Scientific and Technical Writing
Lecture 1

Materials to Consult

- Leslie. C. Perelman, James. Paradis, and Edward. Barrett, 1998, *The Mayfield Handbook of Technical and Scientific Writing*, Mayfield Publishing (ed.), Available free at http://www.mhhe.com/mayfieldpub/tsw/toc.htm, **Mayfield Publishing Company, Inc.,** 1280 Villa Street, Mountain View, CA 94041, 415.960.3222, <http://www.mayfieldpub.com>, <mailto:hypertext@mayfieldpub.com>

- OWL, *The Purdue Online Writing Laboratory*, https://owl.english.purdue.edu/owl/

- Rubens, P. Ed., (2001), Science and Technical Writing: A Manual of Style, 2nd Edition, New York: Routledge.

Writing—An Art or Science?

Art is

- Based on experiential knowledge
- Practice-based
- Personalized
- Creative

Science is

- Experiment- and logic-based knowledge
- Based on widely accepted and widely tested theories
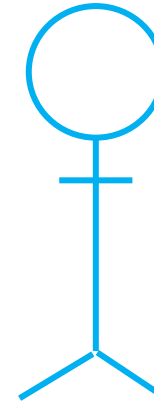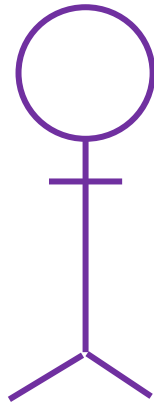
Leonardo da Vinci

To develop a complete mind, study the science of art, study the art of science, learn how to see, and realize that everything is connected to everything else.

Who Is the User of a Piece of Writing?

Document

The writer himself (or herself)

Others
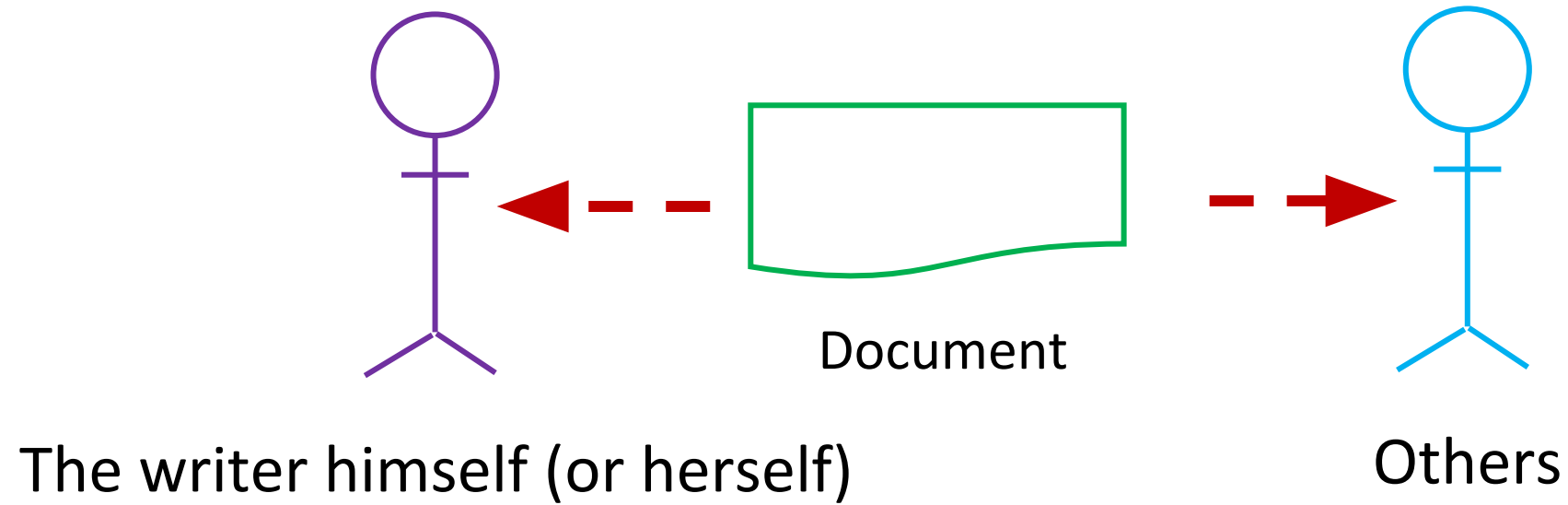
Purpose of Writing

Explicit Purpose

- Inform
- Persuade
- Instruct
- Recommend or Prohibit Actions

Implicit Purpose

- Establish a relationship
- Create Trust
- Establish Credibility
- Document Action

Document Types and Sections Associated with Document Purposes

Explicit Purpose	Document Type	Sections in the Document
To provide information	Reports, Literature Review, Specifications	Background, Theory, Materials, Results, Graphics and Tables
To give instructions	Instructions	Procedures, Workplan,
To persuade the reader	Proposals, Recommendation Letters, Job Applications, Resumes	Discussion, Conclusion, Recommendation
To enact something	Acceptance Letters, Regulations, Patents, Authorization Memoranda	

Audience Types

Audience
- Expert (General and Specific)
- Technician
- Manager
- Lay Person
- Mixed Audience
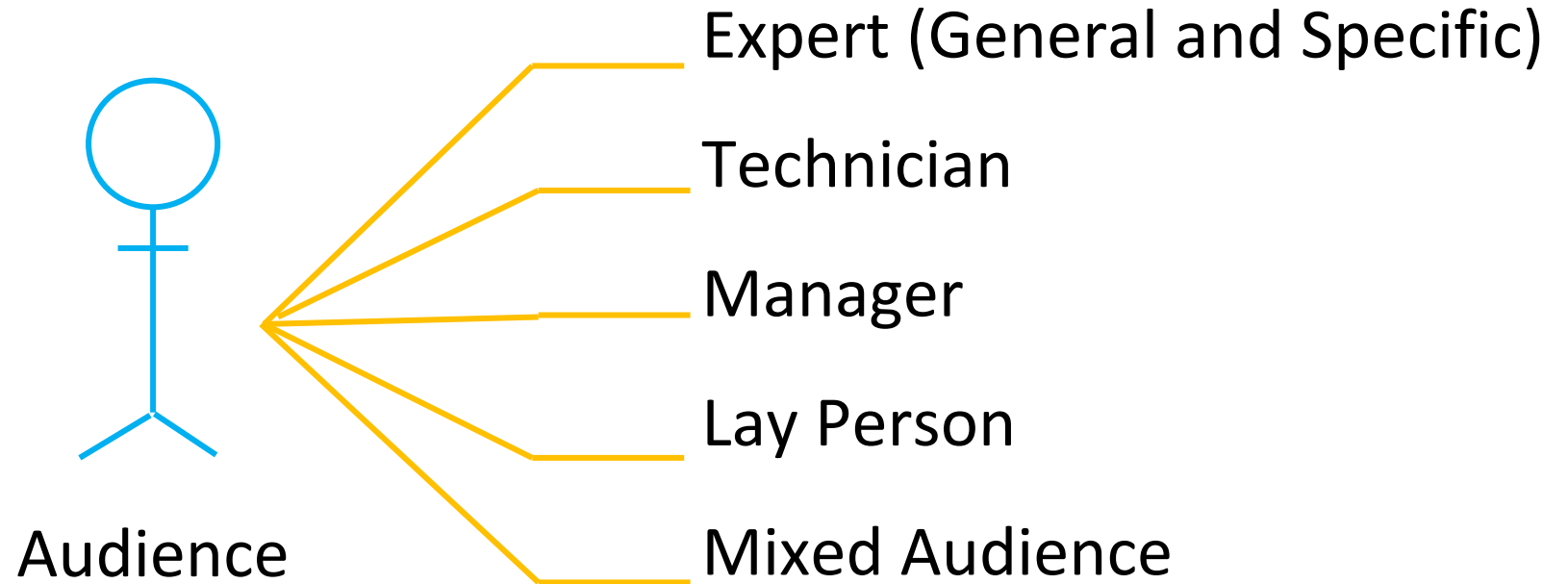
The document's organization and information density vary with the audience's expectations and level of expertise

Organization and Information Density of the Document

Organization:
   Sequence of Presentation

Information Density:
   Amount,
   Type,
   Detail,
   Complexity, and
   Rate of Information Presented

Guidelines for Document Density
## (Mayfield Handbook of Technical and Scientific Writing)

Document Feature	Expert	Manager	Lay Person
Introduction	Technical	Problem, Solution	Relevance
Math. Model	OK	Avoid	Avoid
Equations	OK	Keep Simple or Avoid Simple, Presentational	Avoid
Graphics	Detailed, Analytical		General, Illustrative
Detail Level	Accurate, Numerical	General, Accurate	Simple, Narrative
Technical Terms	Expert, Technical	Administrative	General, Illustrative
Emphasis	Analysis	Operations, Costs	Informational, Interest

General, Technical, Scientific and Science Writing

Forms of Writing

- General (or Creative) Writing
  - Creative Writing: Short Stories, Novels, Poetry, and Plays
  - Expressive Writing: Personal Experience - Diaries
  - Expository Writing: News Reports
  - Persuasive Writing: Emotional Appeal
- Technical Writing: Science, Engineering, and Skilled Trades
- Scientific Writing: Technical Writing with Expert Writers and Audience
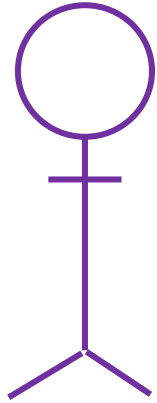- Science Writing: General Expert Writer and Lay Audience

General Writing
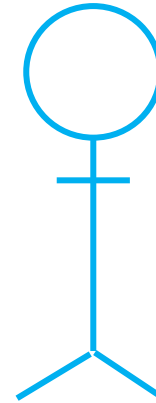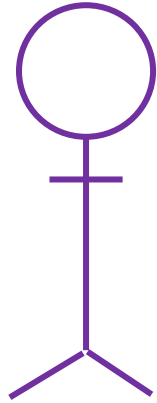
Lay Person

Technical Writing
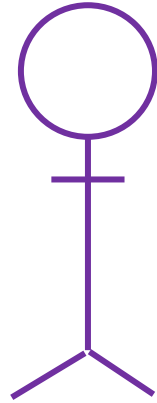
Documents in Science,
Engineering, and Skilled Trades
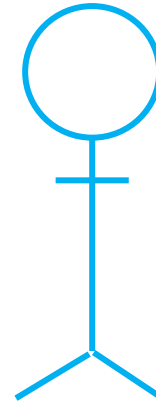with a Specific Need

Scientific Writing
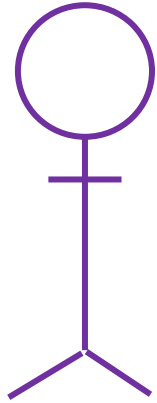

Specific Expert

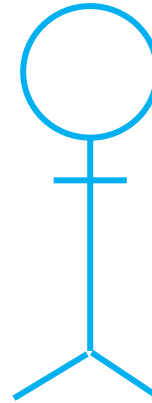Technical Documents in
Science and Engineering

Expert

Science Writing

General Expert   Documents in Science and Engineering   Lay Person

General Writing and Scientific Writing – Differences

ATTRIBUTE	GENERAL WRITING	SCIENIFIC WRITING
Content	imaginative, metaphoric or symbolic	factual, straightforward
Audience	general	specific
Purpose	entertain, provoke, captivate	inform, instruct, persuade
Style	informal, artistic, figurative	formal, standard, academic
Tone	subjective	objective
Vocabulary	general, evocative	specialized
Organization	arbitrary, artistic	sequential, systematic

Technical Documents – Examples

Memoranda	Oral Presentations	Press releases	Procedures
Graphics	Web pages	Catalogues	Specifications
Letters	E-Mail	Advertisements	Style guides
Fliers	Hypertext	Notebooks	Agendas
Reports	Brochures	Business plans	Instructions
Newsletters	Proposals	&policies	Reviews

Scientific Documents

- Comprise scholarly publications
- Report original empirical and theoretical work in natural, social, and abstract sciences.
- Use specialized concepts and terminology
- Make extensive use of numbers, graphics, tables, equations, and algorithms
- Follow standard style of presentation.
- They can be

    - primary: Original scientific research published for the first time in   scientific journals and conference proceedings

          Patents and technical reports for engineering & design work

    - Secondary: Review articles and books

    - Tertiary: Encyclopaedia

          Work intended for broad public consumption (Govt.)

Science Writing

- Writing about science, medicine, and technology
- For general readers
- Appears in magazines and newspapers, in popular books, on the walls of museums, on television or radio programs, and on the Internet.
- Grapples with big ideas and important issues such as DNA, fractals, synapses, and quasars, but always with grace and style.

 Kanigel, R. (1992), The Man Who Knew Infinity: A Life of the Genius Ramanujan, Washington: Washington Square Press.
 Mukherjee, S. (2016), The Gene: An Intimate History, Gurgaon: Penguin Random House India Pvt. Ltd.
 Watson, J. (1968), The Double Helix, New York: Atheneum Publishers.