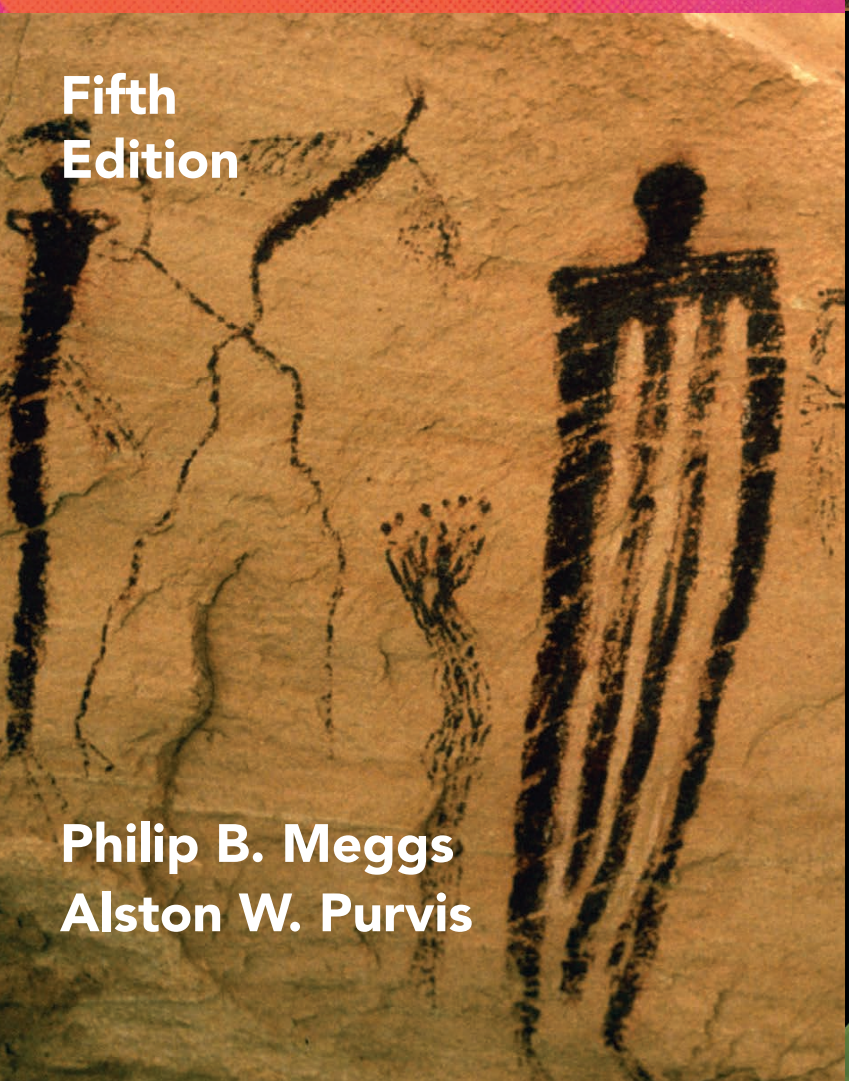
Meggs' History of Graphic Design

Fifth Edition



Philip B. Meggs
Alston W. Purvis

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WILEY

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This book is printed on acid-free paper. ∞

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Contents

Preface

Many different methods can be employed to investigate the evolution of graphic design, including exploring aesthetic movements and ideas, considering economic implications, analyzing audience sensibility, and evaluating the influence of technological innovations such as the invention of movable type or lithography. Naturally, the visual nature of graphic design is our primary concern, but we must also consider the values of the designers, the impact of their work on audiences, and the intrinsic meaning of forms. Traditional art history research approaches are in many ways insufficient for addressing the relatively recent and completely unique history of graphic design. Concentrating only on individual designers and their most important works or placing these designers systematically into schools or overall movements does not adequately fulfill our needs. Invigorating exchanges among designers is crucial impetus to the growth of graphic design, and, because of the Internet, this impetus is particularly relevant to graphic design today.

My own preferences and those of Philip B. Meggs undoubtedly played a role in determining what or whom to include in this edition, but a decided effort was made to arrive at such decisions for reasons other than personal tastes. Ideally, choices were based on how clearly designs impart ideas, aesthetic concepts, or specific graphic forms, even when other examples might be deemed more standard. Obstructions in acquiring publication rights to image reproductions in this edition were also an impediment to the inclusion of certain works of art. For this reason, some significant figures have unfortunately been denied their rightful place in this book and will most likely be denied inclusion in other publications as well.

Although in the history of graphic design, there are moments when shared visions defy any attribution to a single designer, there have also been individual designers forging new paths, with distinctive expressive forms and original means for conveying information. A goal of *Meggs' History of Graphic Design* has been to document graphic design innovation and those designers who have made noteworthy contributions to its long-term development. Selecting exceptionally significant designers, especially from the last thirty years, was a demanding undertaking. By "significant" I refer to those who not only created outstanding work but also played a major role in the growth of the graphic design profession. What characterizes a master designer is not easy to define. Such individuals should first possess a unique aesthetic vision, a directly identifiable visual language, and a philosophy that goes beyond mere problem solving. Clearly, many have been unfairly omitted, but there has been a conscious effort to prevent such exclusions. The inventive accomplishments of past great graphic design practitioners have withstood the test of time and continue to inform and inspire new generations. Assessing graphic design from recent years, however, is a more delicate and complicated task, as there is now a far more level playing field. The boundaries between diverse design disciplines have also become less distinct. Provenance has become more complex as well. Particularly during the last century, many designers created publications in companies with rotating staffs and interns. Such designs are the products of many individuals, and acknowledging all of those involved is rarely a viable option.

Thus, presenting an overview of current graphic design will always be a difficult undertaking, as any final chapter will inevitably have no conclusion. As the English philosopher and historian R. G. Collingwood noted in 1924, "Contemporary history embarrasses a writer not only because he knows too much, but also because what he knows is too undigested, too unconnected, too atomic. It is only after close and prolonged reflection that we begin to see what was essential and what was important, to see why things happened as they did, and to write history instead of newspapers."

The works included in *Meggs' History of Graphic Design* represent only a small part of what was created in any given period. A large number of images in this book denote schools, movements, styles, or individual approaches, and there are rarely instances when the ultimate accomplishments of any one designer are presented. A study such as this one is limited to presenting the work of designers at specific stages in their careers, and not their total oeuvre. Readers seeking a more complete account should consult the bibliography for additional exploration.

Meggs' History of Graphic Design was never meant to be an all-inclusive catalogue, as that would necessitate far more than one volume. Instead, we have attempted to offer a wide-ranging survey of significant stages and accomplishments in the development of graphic design. A guiding consideration in deciding what to include was how specific cultures, movements, works, and individuals affected what graphic design has become today. The current graphic design field is much broader than in the past and now

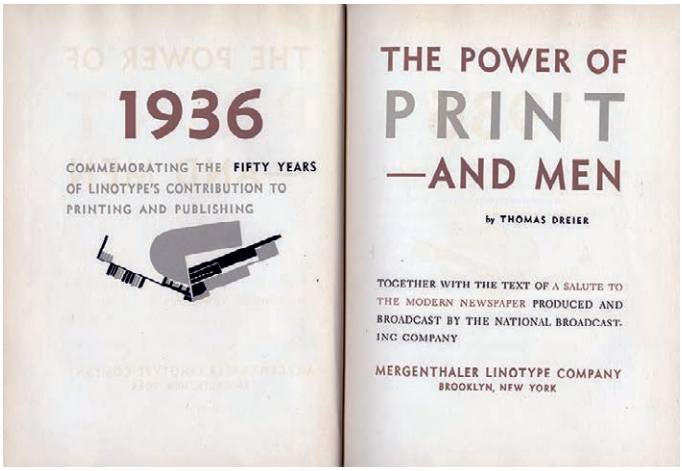
includes disciplines such as motion graphics, environmental communications, and new media. Inevitable space restrictions prevented a thorough exploration of these exciting new topics. Although graphic design is obviously closely related to illustration, photography, printing, and computer technology, it was not feasible to provide a thorough presentation of these related fields within a single volume.

As with any volume of this scale, some key players and topics were omitted in previous editions. A vital consideration for this edition, though, was to record developments since 2004, the date of the most recent images included in the fourth edition. Although the organization of *Meggs' History of Graphic Design* is fundamentally sequential, there are occasions when periods blend together and share common characteristics.

For the fifth edition, we added and replaced many images, and some have been deleted to provide space for additional content. Many designers who merit inclusion were omitted because of space restrictions, and to them I offer my apologies. Although we have become a global culture since the publication of *A History of Graphic Design* in 1983, many regions and countries were excluded, also for space reasons. In this edition Spain, Portugal, Brazil, and China have been duly included.

William Addison Dwiggins arrived at the phrase *graphic design* in 1922, but it was rarely used until after World War II—until then graphic designers were called "commercial artists." The field expanded dramatically in the last decades of the twentieth century, with technology playing an increasingly critical role. As we move forward through the digital era, graphic design is undergoing spectacular changes. Naturally, future generations of graphic designers will challenge existing means of perception and established aesthetic concepts. Whenever we assume we stand at the vanguard, we realize we are truly only at the beginning of an uncharted landscape.

We are continually confronted by new visual messages, and those that remain significant must be visually striking, intellectually stimulating, and deeply genuine. The computer has augmented the pace at which graphic design problems can be solved and permits designers to work more resourcefully. Projects that in the past would have required months are now resolved in a matter of weeks or even days. The profession is no longer limited to books, posters, and advertisements but now includes motion and interactive media and more. In spite of being increasingly involved with technology, there are distinct ties binding the graphic design profession to past crafts and aesthetics. Printed media still retains its importance, as witnessed by the revival of letterpress printing in recent years.



William Addison Dwiggins, title pages from *The Power of Print and Men*, 1936.

Graphic design rests upon historical foundations, and this rich legacy now has an essential place in graphic design education. During a time when established notions of graphic design are being questioned, it is vital that new generations of graphic designers have a historical knowledge of their vocation. In gaining inspiration from works of the past, be they ancient or recent, designers acknowledge the evolution that, in the words of Meggs, has "enabled designers to achieve a gradual transition from Renaissance design to the modern epoch."

Since it was first published in 1983, *A History of Graphic Design* has remained the most complete book in its field. It is my objective to retain and further contemporize the book through the restructuring and enhancements of this edition. I hope that the fifth edition, with its expanded content and fresh images, will continue to enlighten and inspire both students and professionals.

Alston W. Purvis

Preface to the First Edition

There is a German word, *Zeitgeist*, that does not have an English equivalent. It means the spirit of the times, and refers to the cultural trends and tastes that are characteristic of a given era. The immediacy and ephemeral nature of graphic design, combined with its link with the social, political, and economic life of its culture, enable it to more closely express the zeitgeist of an epoch than many other forms of human expression. Ivan Chermayeff, a noted designer, has said: the design of history is the history of design.

Since prehistoric times, people have searched for ways to give visual form to ideas and concepts, to store knowledge in graphic form, and to bring order and clarity to information. Over the course of history, these needs have been filled by various people, including scribes, printers, and artists. It was not until 1922, when the outstanding book designer William Addison Dwiggins coined the term *graphic design* to describe his activities as an individual who brought structural order and more visual form to printed communications, that an emerging profession received an appropriate name. However, the contemporary graphic designer is heir to a distinguished ancestry. Sumerian scribes who invented writing, Egyptian artisans who combined words and images on papyrus manuscripts, Chinese block printers, medieval illuminators, and fifteenth-century printers and compositors who designed early European books all became part of the rich heritage and history of graphic design. By and large, this is an anonymous tradition, for the social value and aesthetic accomplishments of graphic designers, many of whom have been creative artists of extraordinary intelligence and vision, have not been sufficiently recognized.

History is in large measure a myth, because the historian looks back over the great sprawling network of human struggle and attempts to construct a web of meaning. Oversimplification, ignorance of causes and their effects, and the lack of an objective vantage point are grave risks for the historian. When we attempt to record the accomplishments of the past, we do so from the vantage point of our own time. History becomes a reflection of the needs, sensibilities, and attitudes of the chronicler's time as surely as it represents the accomplishments of bygone eras. As much as one might strive for objectivity, the limitations of individual knowledge and insights ultimately intrude.

The concept of art for art's sake, a beautiful object that exists solely for its aesthetic value, did not develop until the nineteenth century. Before the Industrial Revolution, the beauty of forms and images that people made were linked to their function in human society. The aesthetic qualities of Greek pottery, Egyptian hieroglyphics, and medieval manuscripts were totally integrated with useful values; art and life were unified into a cohesive whole. The din and thunder of the Industrial Revolution turned the world upside down in a process of upheaval and technological progress that continues to accelerate at an ever-quickening pace. By jolting the arts and crafts from their social and economic roles, the machine age created a gulf between people's material life and their sensory and spiritual needs. Just as voices call for a restoration of humanity's unity with the natural environment, there is a growing awareness of the need to restore human and aesthetic values to the man-made environment and mass communications. The design arts—architecture and product, fashion, interior, and graphic design—offer one means for this restoration. Once more a society's shelter, artifacts, and communications might bind a people together. The endangered aesthetic and spiritual values might be restored. A wholeness of need and spirit, reunited through the process of design, can contribute in great measure to the quality and raison d'être of life in urban societies.

This chronicle of graphic design is written in the belief that if we understand the past, we will be better able to continue a culture legacy of beautiful form and effective communication. If we ignore this legacy, we run the risk of becoming buried in a mindless morass of a commercialism whose molelike vision ignores human values and needs as it burrows forward into darkness.

Philip B. Meggs

Detail from the Papyrus of Hunefer, c. 1370 BCE.

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Numerous scholars, collectors, friends, colleagues, students, and designers have kindly contributed suggestions and knowledge that have aided in completing this volume, and it is difficult to sufficiently convey my appreciation to them all.

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And especially, I want to thank my wife, Susan, and my son, Philip, for their patience during the long periods when I was away working on this project.

An example of the Islamic manuscript illumination that flourished from the thirteenth through the nineteenth centuries CE.

Meggs' History of Graphic Design

Part I
The Prologue to Graphic Design

The visual message from prehistory through the medieval era

1. The Invention of Writing

5000 BCE

c 15,000–10,000 BCE Cave paintings at Lascaux

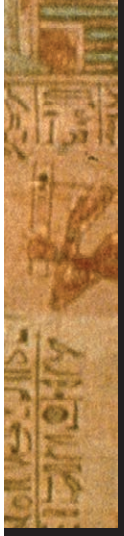
c 3600 BCE Blau Monument combines images and early writing
c 3500 BCE Sumerians settle in Mesopotamia
c 3200 BCE Menes, first pharaoh, unites Egypt
c 3100 BCE Early Sumerian pictographic scripts on clay tablets
c 3100 BCE King Zet's ivory tablet, earliest Egyptian pictographic writing

c 2900 BCE Early cylinder seals
c 2750 BCE Formal land-sale contracts written in cuneiform
c 2600 BCE Early surviving papyrus manuscripts
c 2500 BCE Wedge-shaped cuneiform
c 2345 BCE Pyramid texts in tomb of Unas

c 1930–1880 BCE Law Code of Hammurabi
c 1739 BCE Scarab of Ikhnaton and Nefertiti
c 1500 BCE Hieratic scripts
c 1420 BCE Papyrus of Ani
c 1300 BCE Early Book of the Dead papyrus scrolls
c 1100 **BCE** Iron widely used for weapons and tools

c 600 BCE Nebuchadnezzar builds the Tower of Babel
c 400 BCE Demotic script
332–330 BCE Alexander the Great conquers Egypt
c 197 BCE Rosetta Stone

100 BCE



2. Alphabets

2000 BCE

c 2000 BCE Early Cretan pictographs,Phaistos Disk

c 1500 BCE Ras Shamra script
c 1000 BCE Early Greek alphabet

c 850 BCE Aramaic alphabet
516 BCE Israelites return from Babylonian exile
447–432 BCE Parthenon built in Athens
429 BCE Sophocles' tragedy *Oedipus Rex*
323 BCE Alexander the Great dies in Babylon
300 BCE Euclid's geometry
c 190 BCE Parchment used for manuscripts
44 BCE Julius Caesar assassinated
29 BCE Vergil's Georgics

c 100 CE Pompeiian wall writing
c 114 CE Trajan's Column
c 250 CE Greek uncials
c 200–500 CE Roman square capitals and rustic capitals
c 500 CE Early Arabic alphabet

c 1000 CE Naskhi becomes dominant Arabic alphabet
1446 CE Hangul, Korean alphabet

1500 BCE

3. The Asian Contribution

2000 BCE

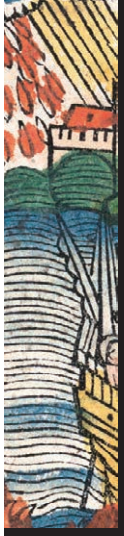
c 1800 BCE Legendary Ts'ang Chieh invents writing
c 1500 BCE Oracle bone writing

551 BCE Confucius is born
c 528 BCE Siddhartha Gautama becomes the supreme Buddha
c 221 BCE Shih Huang-ti unites China: the Great Wall underway
c 250 BCE Small-seal calligraphy
105 CE Ts'ai Lun invents paper

c 165 CE Confucian classics carved in stone
c 200 CE Regular-style calligraphy
c 300 CE Chops are used as identifying seals; chops used in Han dynasty
c 770 CE Early datable Chinese relief printing; printed Buddhist charms
868 CE Diamond Sutra

c 1000 CE Chinese calligraphy printed with perfection
c 1000 CE Gunpowder in use in China
c 1040 CE Pi Sheng invents movable type in China
c 1150 CE Compass is invented

1200 CE



4. Illuminated Manuscripts

300 CE

330 CE Constantine moves Roman capital to Constantinople
c 425 CE Vatican Vergil
c 500 CE Uncial lettering flourishes
570 CE Birth of Muhammad

c 600 CE Insular script
c 680 CE Book of Durrow
c 698 CE Lindisfarne Gospels
c 751 CE Arabs learn papermaking from Chinese prisoners
781 CE Alcuin establishes school at Aachen; Caroline minuscules are developed
c 800 CE Book of Kells, Coronation Gospels
800 CE Charlemagne crowned emperor

1095–99 CE First Crusade
1163 CE Notre Dame Cathedral begun in Paris
1209 CE Cambridge University founded
c 1265 CE Douce Apocalypse
c 1265 CE Marco Polo travels to China
1215 CE King John signs Magna Carta
c. 1300 CE Ormesby Psalter
c 1320 CE Firearms used in Europe
c 1387 CE Chaucer begins *The Canterbury Tales*
c 1413–16 CE *Les tres riches heures du duc de Berry*
c 1450 CE Printing with movable type in Germany
c 1478 CE Washington Haggadah

1500 CE

Part I

The Prologue to Graphic Design

The visual message from prehistory through the medieval era

1 The Invention of Writing

1–1

1–1. Cave painting from Lascaux, c. 15,000–10,000 BCE. Random placement and shifting scale signify prehistoric people's lack of structure and sequence in recording their experiences.

It is not known precisely when or where *Homo sapiens*, the biological species of conscious, thinking creatures, emerged. As the search for our prehistoric origins continues, the early innovations of our ancestors have been pushed back further in time. It is believed that we evolved from a species that lived in the southern part of Africa. These early hominids ventured out onto the grassy plains and into caves as the forests in that part of the world slowly disappeared. In the tall grass, the hominids began to stand erect. Perhaps this adaptation was a result of the need to watch for predators, to help discourage enemies by increasing the hominids' apparent size, or to hold branches as weapons.

In any event, the hand developed an ability to carry food and hold objects. Found near Lake Turkana in Kenya, a nearly three-million-year-old stone that had been sharpened into an implement proves the thoughtful and deliberate development of a technology—a tool. Early shaped stones may have been used to dig for roots or to cut away flesh from dead animals for food. While we can only speculate about the use of early tools, we know that they mark a major step in the human species' immense journey from primitive origins toward a civilized state.

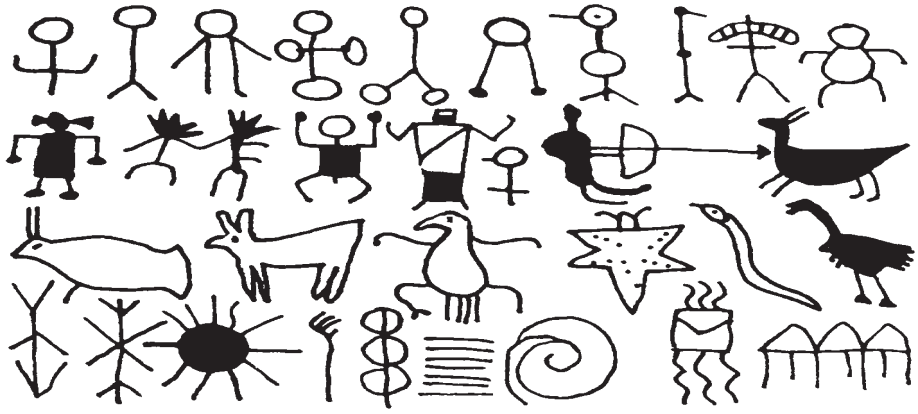
A number of quantum leaps provided the capacity to organize a community and gain some measure of control over human destiny. Speech—the ability to make sounds in order to communicate—was an early skill developed by the species on the long evolutionary trail from its archaic beginnings. Writing is the visual counterpart of speech. Marks, symbols, pictures, or letters drawn or written upon a surface or substrate became a graphic counterpart of the spoken word or unspoken thought. The limitations of speech include the fallibility of human memory and an immediacy of expression that cannot transcend time and place. Until the electronic age, spoken words vanished without a trace, while written words remained. The invention of writing brought people the luster of civilization and made it possible to preserve hard-won knowledge, experiences, and thoughts.

The development of writing and visible language had its earliest origins in simple pictures, for a close connection exists between the drawing of pictures and the marking of writing. Both are natural ways of communicating ideas, and early people used pictures as an elementary way to record and transmit information.

1–2. Found carved and sometimes painted on rocks in the western United States, these petroglyphic figures, animals, and signs are similar to those found all over the world.

1–3. Fremont rock painting from San Raphael Swell, c. 2000–1000 BCE. The Fremont people lived in southern Utah.

1–4. Engraved drawing on a deer antler, c. 15,000 BCE. This prehistoric image is shown in a cast made by rolling the antler onto clay.



1–2

Prehistoric visual communications

Early human markings found in Africa are over two hundred thousend years old. From the early Paleolithic to the Neolithic period (35,000 to 4000 BCE), early Africans and Europeans left paintings in caves, including the Lascaux caves in southern France (Fig. **1–1**) and Altamira in Spain. Black was made from charcoal, and a range of warm tones, from light yellows through red-browns, were made from red and yellow iron oxides. This palette of pigments was mixed with fat as a medium. Images of animals were drawn and painted upon the walls of these former subterranean water channels occupied as a refuge by prehistoric men and women. Perhaps the pigment was smeared onto the walls with a finger, or a brush was fabricated from bristles or reeds. This was not the beginning of art as we know it. Rather, it was the dawning of visual communications, because these early pictures were made for survival and for utilitarian and ritualistic purposes. The presence of what appear to be spear marks in the sides of some of these animal images indicates that they were used in magical rites designed to gain power over animals and success in the hunt.

Abstract geometric signs, including dots, squares, and other configurations, are intermingled with the animals in many cave paintings. Whether they represent man-made objects or are protowriting is not known, and never will be, because they were made before the beginning of recorded history (the five-thousand-year period during which people have recorded in writing a chronicle of their knowledge of facts and events). The animals painted in the caves are pictographs—elementary pictures or sketches that represent the things depicted.

Throughout the world, from Africa to North America to the islands of New Zealand, prehistoric people left numerous petroglyphs (Fig. **1–2**), which are carved or scratched signs or simple figures on rock. Many of the petroglyphs are pictographs, and some may be ideographs, or symbols to represent ideas or concepts. (Fig. **1–3**) A high level of observation and memory is evidenced in many prehistoric drawings. In an engraved reindeer antler found in the cave of Lorthet in southern France (Fig. **1–4**), the scratched drawings of deer

1–3

1–4

1–5

1–6

1–7

and salmon are remarkably accurate. Even more important, however, are two diamond-shaped forms with interior marks, which imply an early symbol-making ability. The early pictographs evolved in two ways: first, they were the beginning of pictorial art—the objects and events of the world were recorded with increasing fidelity and exactitude as the centuries passed; second, they formed the basis of writing. The images, regardless of whether the original pictorial form was retained, ultimately became symbols for spoken-language sounds.

The Paleolithic artist developed a tendency toward simplification and stylization. Figures became increasingly abbreviated and were expressed with a minimum number of lines. By the late Paleolithic period, some petroglyphs and pictographs had been reduced to the point of almost resembling letters.

The cradle of civilization

Until recent discoveries indicated that early peoples in Thailand may have practiced agriculture and manufactured pottery at an even earlier date, archaeologists had long believed that the ancient land of Mesopotamia, "the land between rivers," was the cradle of civilization. Between the Tigris and Euphrates rivers, which flow from the mountains of eastern Turkey across the land that is now Iraq and into the Persian Gulf, there lies a flat, once-fertile plain whose wet winters and hot, dry summers proved very attractive to early human culture. Here, early humans ceased their restless nomadic wanderings and established a village society. Around 8000 BCE, wild grain was planted, animals were domesticated, and agriculture began. By the year 6000 BCE, objects were being hammered from copper; the Bronze Age was ushered in about 3000 BCE, when copper was alloyed with tin to make durable tools and weapons. The invention of the wheel followed.

1–5. Early Sumerian pictographic tablet, c. 3100 BCE. This archaic pictographic script contained the seeds for the development of writing. Information is structured into grid zones by horizontal and vertical division.

1–6. Archaic tablet fragment from the late fourth millennium BCE. The drilled hole denotes a number, and the pictographs represent animals in this transaction of sheep and goats.

1–7. This clay tablet demonstrates how the Sumerian symbols for "star" (which also meant "heaven" or "god"), "head," and "water" evolved from early pictographs (3100 BCE). The latter were turned on their side by 2800 BCE and evolved into early cuneiform writing by 2500 BCE.

The leap from village culture to high civilization occurred after the Sumerian people arrived in Mesopotamia near the end of the fourth millennium BCE. The origin of the Sumerians—who settled in the lower part of the Fertile Crescent before 3000 BCE—remains a great mystery. As vital as the technologies developed in Mesopotamia were for the future of the human race, the Sumerians' contribution to social and intellectual progress had even more impact upon the future. The Sumerians invented a system of gods headed by a supreme deity named Anu, who was the god of the heavens. An intricate system of god-man relationships was developed. The city emerged, with the necessary social order for large numbers of people to live together. But of the numerous inventions in Sumer that launched people onto the path of civilization, the invention of writing brought about an intellectual revolution that had a vast impact upon social order, economic progress, and technological and future cultural developments.

The history of Mesopotamia records waves of invaders who conquered the peoples living there. The culture established by the Sumerians conquered the invaders in turn, and the sequence of ruling peoples who dominated Mesopotamia during its long history include Akkadians, Assyrians, Babylonians, and Chaldeans. Persians from the west and Hittites from the north also conquered the area and spread Mesopotamian civilization beyond the Fertile Crescent.

The earliest writing

Religion dominated life in the Mesopotamian city-state, just as the massive ziggurat, a stepped temple compound, dominated the city. Its vast, multistory brick temples were constructed as a series of recessed levels, becoming smaller toward the top of the shrine. Inside, priests and scribes wielded enormous power, as they controlled the inventories of the gods and the king and ministered to the magical and religious needs of the people. Writing may have evolved because this temple economy had an increasing need for record keeping. The temple chiefs consciously sought a system for recording information.

In human memory, time can become a blur, and important facts are often forgotten. In Mesopotamian terms, such important facts might include the answers to questions like: Who delivered their taxes in the form of crops? How much food was stored, and was it adequate to meet community needs before the next harvest? As even these relatively simple questions show, an accurate continuum of knowledge became imperative if the temple priests were to be able to maintain the order and stability necessary in the city-state. One theory holds that the origin of visible language evolved from the need to identify the contents of sacks and pottery containers used to store food. Small clay tags were made that identified the contents with a pictograph, and the amount with an elementary decimal numbering system based on the ten human fingers.

The earliest written records are tablets that apparently list commodities by pictographic drawings of objects accompanied by numerals and personal names inscribed in orderly columns (Figs. **1–5** and **1–6**). An abundance of clay in Sumer made it the logical material for record keeping, and a reed stylus sharpened to a point was used to draw the fine, curved lines of the early pictographs. The clay mud tablet was held in the left hand, and pictographs were scratched in the surface with the wooden stylus. Beginning in the top right corner of the tablet, the lines were written in careful vertical columns. The inscribed tablet was then dried in the hot sun or baked rock-hard in a kiln.

This writing system underwent an evolution over several centuries. Writing was structured on a grid of horizontal and vertical spatial divisions. Sometimes the scribe would smear the writing as his hand moved across the tablet. Around 2800 BCE scribes turned the pictographs on their sides and began to write in horizontal rows, from left to right and top to bottom (Fig. **1–7**). This made writing easier, and it made the pictographs less literal. About three hundred years later, writing speed was increased by replacing the sharp-pointed stylus with a triangular-tipped one. This stylus was pushed into the clay instead of being dragged through it.

The characters were now composed of a series of wedge-shaped strokes rather than a continuous line drawing (Figs. **1–8 through 1–13**). This innovation radically altered the nature of the writing; pictographs evolved into an abstract sign writing called cuneiform (from the Latin for "wedge-shaped").

While the graphic form of Sumerian writing was evolving, its ability to record information was expanding. From the first stage, when picture-symbols represented animate and inanimate objects, signs became ideographs and began to represent abstract ideas. The symbol for sun, for example, began to represent ideas such as "day" and "light." As early scribes developed their written language to function in the same way as their speech, the need to represent spoken sounds not easily depicted arose.

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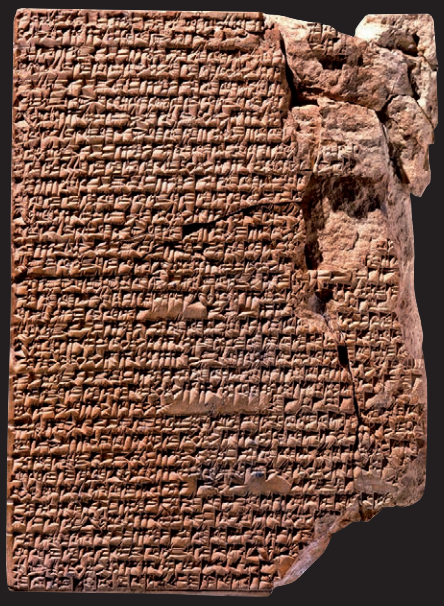
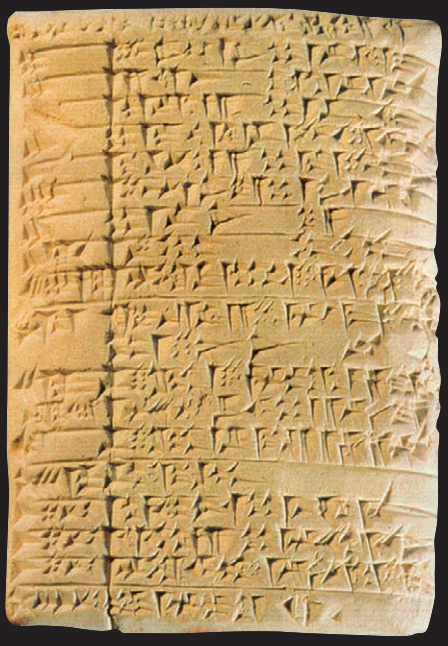


1–12



1–13

1–8. Cuneiform tablet from Umma, c. 2050 BCE. Three workers are paid three bundles a day. The total for six days is fifty-four bundles of reed.

1–9. Cuneiform tablet from Drehem, 2040 BCE. Abbashaga, Shu-Ma, the governor of Kazulla, provides 198 sheep and 162 goats the first time and 41 sheep and 82 female goats the second time.

1–10. Ur III period, dated to Amar-Sin (2039 BCE) in Sumerian. Balanced silver account of Ur-Dumuzi, the merchant.

1–11. Old Babylonian (c. 1850 BCE) in Akkadian. A chapter of the Epic of Gilgamesh. Gilgamesh and his friend go to fell the cedars of Lebanon.

1–12. Old Babylonian (c. 1850 BCE) in Akkadian. The world's oldest cookbook, a collection of recipes for dishes for the royal palace or the temple.

1–13. Middle Babylonian, dated Shagarakti-Shunash (1245–1233 BCE). Balanced account of seed.

1–14

1–14. The Blau monument, early Sumerian, third quarter, fourth millennium BCE. Etched writing and carved relief figures are combined on this early shale artifact.

Adverbs, prepositions, and personal names often could not be adapted to pictographic representation. Picture symbols began to represent the sounds of the objects depicted instead of the objects themselves. Cuneiform became rebus writing, which is pictures and/or pictographs representing words and syllables with the same or similar sound as the object depicted. Pictures were used as phonograms, or graphic symbols for sounds. The highest development of cuneiform was its use of abstract signs to represent syllables, which are sounds made by combining more elementary sounds.

Cuneiform was a difficult writing system to master, even after the Assyrians simplified it into only 560 signs. Youngsters selected to become scribes began their schooling at the *edubba*, the writing school or "tablet house," before the age of ten and worked from sunrise to sunset every day, with only six days off per month. Professional opportunities in the priesthood, estate management, accounting, medicine, and government were reserved for these select few. Writing took on important magical and ceremonial qualities. The general public held those who could write in awe, and it was believed that death occurred when a divine scribe etched one's name in a mythical Book of Fate.

Early Sumerian artisans mixed writing with relief images. The Blau monument (Fig. **1–14**) may be the oldest extant artifact combining words and pictures on the same surface. The knowledge explosion made possible by writing was remarkable. Mesopotamians organized libraries that contained thousands of tablets about religion, mathematics, history, law, medicine, and astronomy. There was a beginning of literature as poetry, myths, epics, and legends were recorded on clay tablets. Writing also fostered a sense of history; tablets chronicled with meticulous exactitude the events that occurred during the reign of each monarch. Thousands of commercial contracts and records still remain.

Writing enabled society to stabilize itself under the rule of law. Measurements and weights were standardized and guaranteed by written inscription (Fig. **1–15**). Law codes, such as the Code of Hammurabi, who reigned from 1792 to 1750 BCE, spelled out crimes and their punishments, thus establishing social order and justice. The Code of Hammurabi is written in careful cuneiform on a 2.5-meter (8-foot) tall stele, an inscribed or carved stone or slab used for commemorative purposes (Figs. **1–16** and **1–17**). The stele contains 282 laws gridded in twenty-one columns. Steles with Hammurabi's reformed law code were erected in the main temple of Marduk at Babylon and in other cities. Written in a precise style, harsh penalties were expressed with clarity and brevity. Some of these commandments include: "a thief stealing from a child is to be put to death"; "a physician operating on a slightly wounded man with a bronze scalpel shall have his hands cut off"; and "a builder who builds a house that falls and kills the owner shall be put to death."

1–15. Black stone duck weight, c. 3000 BCE. The cuneiform inscription dedicates this weight to the god Nanna by the King of Ur and confirms a weight of five minas. A mina weighed about 0.6 kilograms, or 18 ounces.

1–15

Mesopotamian visual identification

Two natural by-products of the rise of village culture were the ownership of property and the specialization of trades or crafts. Both made visual identification necessary. Cattle brands and proprietary marks were developed so that ownership could be established and the maker of pottery or other objects identified in case problems developed or superior quality inspired repeat purchases. A means of identifying the author of a clay cuneiform tablet certifying commercial documents and contracts and proving the authority of religious and royal proclamations was needed. Mesopotamian cylinder seals provided a forgery-proof method for sealing documents and proving their authenticity (Fig. **1–18**). In use for over three thousand years, these small cylinders had images and writing etched into their surfaces. When they were rolled across a damp clay tablet, a raised impression of the depressed design, which became a "trademark" for the owner, was formed. Because the image carved into the round stone appeared on the tablet as a raised flat design, it was virtually impossible to duplicate or counterfeit. Many such stones had a hollow perforation running through them so that they could be worn on a string around the neck or wrist. Since the images could be reproduced, this can be seen as an initial form of printing.

The widely traveled Greek historian Herodotus (c. 484–c. 425 BCE) wrote that each Babylonian wore a cylinder seal on a cord around the wrist, like a bracelet. Prized as ornaments, status symbols, and unique personal signatures, cylinder seals were even used to mark a damp clay seal on the house door when the occupants were away, to indicate whether burglars had entered the premises. Cutters of cylinder and stamp seals developed great skill and a refined sense of design. The earliest seals were engraved with simple pictures of kings, a line of cattle, or mythic creatures. Later, more narrative images developed; for instance, one god would present a man (probably the seal's owner) to another god, or a man would figure prominently in fighting a battle or killing a wild animal. In the later Assyrian period, a more stylized and heraldic design approach developed north of Mesopotamia. Stories of the gods were illustrated, and animals were shown engaged in battle (Figs. **1–19** and **1–20**).

The last glory of Mesopotamian civilization occurred during the long reign of King Nebuchadnezzar (c. 634–561 BCE) in the city-state of Babylon. But in 538 BCE, after less than a century of great power during which Babylon, with nearly a million inhabitants, became the richest city in the world. Babylon and Mesopotamia fell to the Persians. Mesopotamian culture began to perish as the region became a province first of Persia, then of Greece, and finally of Rome. By the time of the birth of Christ, great cities such as Babylon had been abandoned, and the ziggurats had fallen into ruins. The dawning of visible language, the magnificent gift to mankind that was writing, passed forward to Egypt and Phoenicia. The Egyptians evolved a complex writing based on pictographs, and the Phoenicians replaced the formidable complexity of cuneiform with simple phonetic signs.

Egyptian hieroglyphs

By the time King Menes unified the land of Egypt and formed the First Dynasty around 3100 BCE, a number of Sumerian inventions had reached Egypt, including the cylinder seal, architectural designs of brick, decorative design motifs, and the fundamentals of writing. Unlike the Sumerians, whose pictographic writing evolved into abstract cuneiform, the Egyptians retained their picture-writing system, called hieroglyphics (Greek for "sacred carving," after the Egyptian for "the god's words"), for almost three and a half millennia. The earliest known hieroglyphs (Fig. **1–21**) date from about 3100 BCE, and the last known hieroglyphic inscription was carved in 394 CE, many decades after Egypt had become a Roman colony. The last people to use this language system were Egyptian temple priests. They were so secretive that Greek and Roman scholars of the era believed hieroglyphs were nothing more than magical symbols for sacred rites.

For nearly fifteen centuries, people looked with fascination upon Egyptian hieroglyphs without understanding their meaning. Then, in 1798, Napoleon conducted an expedition to Egypt in an effort to sever the English land route to India. In August 1799, his troops were digging a foundation for an addition to the fortification in the Egyptian town of Rosetta, which they were occupying. A black slab was unearthed bearing an inscription in two languages and three scripts: Egyptian hieroglyphics, Egyptian demotic script, and Greek (Fig. **1–22**). This decree had been written in 197 or 196 BCE after a great council of Egyptian priests met to commemorate the ascension of Pharaoh Ptolemy V (c. 210–180 BCE) to the throne of Egypt nine years earlier. Scholars realized that the inscription was probably the same in the three languages, and translation efforts began. In 1819 Dr. Thomas Young (1773–1829) proved that the direction in which the glyphs of

1–16. Stele bearing the Code of Hammurabi, which was developed between 1792 and 1750 BCE. Above the densely textured law code, King Hammurabi is shown on a mountaintop with the seated sun god Shamash, who orders the king to write down the laws for the people of Babylon. A graphic image of divine authority as the source for the code becomes powerful visual persuasion.

1–17. Detail of the Code of Hammurabi, c. 1800 BCE. Whether pressed into clay or carved into stone as shown here, Mesopotamian scribes achieved a masterful control and delicacy in their writing and arrangement of the strokes in the partitioned space.

1–18. Stamp-cylinder seal ("the Tyszkiewicz seal"), Hittite, 1650–1200 BCE. Combining decorative ornamentation with figurative images, this most likely portrays a ritual, possibly with a sacrificial offering on the right. It has both an image on the side, for rolling, and an image on the bottom, for stamping. Because it allows images to be reproduced, the cylinder seal can be seen as a precursor to printing.

1–19 and **1–20.** Persian stamp seal, c. 500 BCE. Incised into a precious pale blue quartz called chalcedony in a gold mount, this seal, with its symmetrical design of a pair of heraldic beasts locked in combat, probably belonged to a member of the royal family or the high priesthood.

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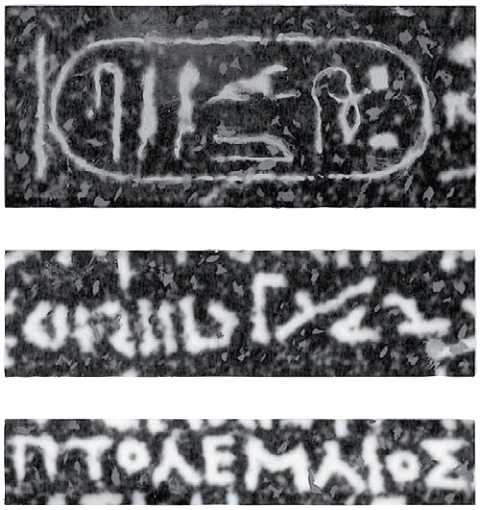

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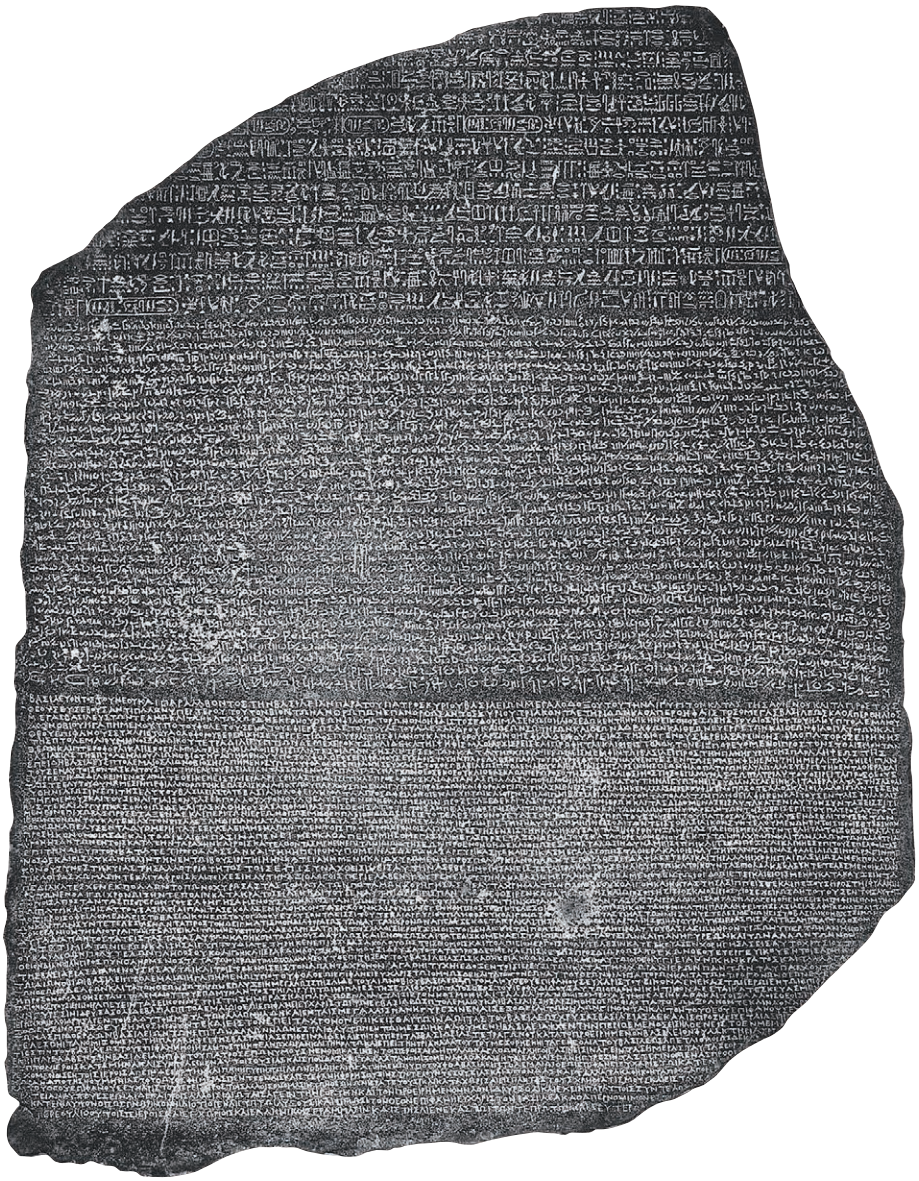

1–22

1–21. Ivory tablet of King Zet, First Dynasty. This five-thousand-year-old tablet is perhaps the earliest known example of the Egyptian pictographic writing that evolved into hieroglyphics.

1–22. The Rosetta Stone, c. 197–196 BCE. From top to bottom, the concurrent hieroglyphic, demotic, and Greek inscriptions provided the key to the secrets of ancient Egypt.

1–23. Details of the Rosetta Stone showing the name *Ptolemy* in hieroglyphics (top) and as the Greek word *Ptolemaios* (bottom).

1–24. Alphabet characters placed beside each hieroglyph in the cartouches of Ptolemy and Cleopatra demonstrate the approximate phonetic sounds deciphered by Champollion.

1–25. These Egyptian hieroglyphs illustrate the rebus principle. Words and syllables are represented by pictures of objects and by symbols whose names are similar to the word or syllable to be communicated. These hieroglyphs mean bee, leaf, sea, and sun. As rebuses (using the English language) they could also mean belief and season.