

Organizations, Structures and Technology: Insights from Media and Communication Studies and Information Systems

Presented by

Dr. Sebastian Boell

University of Sydney Business School, Business Information Systems

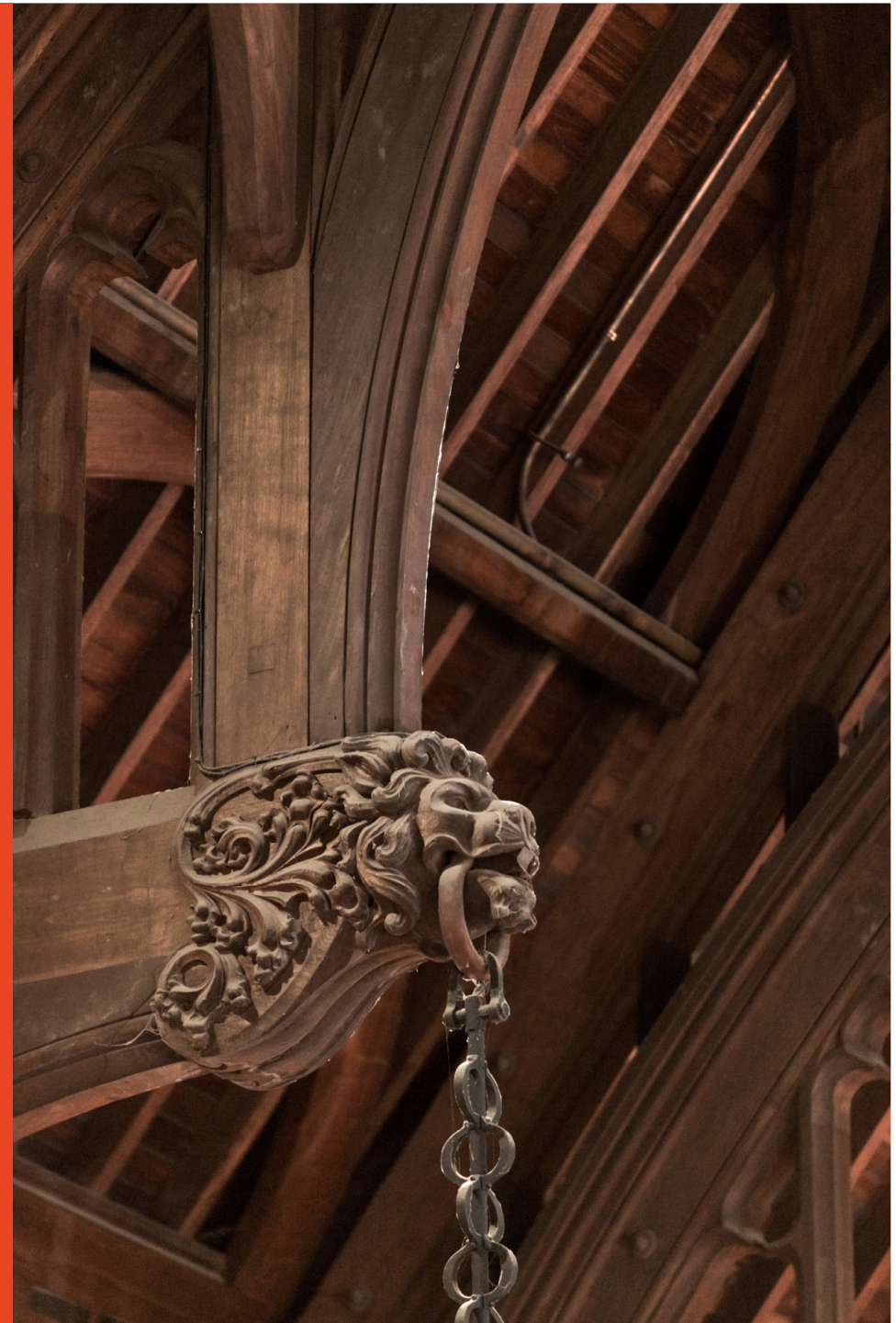
Dr. Florian Hoof

Leuphana University Lüneburg, Institute for Advanced Study on Media Cultures of Computer Simulation (MECS)



THE UNIVERSITY OF
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—
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mecs
MEDIA CULTURES OF
COMPUTER SIMULATION



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- 1. Existing Conceptions of Media in Literature**
- 2. Case: Automation at the University of Sydney Library 1963-1972**
- 3. Discussion Exemplary use of Media**
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Understanding Long-Term Cycles of ICT Innovation

- Rise of ICT in Organization
 - e.g. automation of labor intensive accounting related activities (processing of payroll, financial data reporting)
- Understanding ICT as mere tools for ‘Automation’ and ‘Standardization’?

OR

- Understanding the Materiality of ICT Innovation over a longer period of time?
- Our Approach: ICT as Media

Conceptions of Media I: Materiality

- Materiality of Media: A Non-Functional Lens on Media
 - e.g. H. Innis (1927) *The Fur Trade in Canada*
 - network of rivers as a medium for transportation and communication
 - e.g. H. Innis (1951) *The Bias of Communication*
 - materiality of writing media (stone, clay, paper) affect the abilities to exert administrative power over time and space

Conceptions of Media II: Media Networks

- Single Medium Approach vs. Media Networks
 - e.g. M. McLuhan (1964) *Understanding Media. The Extensions of Man*
 - electricity and light as media
 - e.g. F. Kittler (1999) *Gramophone, Film, Typewriter*
 - interconnectedness of different “technical media”

Conceptions of Media III: 'Eigenlogik'

- 'Eigenlogik' of Media
 - e.g. F. Kittler (1990). *Discourse Networks. 1800 / 1900*
 - 'Discourse Networks' structure society and culture on a basic level
 - e.g. F. Heider (1926). *Thing and Medium*
 - changing perceptions of world

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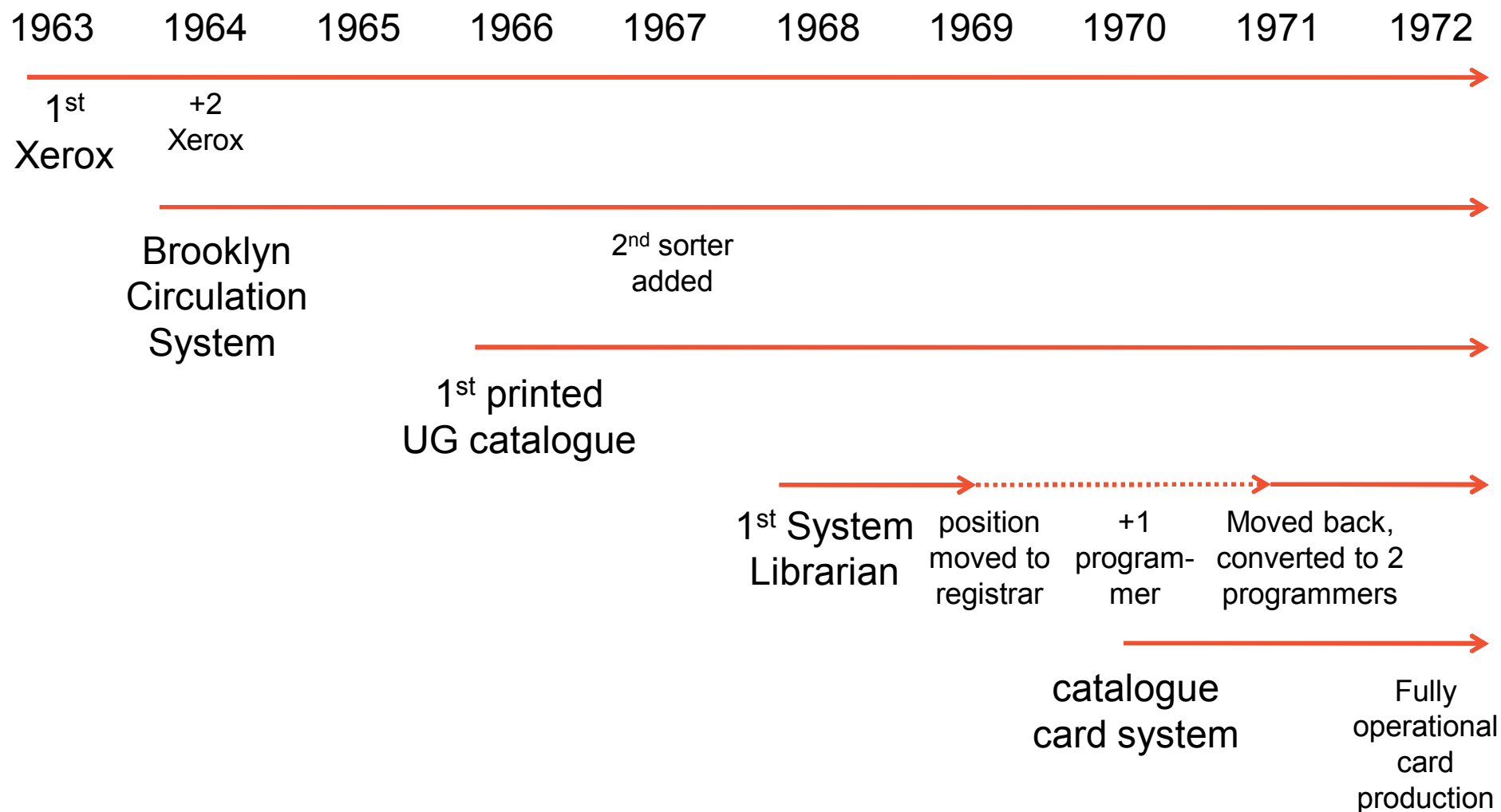
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Automation at the university of Sydney Library (1963-1973)

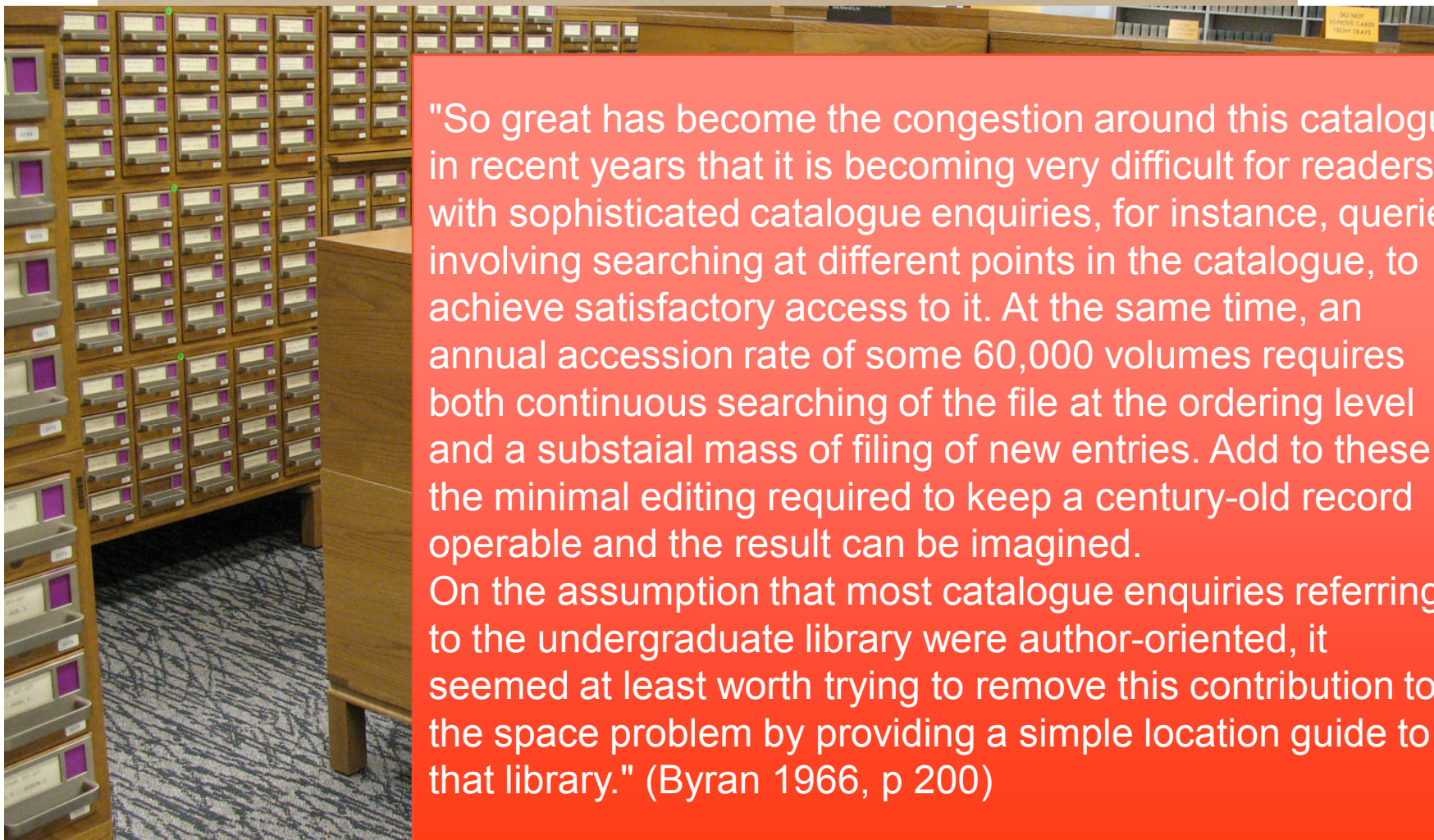
Data Sources

- Annual Reports of the Librarian
- Library circulars (~ bi-monthly)
- Interviews
- Research articles
 - ALJ - Australian Library Journal
 - LASIE - Library Automated Systems Information Exchange

Automation at the university of Sydney Library (1963-1973)



Example – Printed UG catalogue



"So great has become the congestion around this catalogue in recent years that it is becoming very difficult for readers with sophisticated catalogue enquiries, for instance, queries involving searching at different points in the catalogue, to achieve satisfactory access to it. At the same time, an annual accession rate of some 60,000 volumes requires both continuous searching of the file at the ordering level and a substantial mass of filing of new entries. Add to these the minimal editing required to keep a century-old record operable and the result can be imagined.

On the assumption that most catalogue enquiries referring to the undergraduate library were author-oriented, it seemed at least worth trying to remove this contribution to the space problem by providing a simple location guide to that library." (Byran 1966, p 200)

Example – Printed UG catalogue 1966-?

- “In 1964 a committee of the professional staff investigated the feasibility of a near-print catalogue for the undergraduate library, run off from a record created by the Library punched-card installation.”
- 1966 Punch all items in the UG library (21.824 entries) – 369 hours
Proof reading and re-punching – 312 hours
30 copies printed in alphabetical order with call no by ‘commercial data processing organisation’
- 1967 move to processing at Basser computing centre
updated bi-monthly
printed twice annually (March, August)
- 1973(?) used for annual stock take and as shelf list

Example – The Brooklyn Circulation System at the University of Sydney Fisher Library (1964-1984)

1. Select book, fill out borrower card (book details, borrower details)
2. Staff check details and match book with a transaction card # (yellow – UG collection; green – research collection); security check at exit
3. Cards are punched with details for sorting on an *IBM 26 printing card punch*

"The information normally punched into each card comprises: call number, date due, transaction number, and a code number to present the status of the borrower (staff, student or inter-library). In addition, cards for loans to members of academic staff are punched with the borrower's number." (p. 229)

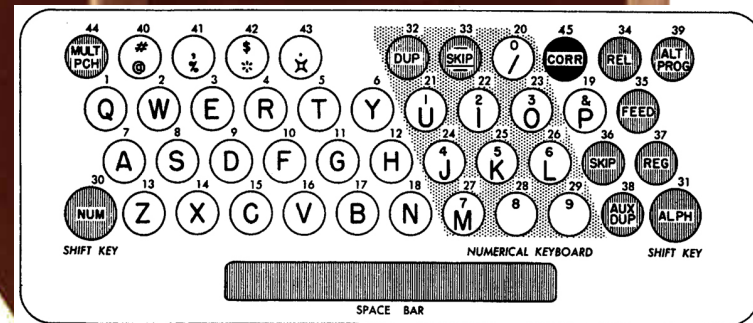
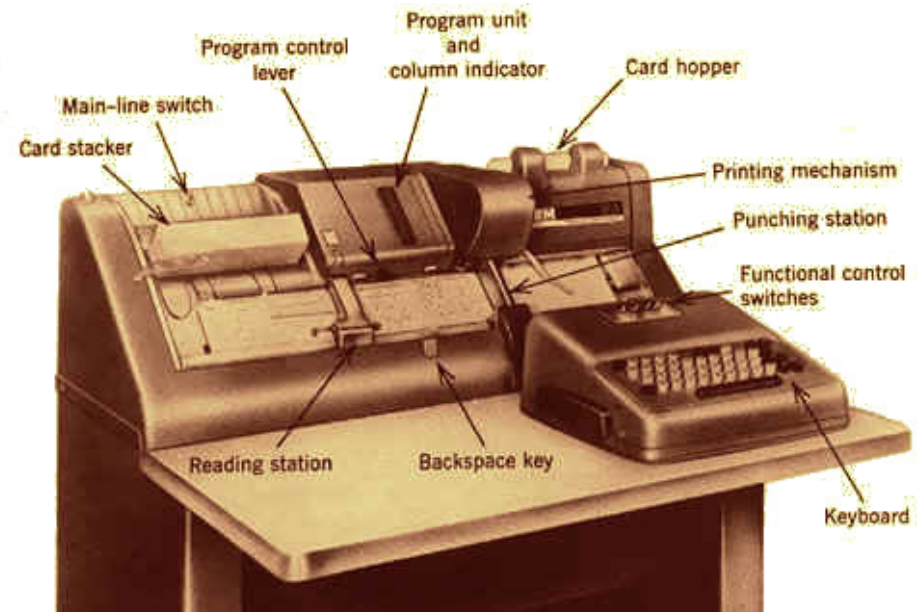


Figure 28. Combination Keyboard Chart

Example – The Brooklyn Circulation System at the University of Sydney Fisher Library (1964-1984)

4. Cards are checked for correct punching on an *IBM 77 collator*

"If any transaction number has not been punched into a loan card the collator will interfile a different coloured card as a signal for a check to be made, and if any cards have the same transaction number punched into them the machine stops to allow the operator to rectify the error." (p 230)

5. Cards are merged into the loan file

"The loan files are arranged in call number order, and the five-digit call number punching has, on the whole, been found sufficient. It means that, to search the file manually for a wanted book from the Research Collection, one must go through all cards whose call numbers have the same first five digits, and only occasionally is this at all a burdensome task." (p, 230)

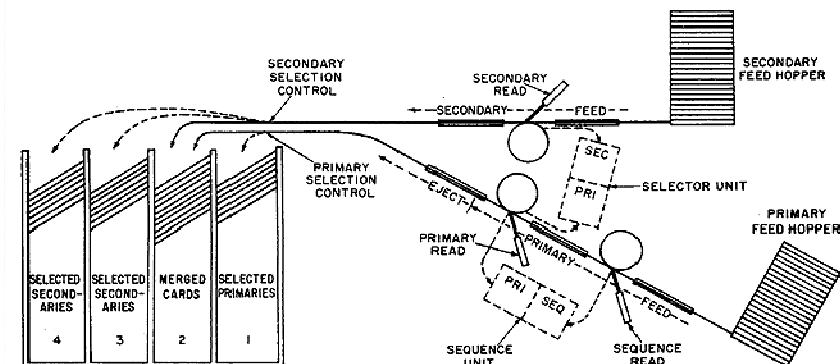


Figure 8-21.—Card feed schematic diagram.

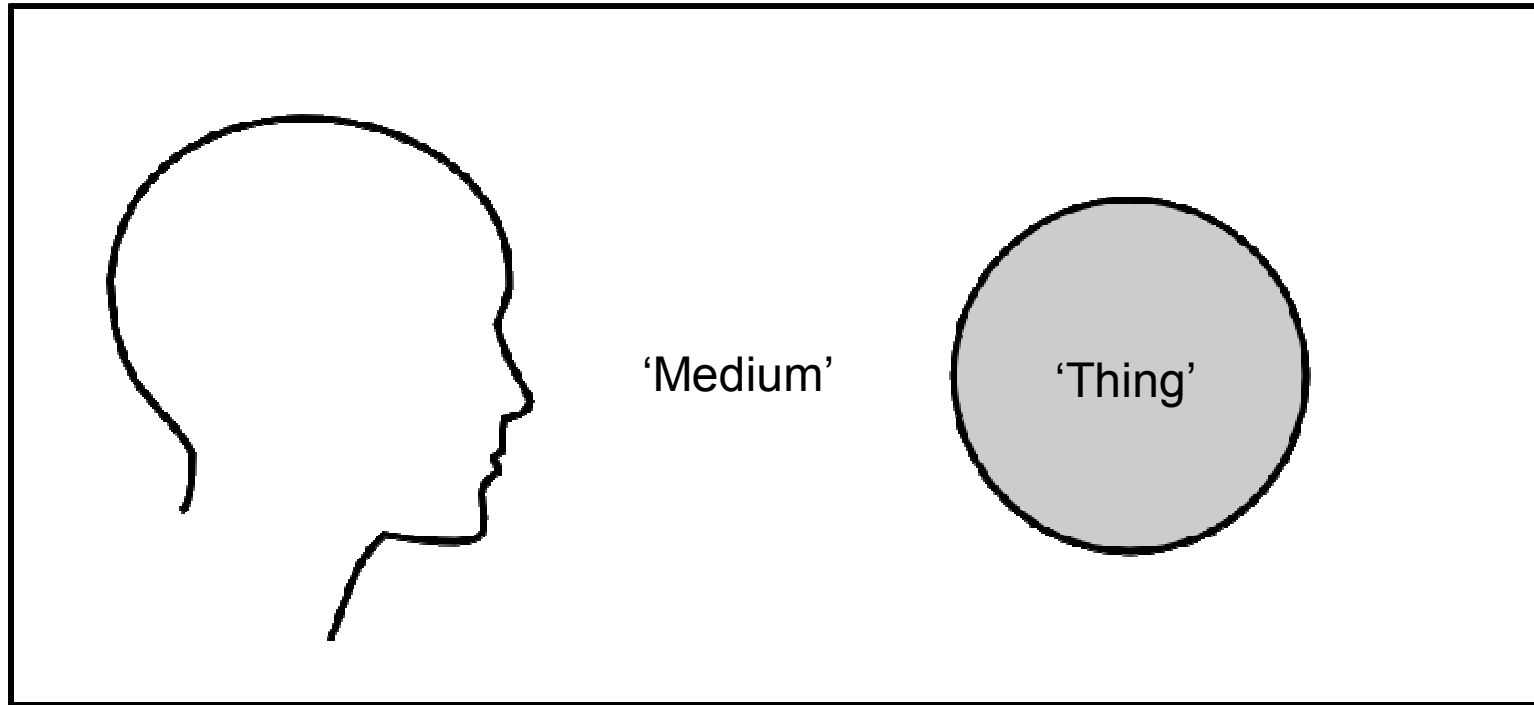
Example – The Brooklyn Circulation System at the University of Sydney Fisher Library (1964-1984)

6. When the book is returned the transaction card is removed and the book is re-shelfed.
7. The *IBM 77 collator* is used to separate cards for due books from the loan file.
8. Both sets of cards (loan cards + transaction cards) are sorted using and *IBM 82 Sorter* by transaction card #
9. *IBM 77 Collator* is use to create 3 piles:
 - 1st pile - loan cards with a matching transaction card, which are discarded
 - 2nd pile - transaction cards with a matching loan card, which are ready to be reuse
 - 3rd pile - loan cards without a matching transaction card, representing overdue books
10. Pile 3 is processed for overdue books, whit notices issued using Xerox and then matched back into the loan file

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Materiality - ICT as Thing and Medium



According to Fritz Heider (1926)

- Perception is key for understanding characteristics of ICT
- ICT as medium enable to see things through them
- Digitizing records not only changes thing character but also medium

Enabled Accounting Practices and Analysis

- “...which results in a total cost of 7 cents per loan transaction” (Radford, Barry, 1966 p. 234)
- “The system’s versatility allows ... to extract much more information from the same file of cards without appreciably increasing costs.” (ibid p. 234)

SUBJECT CLASS	TERM 1	VACN. 1	TERM 2	VACN. 2	TERM 3	VACN. 3	TOTALS
000	3	2	3	0	8	2	18
100	7,505	1,943	10,894	2,317	11,305	586	34,550
200	805	225	650	177	813	35	2,705
300	6,861	1,868	7,664	2,689	9,936	624	29,642
400	1,173	97	810	194	1,440	77	3,791
500	6,825	1,470	8,456	2,471	11,956	1,227	32,405
600	1,282	250	1,359	444	1,882	534	5,751
700	196	53	267	86	423	51	1,076
800	4,581	945	5,855	1,680	9,723	868	23,652
900	5,458	1,540	5,900	2,414	9,657	395	25,364
TOTALS	34,689	8,393	41,858	12,472	57,143	4,399	158,954

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Summary

- Media enable an understanding of ICT
 - e.g. Materiality: Automation enables new way of seeing the organization
- Extending our analysis from 1963-2000
- Implications for accounting?
 - changed costing practices for the organization (new types of data)
 - overdue loan fee collection made possible

Thank you for your Attention!

Dr. Sebastian K Boell

sebastian.boell@sydney.edu.au

University of Sydney Business School

Business Information Systems

Dr. Florian Hoof

hoof@leuphana.de

Leuphana University Lüneburg

Institute for Advanced Study on

Media Cultures of Computer Simulation

<http://sociomateriality.de>