THE IMAGE OF THE BOOK
WHAT COGNITIVE PSYCHOLOGY TELLS US ABOUT THE INTERPLAY OF THE VISUAL AND AURAL WHEN EXPERIENCING A PRINTED BOOK

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Keywords
printed book, working memory, image, imageability, visual, aural

Abstract
This paper aims to show that the physical properties of a printed book are intrinsic elements that aid the verbal content in communicating to the reader. This may sound obvious to the book designer, of indifference to the writer, or unimportant to the reader, but there was a time when the physical and verbal elements combined in the single personage of the author, publisher, designer and printer. Paraphrasing the title of a book by urban planner Kevin Lynch and borrowing on his concept of a city's "imageability", we aim to show that the construction of the "mental image" of a text can be enhanced by the visual and physical context in which the text is presented, and that the printed page can retain its privileged status between the author and the reader in part because of this physical character.

Cognitive psychology points to the verbal-visual interaction in perceiving and remembering things, and that the atemporal visual and the temporal verbal are each both temporal and verbal. Through the example of books designed and printed by co-author Jack Stauffacher, we aim to present the printed book as an object lesson in the integration between the visual and the verbal in Alan Baddeley's model of working memory, which postulates an interaction between the "phonological loop" and the "visuo-spatial sketch pad".

Subvocalisation occurs when reading, and also when viewing and "naming" images, thus helping visual organization. Similarly, images are invoked in metaphors, and used as mnemonic devices for easier storage and retrieval. These strategies are crucial if a reader's "working memory" is going to successfully retain meaningful information that will be available for later retrieval from long-term memory. While in principle there should be no difference between the hypertext properties of the physical book (footnotes, cross-references, bibliographies, etc.) and those of the digital book or digital text in general (hyperlinks, word definitions, etc.) the act of turning the pages or opening another book involve a physical, spatial activity that complements the aural, phonological process of reading the text. This activity punctuates the temporal process of reading with the spatial equivalent of landmarks and monuments. They are markers that stake out and record a path for a new reader, or confirm and validate the reader's path through the text.

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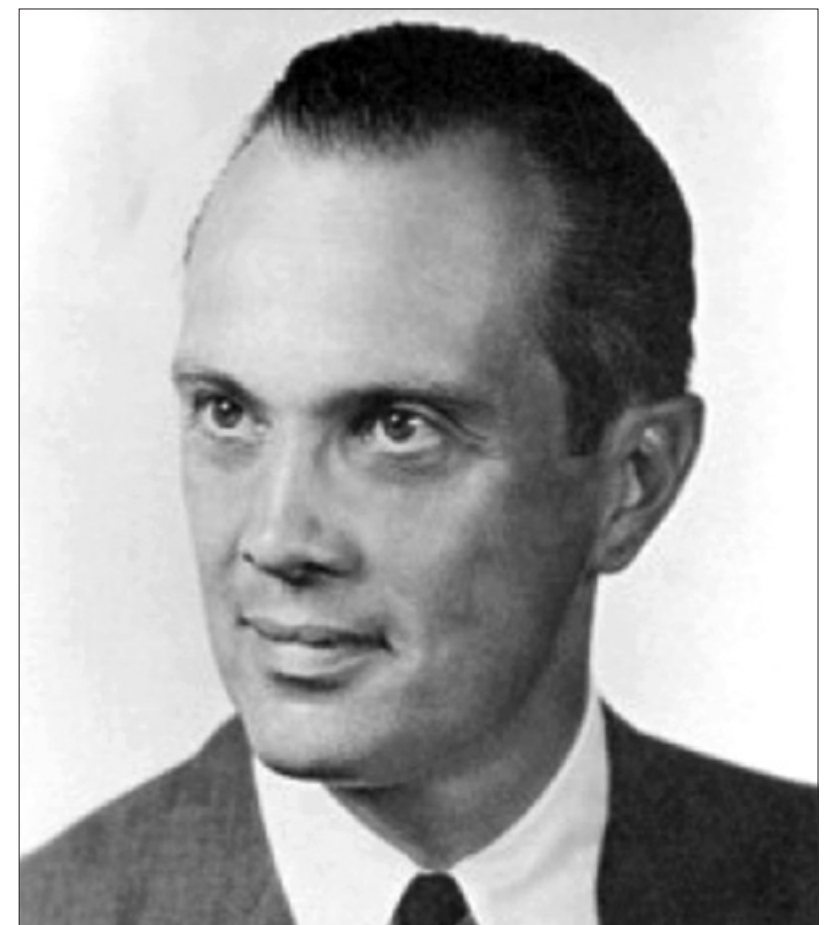
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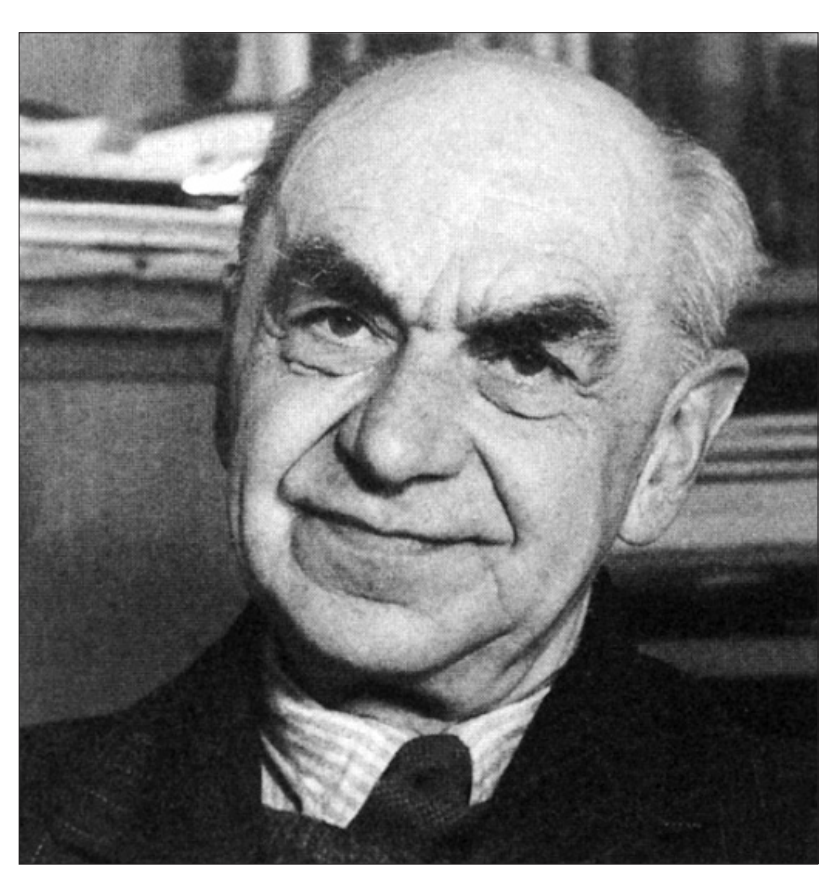
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Hermann Ebbinghaus (1850–1909) was a German psychologist who pioneered the experimental study of memory, and is known for his discovery of the forgetting curve and the spacing effect.

Figure 1: *Sometimes it is simply the physicality of the printed book that signals to the reader his localized place on the mental map, the journey that is the book. A King James Bible laying on the desk and open at the division pages marking the end of the Old Testament and the beginning of the New Testament gives, when viewed from the side, an immediate, concrete, natural map of the metaphorical geography of the Old and the New "countries". The new is roughly 7 mm in height (thickness of 327 pages), that is, only about a third of its elder sister: 22 mm in height or 1079 pages. One may call this representation a quantitative visualization, or a kind of very wide bar chart.*

Plato was a philosopher in Classical Greece. One of his dialogues is the Phaedrus. Hackforth's translation of Phaedrus was used by Jack Stauffacher for his typographic exploration of the dialogue. (Fig. 2).

George A. Miller (1920–2012) was one of the founders of the cognitive psychology field. Miller wrote several books and authored the paper, "The Magical Number Seven, Plus or Minus Two," which experimentally discovered an average limit of seven for human short-term memory capacity.

Phaedrus — *Socrates*

Figure 2: *Jack Stauffacher's Phaedrus is perhaps the limit to which all page layout designs must measure themselves. The layout, which confines each speaker in Plato's dialogue to his own inviolable left or right page – Socrates always on the right and Phaedrus always on the left – could be accused of embodying the ultimate rigid grid. In this layout, not only do the mute words not have a chance to "talk back" to the reader (Hackforth, 1952: 275D), but also the two speaking voices of Socrates and Phaedrus are forever crystallized in finite blocks admitting no walking astray of the never-crossing parallel paths. Like in the setting of dialog itself, the two voices walk alongside each other, but their bodies never overlap. The layout of the pages is a one-way path, the strollers move along in it but a fence – the hinge, gutter in the middle – separates them at all times.*

Sir Frederic C. Bartlett (1886–1969) was a British psychologist and the first professor of experimental psychology at the University of Cambridge. He was one of the forerunners of cognitive psychology.
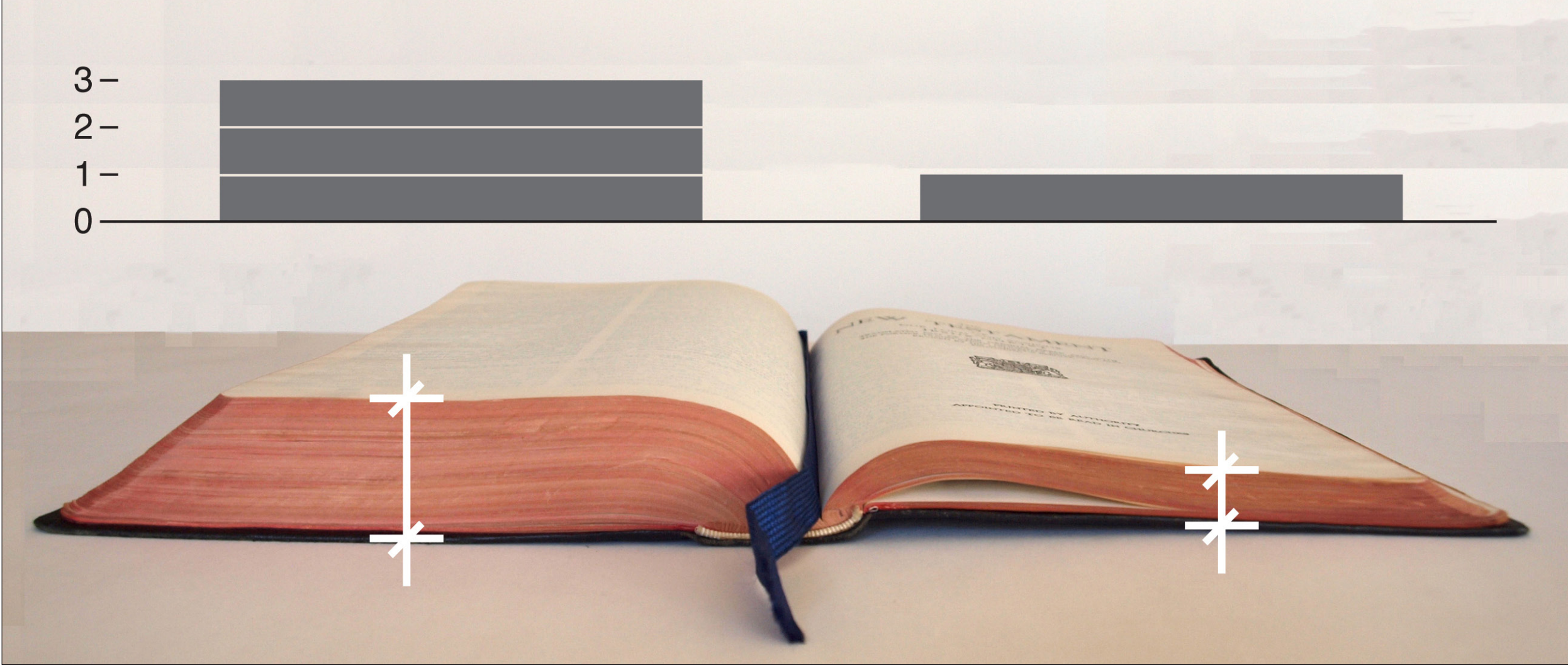

Figure 3: *How is the printed book similar to a city, in light of the urban analysis presented by Kevin Lynch in his 1960 book The Image of the City? How is a book similar to the "imageable" city that he describes? A more imageable city is for Lynch one with clear and visible landmarks, one with distinct neighbourhoods and recognizable boundaries between different districts. Most importantly, a clean, distinct image of the city reinforces a sense of identity and belonging and helps a person get oriented in her surroundings.*

Alan D. Baddeley is a British psychologist. He is professor of psychology at the University of York. He is known for his work on working memory, in particular for his multiple components model. Baddeley was the director of the Cognition and Brain Sciences Unit, a branch of the UK Medical Research Council, based in Cambridge, from 1974-1997.
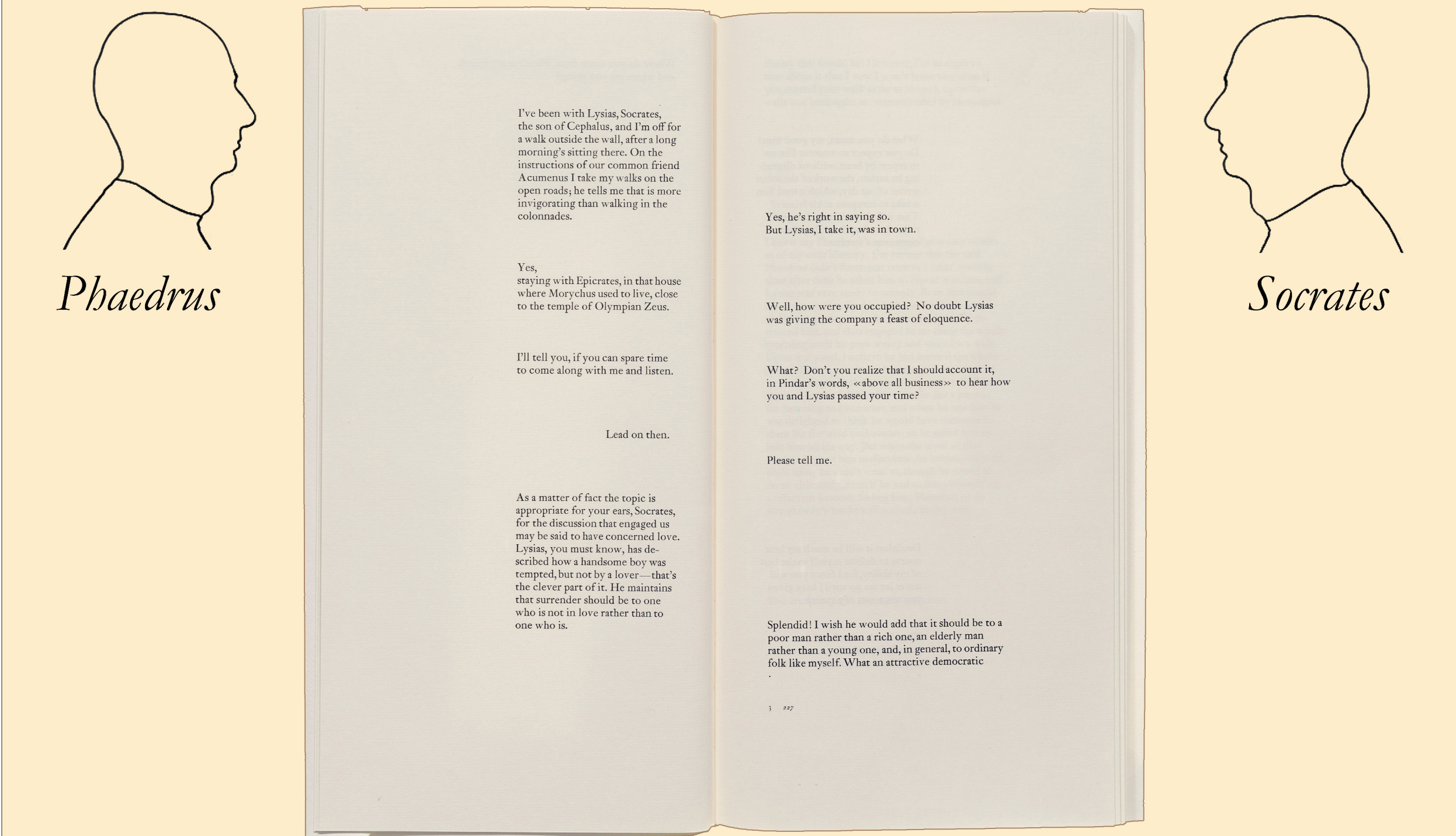

Jack W. Stauffacher (b. 1920) has been experimenting with typography, letters, and the meaning of the printed page since the mid-1930s when he established the still active Greenwood Press in San Francisco, California.
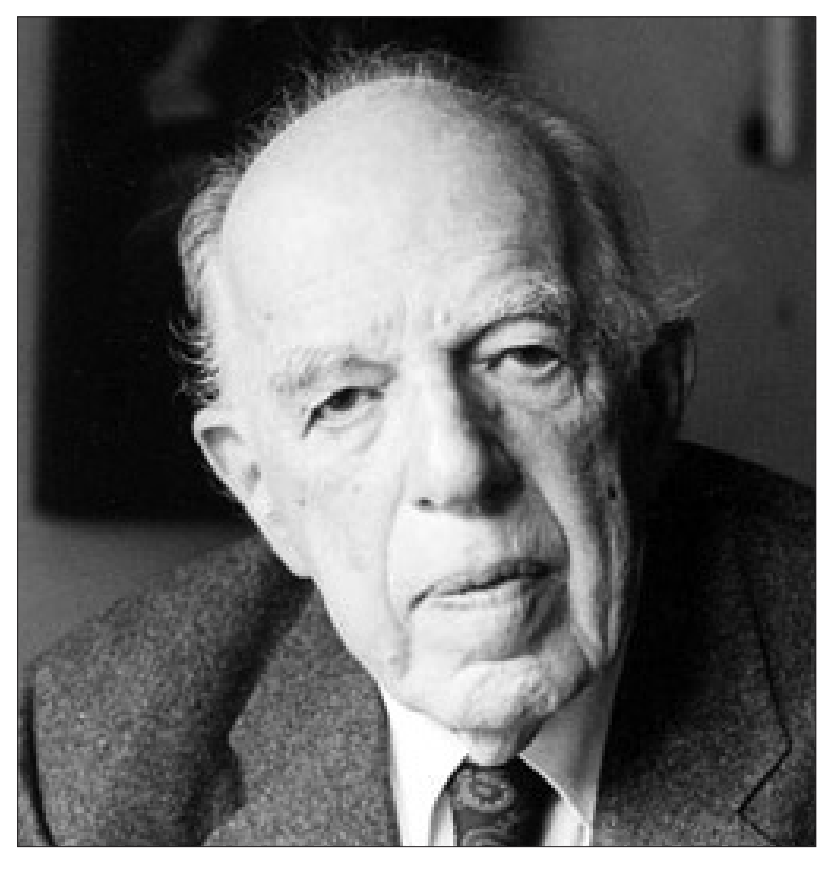
Sir Ernst H. J. Gombrich (1909–2001) was an Austrian-born art historian who became a naturalized British citizen in 1947. He was the author of many works of art history, including The Story of Art, a book widely regarded as one of the most accessible introductions to the visual arts.

REMEMBER:

1. A PHYSICAL, PRINTED BOOK ENGAGES THE VISUAL-SPATIAL COMPONENT OF WORKING MEMORY.

2. A PRINTED BOOK, LIKE A CITY, CAN GENERATE A MEANINGFUL MENTAL IMAGE FOR REMEMBERING AND ORIENTATION.

Kevin A. Lynch (1918-1984) was an American urban planner and author. His most influential books include The Image of the City (1960) and What Time is This Place? (1972). Lynch provided seminal contributions to the field of city planning through empirical research on how individuals perceive and navigate the urban landscape.

Daniel T. Willingham researches the application of cognitive psychology to K-16 education. He is the author of Why Don't Students Like School?

Figure 4: *More than its tangible materiality and obviously important sensible and tactile attributes, another, more important characteristic determines the construction of the reader's mental image of the book. This is the linear, fixed sequence of letters making up the words, the fixed sequence of words making up sentences, at the fixed sequence of sentences making up the paragraphs and so on, until the full complete book is assembled and contained between the covers. In a printed book, all these sequential relationships stay the same, to change only when a new edition gets printed.*

Ferdinand de Saussure (1857–1913) was a Swiss linguist whose ideas laid a foundation for many significant developments both in linguistics and semiotics in the 20th century. One of his seminal distinctions in language was that between langue and parole.
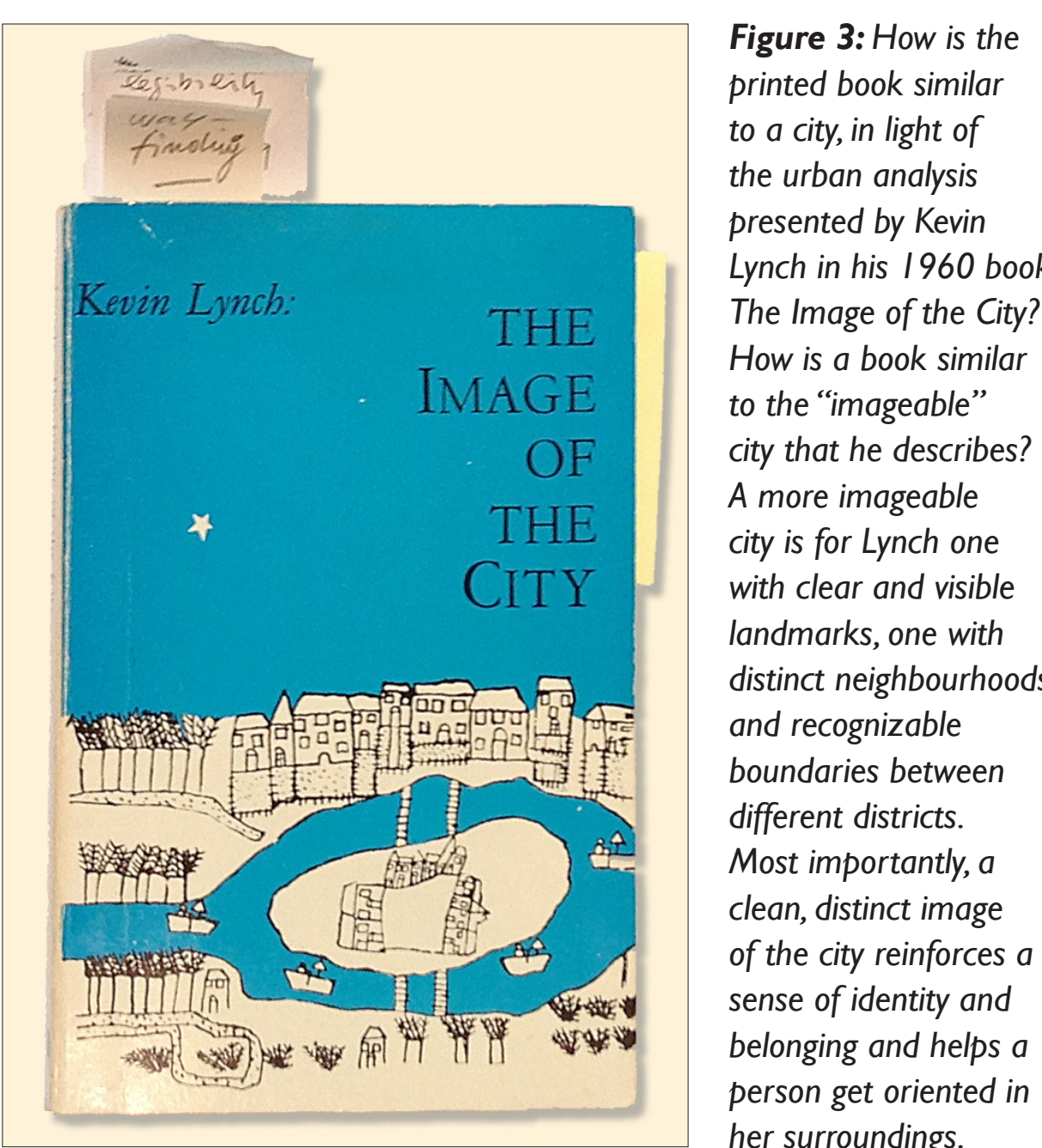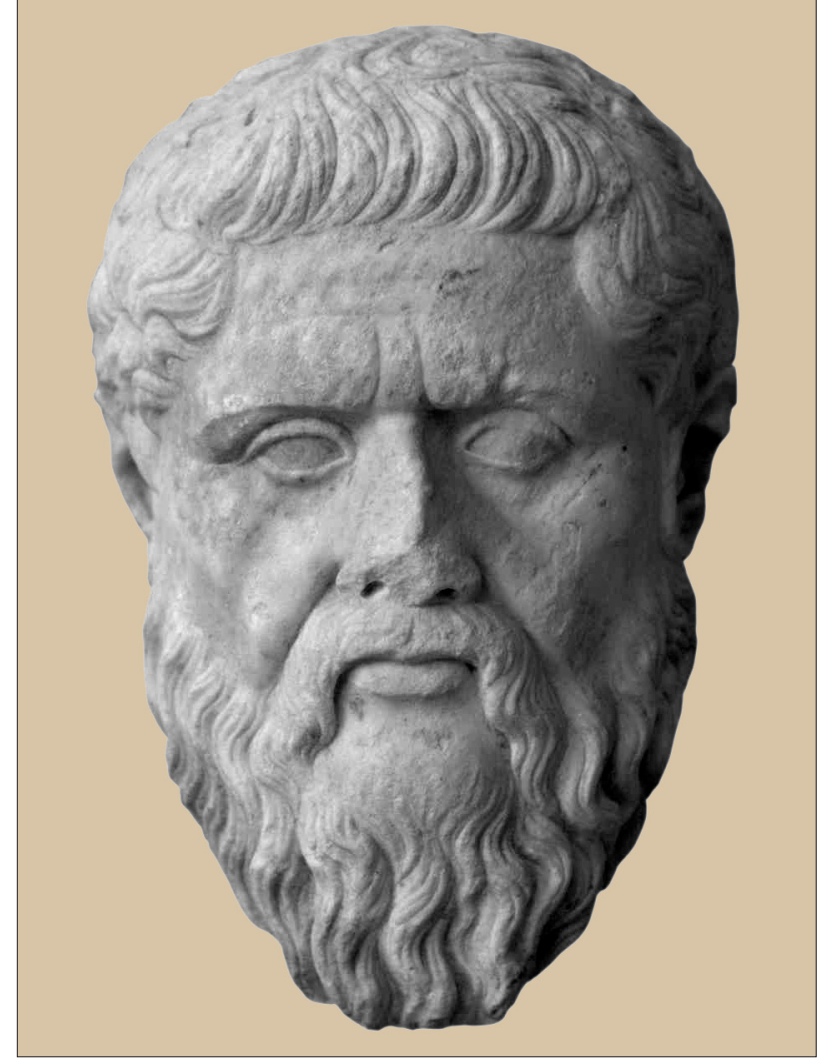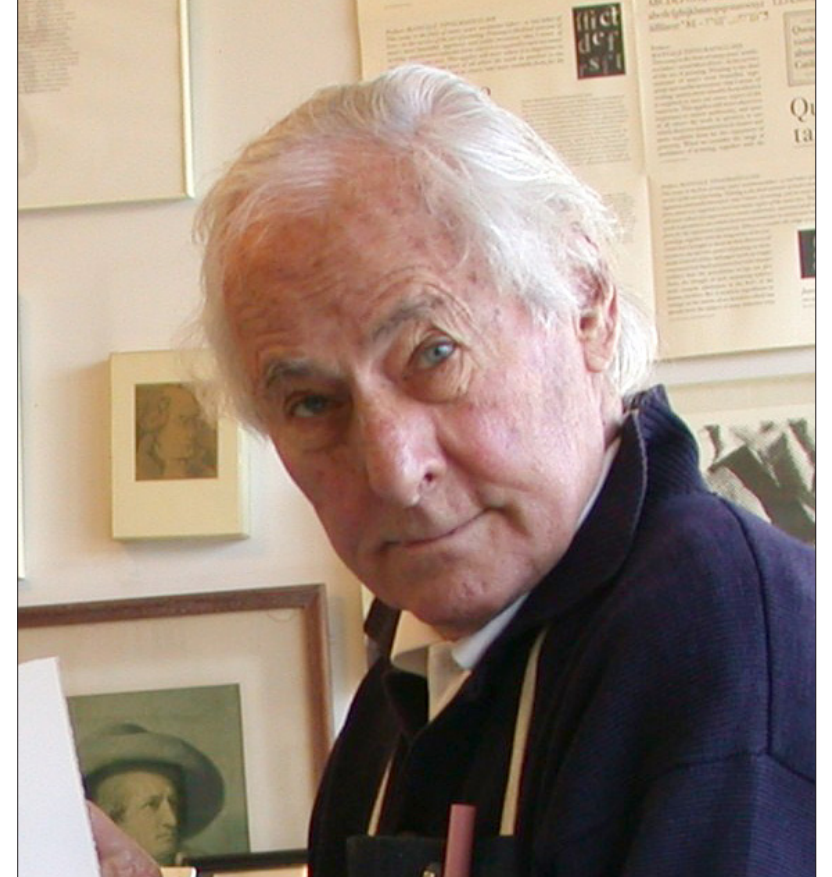
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[2] JACK STAUFFACHER describes himself as a printer, in the tradition of the entrepreneur-publisher-designer-typographer-printer. Works from his Greenwood Press are in the collections of the San Francisco Museum of Modern Art and the Los Angeles County Museum of Art. In 2004, he was awarded the Gold Medal from the American Institute of Graphic Arts.
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[3] JIM FARIS is an interaction designer who trained at the Basel School of Design. He was Director of Graphic Design for The Museum of Modern Art, New York. Recently he was Visual Interface Consultant for Motorola and Lead Visual Designer for Google. He is currently Lead Visual Designer at Skype.
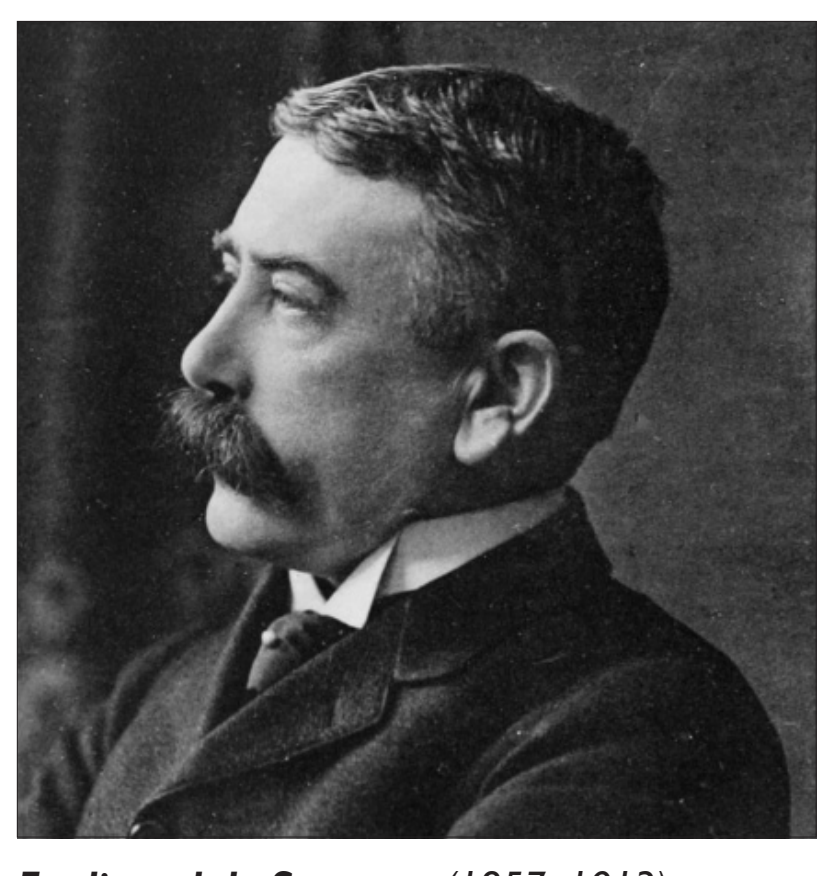jimfaris@me.com