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# The place of books in the future of the history of chemical information

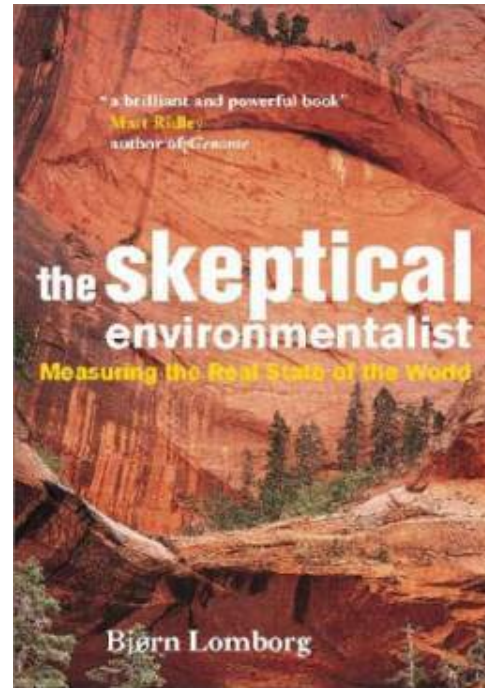
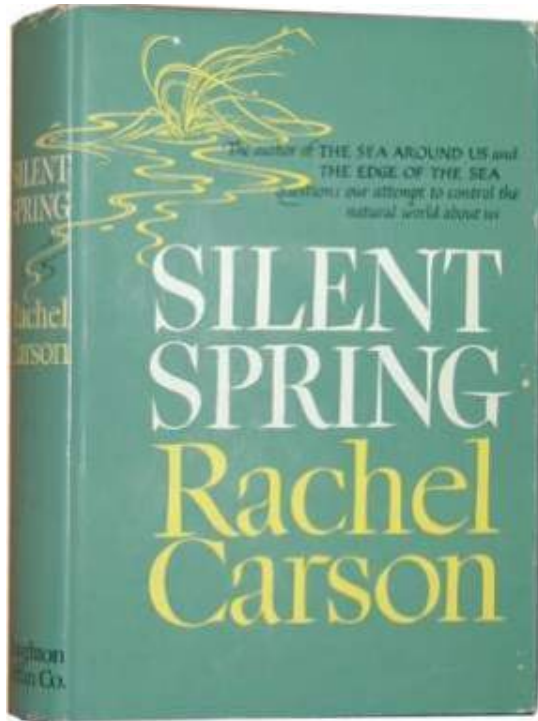
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Chemical Society  
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# Books are definitely out there

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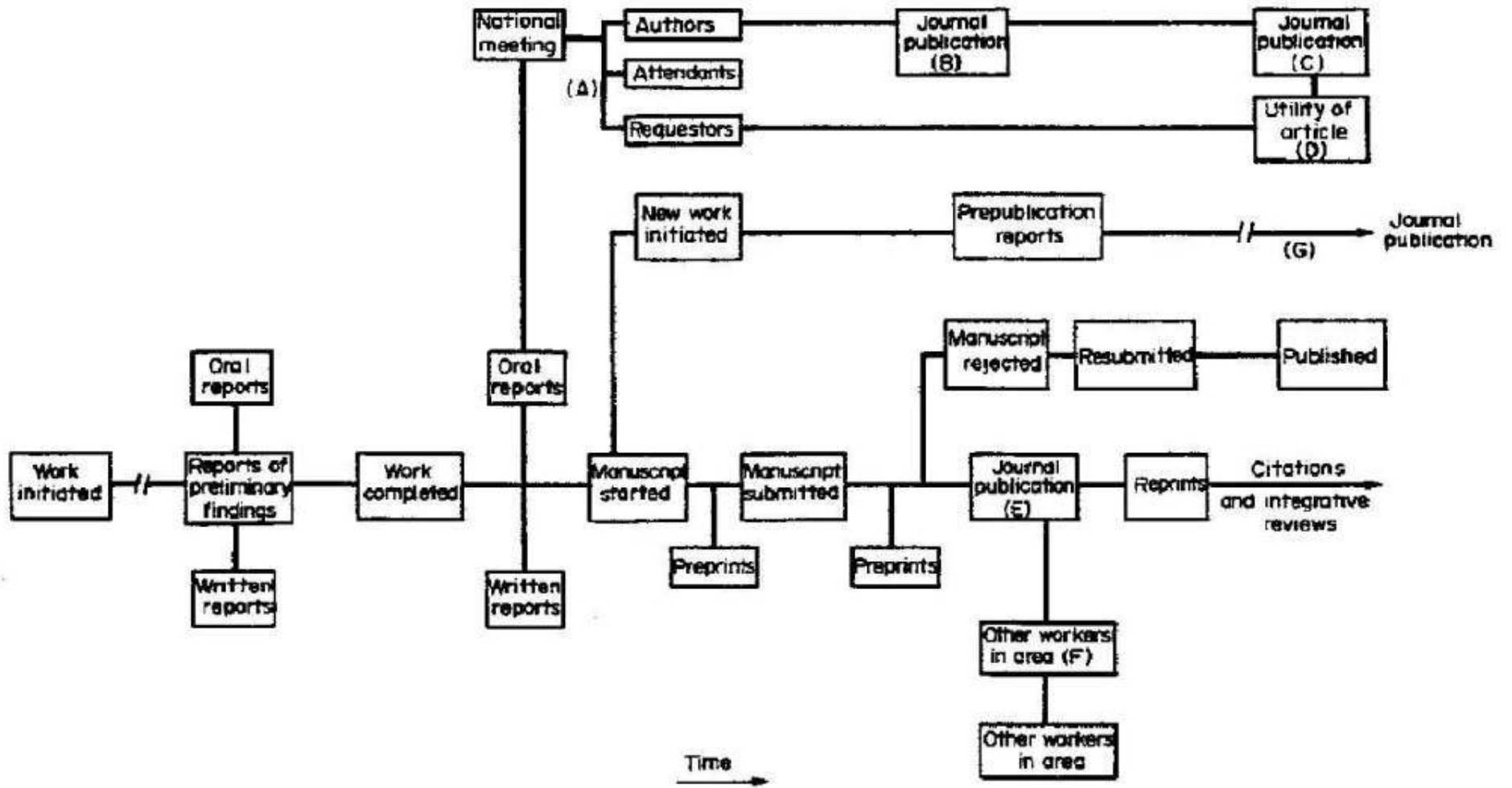
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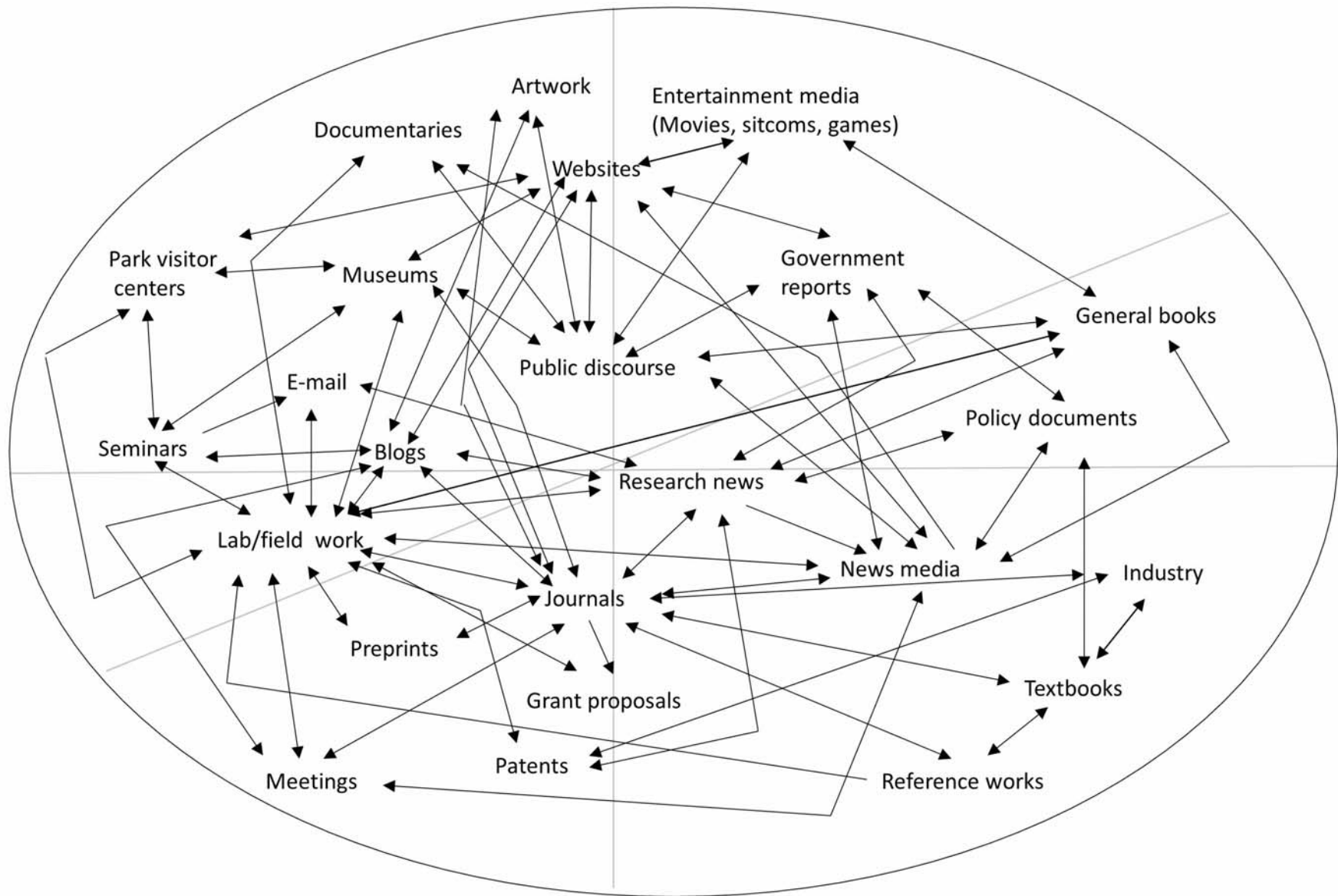
# Why look at science in books?

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- ◆ Counter-intuitive to truism that recent science depends on peer-reviewed journal publication
- ◆ Therefore useful for thinking about models of science communication
- ◆ Potential value both for understanding science and for limning science's place in broader culture







## Sphere of Science Communication.

# Books in daily science

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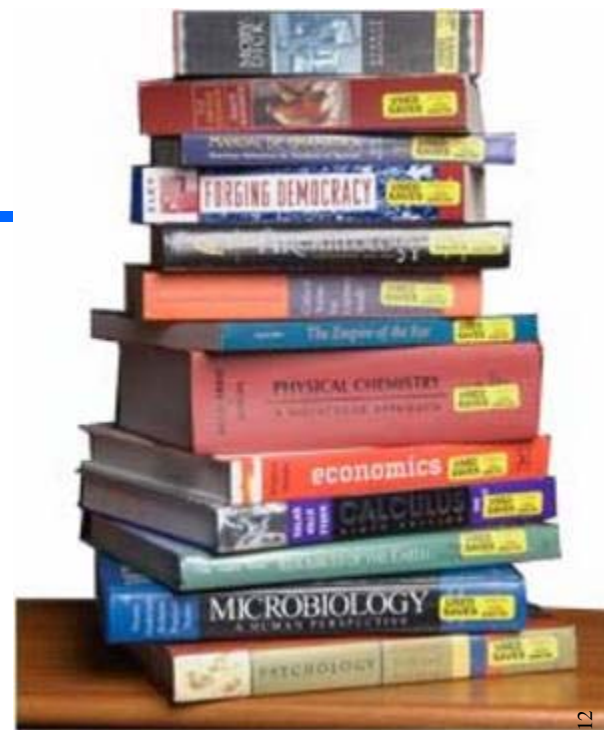
- ◆ Primary literature
  - Conference proceedings
  - *Festschriften*
- ◆ Secondary literature
  - Reference books
  - Databases
  - Review literature
- ◆ Textbooks



# Nature of knowledge

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- ◆ Texts as “packed down” knowledge
- ◆ BUT: Authors aware of limitations
  - Pauling (1947): "the subject [chemistry] is . . . developed in as orderly a manner as has seemed possible at the present stage of chemical knowledge."
  - Sienko and Plane (1957): their text "is devoted to establishing the fundamental principles of chemistry at their present stage of development."



# Powerful texts: Physics and Biology

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- ◆ Sears and Zampansky, *College Physics* (1947)
- ◆ Halliday and Resnick, *Physics for Students of Science and Engineering* (1960)
- ◆ Feynman, *Lectures on Physics* (1963)
- ◆ Watson, *Molecular Biology of the Gene* (1965)
- ◆ Stryer, *Biochemistry* (1975)
- ◆ Carlsen and Johnson, *Machinery of the Body* (1937; 5th ed, 1961)
- ◆ Buchsbaum, *Animals without Backbones* (1938; 2nd ed, 1976)





# Powerful texts: Chemistry

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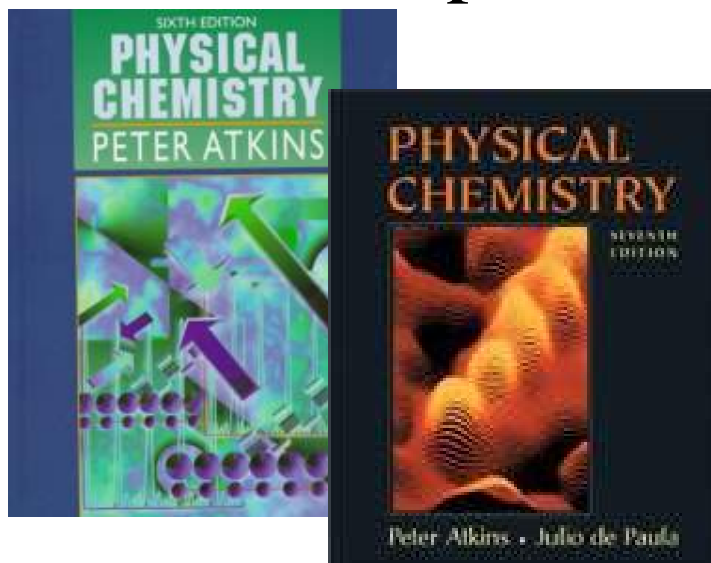
- ◆ Pauling, *General Chemistry* (1947)
- ◆ Sienko and Plane, *Chemistry* (1957)
- ◆ Morrison and Boyd, *Organic Chemistry* (1959)
- ◆ Atkins, *Physical Chemistry* (1981)



# The challenge of textbooks

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- ◆ Post-war demographic growth and the rise of education as an industry
- ◆ Size and topical selection
- ◆ Shift from description to theory/principle



# The problem of size

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- ◆ Tension between intellectual goal of organizing information and the economic goal of ensuring no adoption rejections
- ◆ Organic chem texts grew 16 pages/year from 1950s to late 1980s.
- ◆ 1988 prediction: New century would bring textbooks of 1500+ pages and "a body-building prerequisite to the organic chemistry course." (Kerber 1988)



# From practice to principle

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"If a layman asks an art historian who painted the Mona Lisa and during what period, he has a right to expect to be given the correct answer. The same is true of a layman who asks a chemist how baking soda (or some other common substance) is manufactured. It is not enough to say 'I don't know but I can look it up.' Yet, unfortunately, this is the attitude of many of our students (as well as some of our teachers) regarding a store of knowledge of experimental facts." (Basolo 1977)



# Books and culture

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- ◆ Intellectual development in science
- ◆ Recruitment
- ◆ *Culture scientifique*
- ◆ Public debate



# Conclusion

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- ◆ Books have been part of the chemical information system
- ◆ Books (in modern forms) will continue to be part of chemical information system
- ◆ In the future of the history of chemical information system, we will need to pay attention to books.



# References

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- ◆ Garvey, William D. (1979). *Communication: The Essence of Science--Facilitating Information Exchange among Librarians, Scientists, Engineers and Students*. Oxford/New York: Pergamon Press.
- ◆ Kerber, Robert C. (1988). Elephantiasis of the Textbook. *Journal of Chemical Education*, 65(8), 719-720.
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- ◆ Pauling, Linus. (1947). *General chemistry; an introduction to descriptive chemistry and modern chemical theory*. San Francisco: W. H. Freeman.
- ◆ Sienko, Michell J., & Plane, Robert A. (1957). *Chemistry*. New York,: McGraw-Hill.

