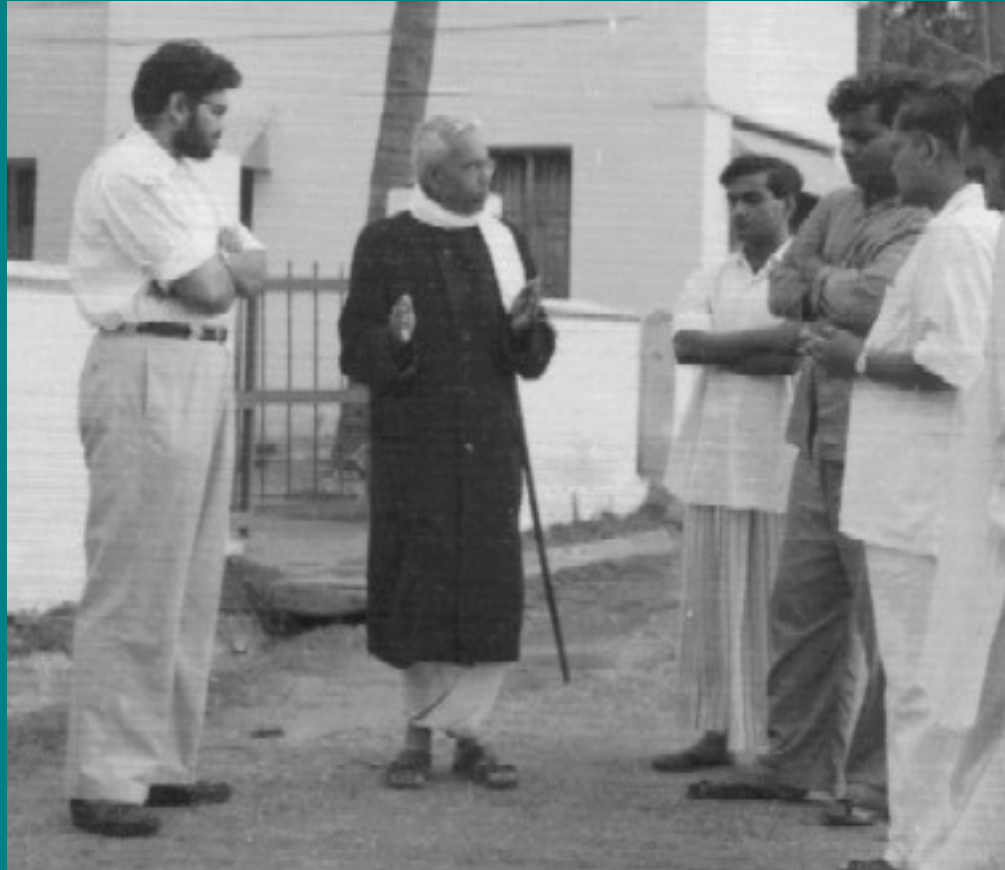
special double issue

on **facet analysis**

including contributions by Beghtol, Broughton, Cheti,
Dahlberg, Gnoli, Priss, Slavic, Tudhope, Vickery



...thank you



source: DRTC

Ranganathan revisited: facets for the future
ISKO UK meeting, London, November 5th, 2007