Vnd Gott ſprach/ Es werde eine

Martin Luther

In 1522, Martin Luther's translation of the Bible into the German language created the cultural foundation for the Reformation. Luther provided the example for generations to come that the future belongs to those who combine a universal and acceptable new meaning with the mastery of a new technology.

POLIPHILO INCOMIN

Aldus Manutius

The type in this specimen was designed and cut by Francesco Griffo of Bologna for the publications of Aldus Manutius of Venice, who was known not only as the most influential publisher of his time, but also as one of the first successful printer/publishers. The 1499 publication of *Hypnerotomachia Poliphili*, a sample of which is represented here, is referred to often as one of the most beautiful and influential books of its era.

J. S. Bach

Johann Sebastian Bach (1685-1750): hand written score of music. As one of the principal languages apart from "the word," written music provides a necessary link between invention and performance. Unlike nationalistic or ethnic languages, written music leaps across political and cultural borders to communicate an immediate sense of shared emotions and aspirations which do not need translation or interpretation.

cano, vna verſo Leuante, e l'altra verſo Ponente, nelle quali non s'è mai per ancora veduta mutazione alcuna, nè reſolutamente è per vederſi per l'auuenire, ſe non forſe qualche ſtrauagantiſſimo accidente lontano non pur da gli altri mouimenti cogniti à noi, mà da ogni noſtra immaginazione. Ma quella che pone Apelle del moſtrarſi Saturno hora oblongo, & hor' accompagnato con due ſtelle à i fianchi, creda pur V. S. ch'è ſtata imperfezzione dello ſtrumento, ò dell'occhio del riguardante, perche ſendo la figura di Saturno così , come moſtrano alle perfette viſte i perfetti ſtrumenti, doue manca tal perfezzione appariſce così non ſi diſtinguendo perfettamente la ſeparazione, e figura delle tre ſtelle; ma io che mille volte in diuerſi tempi con eccellente ſtrumento l'hò riguardato, poſſo aſſicurarla, che in eſſo non ſi è ſcorta mutazione alcuna, e la ragione ſteſſa fondata ſopra l'eſperienze, che hauia-

Galileo Galilei, *Istoria e dimostrazioni intorno alle macchie solari ...*, Roma, 1613.

la figura di Saturno così ,come

Galileo

In 1613, Galileo Galilei (1564-1642) published the first telescopic observations of Saturn in *Istoria e dimostrazioni intorno alle macchie solari*....This excerpt shows the first appearance of Saturn as a pictorial sentence element, as well. This publication marks an instance of technology turning an observation (Saturn seen through the telescope) into a noun (Saturn as a planet with rings) by making a picture of it in a book.

ᓂᐧᐢᐧᒪᑲᑦ ᓱᐦᑕ ᑲᑭᐦᑭᓄᐊᒪᑫᒋᑦ

Cree

James Evans was the first European to devise a system of writing for a Native American language. He invented the Plain Cree character which is partly syllabic and partly alphabetic. The script, very simple and purely geometric, consists of twelve symbols which are either vowels or basic consonants. The consonants are turned sideways, upwards, or downwards according to the accompanying vowel sounds. The first printings of this script were made in 1833.

AWFUL STACK OF WORDS ON ONE

Typewriter

One of the first authors to admire, possess, and complain about what he referred to as "this new fangled writing machine" was Mark Twain, whose real name was Samuel Clemens. On December 9, 1874, he used his Remington Model 1 typewriter to compose a letter to his brother, Orion Clemens. The entire letter is shown on the next page.

BJUYT KIOP M LKJHGFDSA]QWERTYUIOP:_-9876432GW RT
HA

HARTFORD, DEC. 9.

DEAR BROTHER:

I AM TRYING T TO GET THE HANG OF THIS NEW F
FANGLED WRITING MACHINE, BUT AM NOT MAKING
A SHINING SUCCESS OF IT. HOWEVER THIS IS THE
FIRST ATTEMPT I EVER HAVE MADE, & YET I PER-
CEIVETHAT I SHALL SOON & EASILY ACQUIRE A FINE
FACILITY IN ITS USE. I SAW THE THING IN BOS-
TON THE OTHER DAY & WAS GREATLY TAKEN WITH
IT. SUSIE HAS STRUCK THE KEYS ONCE OR TWICE,
& NO DOUBT HAS PRINTED SOME LETTERS WHICH DO
NOT BELONG WHERE SHE PUT THEM.
THE HAVING BEEN A COMPOSITOR IS LIKELY TO BE
A GREAT HELP TO ME, SINCE O NE CHIEFLY NEEDS
SWIFTNESS IN BANGING THE KEYS. THE MACHINE COSTS
125 DOLLARS. THE MACHINE HAS SEVERAL VIRTUES
I BELIEVE IT WILL PRINT FASTER THAN I CAN WRITE.
ONE MAY LEAN BACK IN HIS CHAIR & WORK IT. IT
PILES AN AWFUL STACK OF WORDS ON ONE PAGE.
IT DONT MUSS THINGS OR SCATTER INK BLOTS AROUND.
OF COURSE IT SAVES PAPER.

SUSIE IS GONE,
NOW, & I FANCY I SHALL MAKE BETTER PROGRESS.
WORKING THIS TYPE-WRITER REMINDS ME OF OLD
ROBERT BUCHANAN, WHO, YOU REMEMBER, USED TO
SET UP ARTICLES AT THE CASE WITHOUT PREVIOUS-
LY PUTTING THEM IN THE FORM OF MANUSCRIPT; I
WAS LOST IN ADMIRATION OF SUCH MARVELOUS
INTELLECTUAL CAPACITY.

LOVE TO MOLLIE.

YOUR BROTHER,

SAM.

Mark Twain's first letter to his brother, Orion, on the Remington typewriter, December 9, 1874. (See page 80 for text.)

The Remington typewriter, the "Sholes and Glidden Type Writer," as it was known, in 1874.

c'était issu stellaire le nombre évidence de la somme pour peu qu'une ILLUMINÂT-IL LE HASARD

Stéphane Mallarmé

Stéphane Mallarmé (1842-1898) designed his poem "Un coup de dés jamais n'abolira le hasard" to be set in varying fonts and sizes of type with the lines scattered calculatingly across the pages in a typographic free-fall suggesting the chance that rules a throw of dice. Mallarmé's poem, which translates from the French as "A throw of the dice will never abolish chance," was influential for poets and artists throughout the twentieth century, as the literary imagination was metaphorically thrown into a confrontation with typographic space. Though his work in some ways only recalls the experiments of so many others who came before him, Mallarmé had a solid enough literary reputation to legitimize the examination of the space between the letters, the words, and the pages.

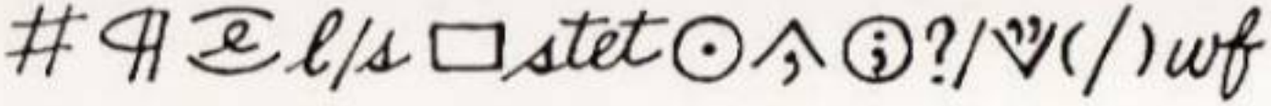
wersala" kaj la nuna Esperanto

Esperanto

Esperanto is a constructed or extracted language, as it consists of combined elements of the Aryan languages—Russian, French, Italian, German, Spanish and English. It was released to the public by Ludwig Lazar Zamenhof in 1887. Zamenhof (1859-1917) was born in Bialystok, Poland (which was then part of Russia) and grew up with a knowledge of Russian, Polish, Hebrew, and Yiddish. An international language, Esperanto gained some ground at the early part of the twentieth century, while print media were still dominant. But the influence of motion pictures, radio, and television raised the level of English to such an international stature that no other language, whether constructed or artificial, could take its place at the top.

Steps, fourth terrace, south side, Kiel Plaza, Lincoln

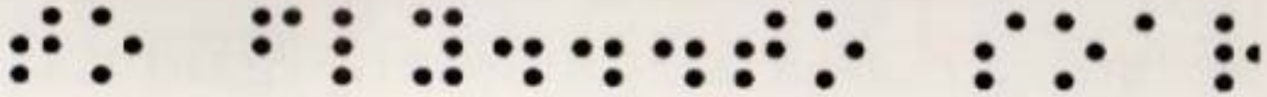
FUTU-RYZM POLSKI 1920
DE STIJL
FASCICULE SPÉCIAL DE
L'ARCHITECTURE VIVANTE
DÉDIÉ AUX ARCHITECTES



Proof Reading At each transition of technological change in the development of the printed word, there has been a corresponding change in the means of editing. If you make a mistake carving a petroglyph, the editing solution would most likely be to find another rock to scratch. Moveable type did not print better than engraved wood blocks, but mistakes in the arrangement of text could be corrected faster. Moveable type created the precondition for the next 500 years of publishing and established the editorial ground for dictionaries, copy editors, style books, proofreaders, and, as we see in this example, proof reading marks.

Signals Marshalling signals are an important communication device in mass transportation and comprise a limited but important modern pictographic language based on common understanding of gesture, direction, and procedure.

Morse code Samuel F. B. Morse (1791-1872) invented the system of communication—Morse code—in which letters of the alphabet and numbers are represented by short and long patterns, which may be conveyed as sounds, flashes of light, written dots and dashes (as in this example), or wigwags of a flag. The coded message here has been taken from a wall plaque in the North Stair Hall, opposite the two black marble sphinxes and the Statue of Civilization, in the Goodhue building. The plaque honors the Library's founding Board of Trustees, 1872-1878: "Being dead, they yet speak."

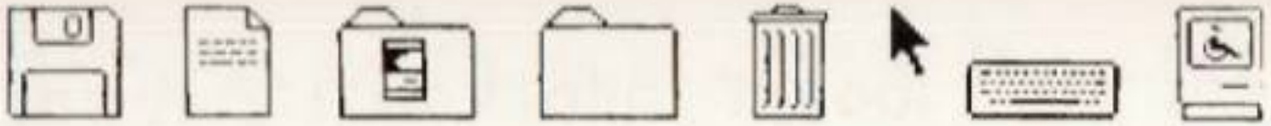


Braille

A system of writing and printing for the blind was invented by Louis Braille, a teacher in the Institut National des Jeunes Aveugles. In his system, varied arrangements of raised dots representing letters and numerals can be identified by touch. There are sixty-three possible combinations which provide for all the letters of the alphabet and also for punctuation, contractions, etc. The arrangement here quotes the Romanian-born French sculptor, Constantin Brancusi (1876-1957): "to fly...to soar."

Shorthand

The need to write with sufficient speed to record human speech created the form of writing commonly referred to as "shorthand." Until recently, shorthand was essential for reporting the proceedings of parliamentary and legislative bodies, the trials of cases in courts of law, and for dictation of business correspondence. Abbreviated writing is not an invention of modern times, as examples from Greek and Roman times attest. It was not until the eighteenth century, however, that the idea of shorthand based on sound instead of orthography began to gain favor. In 1837 Isaac Pitman published *Stenographic Sound Hand*, from which this example is taken. Pitman's system marked the start of the modern era of sound-based shorthand.



Computer icons

Apple Computer, Inc. introduced its Macintosh computer line in 1984 with a visual orientation of iconography for control, rather than a text or numerically derived system for managing and controlling information. Computer icons are images from beyond the desktop of the monitor or hard drive. Standard office terms (such as folders, files, documents, trash, etc.) and common print technology terms (e.g. font, type, print) were adopted to give the electronic environment of the computer a sense of familiarity and continuity with previous technologies.

Letter System Trash

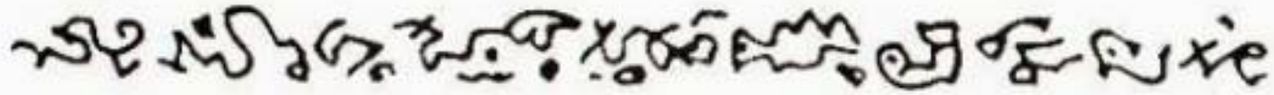
Computer words

Text composition in the computer world at first was broken up into annoyingly visible dots that were patched together to resemble a letter form. LaserWriters changed all that by taking away the nerdy look of computer type. These bitmapped letters are transitional characters, printed with the LaserWriter to give the nostalgic feel of the "old" computer printers. The computer-generated character is now demonstrating its poise and hegemony as it becomes, at the end of the twentieth century, the predominant social and cultural metaphor of information storage.

zel prrrr joo jüü joo korr rrg haaaa

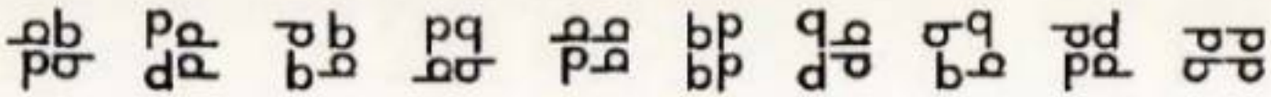
Kurt Schwitters

Kurt Schwitters (1887-1948) was a German artist who worked as a printer, helped establish the collage as a recognizable art form, and created art installations and performances. This specimen comes from one of his sound poems that was presented as both a visual poem and a dramatic, at times satirical, performance. A major step of bringing total irrationalism into literature came about through the introduction of phonetic poetry. Schwitters and the Dadaists used experiments of sound poetry, and the typographical visual representation of it, to direct their work at making sense perceptible in nonsense.

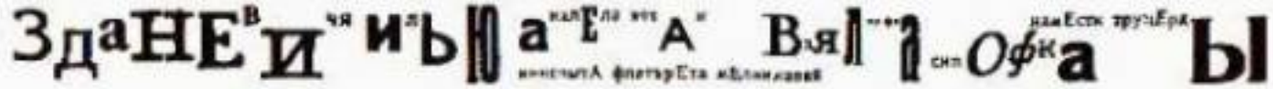


Max Ernst

German born American surrealist painter, Max Ernst (1891-1976), created many artworks by utilizing found or available materials. He used formal aspects of writing within the book structure—such as uniformity of characters, standard line lengths, regularity of weight and placement, etc.—while creating his own "nonsense" writing system for his book, *Maximilliana*. Ernst and many others have created their own autonomous writing systems which have satirical significance and at the same time create a kind of visual poetics.



Dieter Roth A contemporary Swiss artist, Dieter Roth (also known as Diter Rot or Diterrot or Karl-Dietrich Roth or D. R), has lived primarily in Stuttgart, Germany, and Reykjavik, Iceland. He has playfully manipulated traditional typography and graphic design (as shown in this example from 1957) in an assortment of influential books, posters, installations, and visual poetry.



Constructivists Ilya Zdanevich (1894-1975), also known as Iliazd, was a key figure in the flowering of typography for the Russian Avant-Garde poets, printers, and book artists (1900-1930). Iliazd moved to Paris in the early 1920s. His collaborations with various artists, and his experiments with the form of the *livre de peintre*, show a distinctive typographic flourish and continual innovation. This image comes from the 1923 publication, *IidantYU azabEEkan*.

вОйня наЯканая дЕтками Оли ляшкОвай

а кал Е ла вот А к Вз Я Л

мУмир ыЕ лидантЮ иканапИси sжыиИ hзапУлию

ниниспытА фпатърЕта мЕлникавай

гастИнцэ мзнАхарю Онай ни В Е С Т ы

З д а Н Е В И чя и л ь Ю

търИжды тАшънИла цАръстки мбОжым

а В ы ш а лъ В ир С А й о

вчЕтка тУжаца чЕтвкра загрОпсъюк мсуюгОк

кадА шЫлись усОпшай дис Н Ицы

срЕдъняй казАк ибалъшОй

търнабразавАния жЭнщчины видУ тк Н улю

нивзыскА тнинапИ С анай патърЕ I з а н

чі Р кзнатАриуса климансО

слУшайтжжы пахА ннкралОк

з а Д Утаму фк а нУна хфАру

алат О М умирА И Т и

начЯла

намЕсти трупЕрд

пърипупОфка Ы

ж а Р алЕк сип Офк а

FUTU-RYZM POLSKI 1920

Polish Futurists

The two most widely seen art products are architecture and typography. The manifestos of Futurism from Marinetti and his followers spread from Paris (around 1910) to all of Europe—and, as this example shows, as far as Poland—and were immediately noticeable in the typographic arrangements seen in popular magazines, posters, regional advertising, and public announcements. Fast mechanical reproduction not only spread information, but also easily transmitted the look of new typographical formats and presentations. The way it looked communicated as much as what it was announcing in words.

DE STIJL

FASCICULE SPÉCIAL DE
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CONSACRÉ AUX ARCHITECTES

De Stijl

Movements such as the De Stijl group in the Netherlands after World War I merged poetry and prose with visual art, experimental picture books, information graphics, and point-of-purchase advertising. "If, in the old poetry, the inner meaning of the word has perished through the tyranny of relative and subjective emotions, we want, with all the means at our disposal: syntax, prosody, typography, arithmetic, orthography to give a new meaning and a new power of expression to the word." (Source: "Manifesto II of De Stijl," Theo Van Doesburg, Piet Mondrian, Antony Kok, 1920.)

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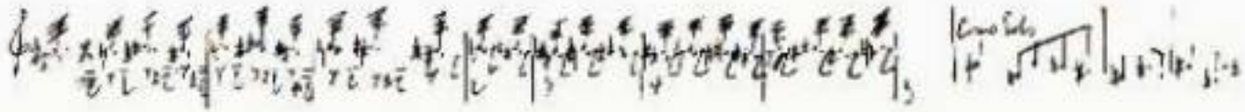
La Revue Internationale " POESIA ,, vient de fonder une nouvelle école littéraire sous le nom de " FUTURISME ,,

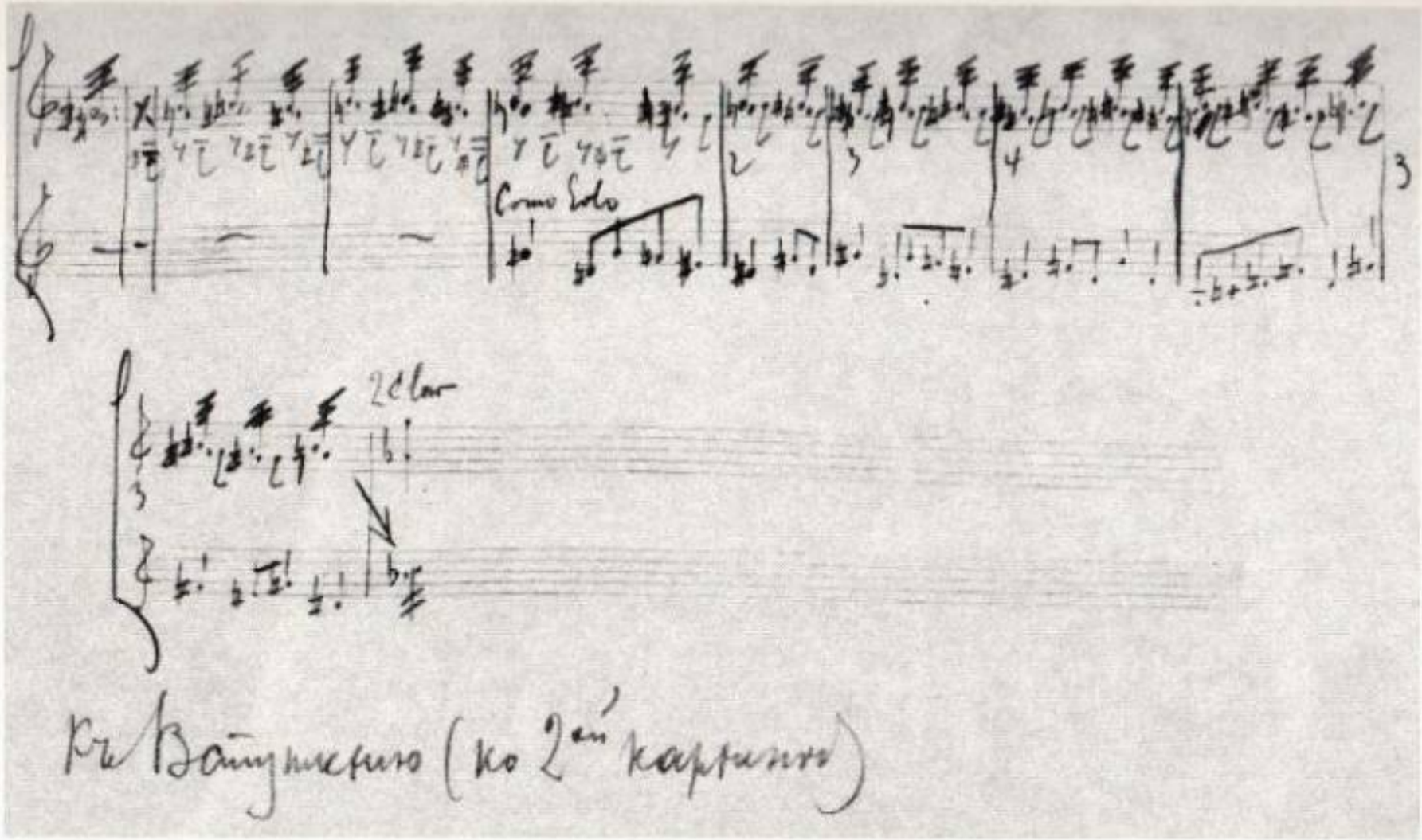
F. T. Marinetti

After an impressive ride in the recently invented flying machine, the bilingual poet, editor and artist Filippo Tomasso Marinetti (1885-1944) helped launch the movement known as Futurism, whose enthusiasts worshipped modern mediums of communication and transportation—from the airplane, train, and automobile to the telegraph, poster, leaflet, newspaper, postcard, and advertisement. Marinetti believed "free expressive orthography and typography also serve to express the facial mimicry and gesticulation of the narrator." The term Futurism caught the imagination of writers and artists throughout the world, as did Marinetti's insistence that the artist turn away from the past to welcome the vital, noisy life of the industrial city.



Igor Stravinsky

From Igor Fyodorovich Stravinsky (1882-1971) comes this hand-written sketchbook copy of the music for *Sacre du Printemps*, which first was performed in Paris in 1913. The heart of the modern taste for the archaic is precisely the opposite of the Romantic feeling for ruins. Picasso liked to say that modern art is what we have kept from the past. Stravinsky's music demonstrated to a reluctant Parisian audience that what was most modern about the early twentieth century frequently turned out to be the most archaic.


Como Solo
2 Clar
Pe Вагнисерго (ко 2ей кадензе)

$$\pi = 3.1415926535\ 8979323846\ 2643383279\ 502884197$$
$$6939937510\ 5820974944\ 5923078164\ 062862089+$$

Computer numbers

The excerpt on the steps shows the first 80 decimal places of the value of π, from a computer printout obtained by Daniel Shanks and J. W. Wrench, Jr., who programmed an IBM 704 computer to compute π to 100,265 decimal places in July 1961. By 1967, the value of π was known to 500,000 places—a calculation which required the computer's attention for about 28 hours. Aside from the notoriety which such number crunching invariably attracts, computations of long sequences of numbers can be verified to test the accuracy and reliability of new computers.

Miscellaneous symbols

Mathematics is known in the printing trade as *difficult* or *penalty copy* because it is slower, more difficult, and more expensive to set than any other kind of copy normally occurring in books or journals. Special characters have always been a problem for typographers, from the time of Gutenberg to the present, and one of the solutions has been to make contemporary alphabetical communication more archaically pictographic, as these "miscellaneous" samples attest.

$$\Delta E = KZ^2\left(\frac{1}{n'^2} + \frac{1}{n^2}\right) \qquad \frac{-\hbar^2}{8\pi^2 m}\nabla^2\psi + V\psi = E\psi$$

$$\Delta E\Big|_n^{n'} = E_{n'} - E_n = \frac{2\pi^2 m e^4}{h^2} Z^2\left(\frac{1}{n^2} - \frac{1}{n'^2}\right) \qquad \Delta E\,\Delta\tau \simeq \frac{h}{2\pi}, \qquad \Delta p\Delta q \simeq \frac{h}{2\pi}$$

20th century equations

Twentieth century equations by Neils Bohr (1913), Erwin Schrödinger (1926), and Werner Heisenberg (1927). (See "Entry," page 25, for a discussion of these equations.)

PI = 3.4

1415926535	8979323846	2643383279	5028841971	6939937510	5820974944	5923078164	0628620899	8628034825	3421170679
8214808651	3282306647	0938446095	5058223172	5359408128	4811174502	8410270193	8521105559	6446229489	5493038196
4428810975	6659334461	2847564823	3786783165	2712019091	4564856692	3460348610	4543266482	1339360726	0249141273
7245870066	0631558817	4881520920	9628292540	9171536436	7892590360	0113305305	4882046652	1384146951	9415116094
3305727036	5759591953	0921861173	8193261179	3105118548	0744623799	6274956735	1885752724	8912279381	8301194912
9833673362	4406566430	8602139494	6395224737	1907021798	6094370277	0539217176	2931767523	8467481846	7669405132
0005681271	4526356082	7785771342	7577896091	7363717872	1468440901	2249534301	4654958537	1050792279	6892589235
4201995611	2129021960	8640344181	5981362977	4771309960	5187072113	4999999837	2978049951	0597317328	1609631859
5024459455	3469083026	4252230825	3344685035	2619311881	7101000313	7838752886	5875332083	8142061717	7669147303
5982534904	2875546873	1159562863	8823537875	9375195778	1857780532	1712268066	1300192787	6611195909	2164201989
3809525720	1065485863	2788659361	5338182796	8230301952	0353018529	6899577362	2599413891	2497217752	8347913151
5574857242	4541506959	5082953311	6861727855	8890750983	8175463746	4939319255	0604009277	0167113900	9848824012
8583616035	6370766010	4710181942	9555961989	4676783744	9448255379	7747268471	0404753464	6208046684	2590694912
9331367702	8989152104	7521620569	6602405803	8150193511	2533824300	3558764024	7496473263	9141992726	0426992279
6782354781	6360093417	2164121992	4586315030	2861829745	5570674983	8505494588	5869269956	9092721079	7509302955
3211653449	8720275596	0236480665	4991198818	3479775356	6369807426	5425278625	5181841757	4672890977	7727938000
8164706001	6145249192	1732172147	7235014144	1973568548	1613611573	5255213347	5741849468	4385233239	0739414333
4547762416	8625189835	6948556209	9219222184	2725502542	5688767179	0494601653	4668049886	2723279178	6085784383
8279679766	8145410095	3883786360	9506800642	2512520511	7392984896	0841284886	2694560424	1965285022	2106611863
0674427862	2039194945	0471237137	8696095636	4371917287	4677646575	7396241389	0865832645	9958133904	7802759009
9465764078	9512694683	9835259570	9825822620	5224894077	2671947826	8482601476	9909026401	3639443745	5305068203
4962524517	4939965143	1429809190	6592509372	2169646151	5709858387	4105978859	5977297549	8930161753	9284681382
6868386894	2774155991	8559252459	5395943104	9972524680	8459872736	4469584865	3836736222	6260991246	0805124388
4390451244	1365497627	8079771569	1435997700	1296160894	4169486855	5848406353	4220722258	2848864815	8456028506
0168427394	5226746767	8895252138	5225499546	6672782398	6456596116	3548862305	7745649803	5593634568	1743241125
1507606947	9451096596	0940252288	7971089314	5669136867	2287489405	6010150330	8617928680	9208747609	1782493858
9009714909	6759852613	6554978189	3129784821	6829989487	2265880485	7564014270	4775551323	7964145152	3746234364
5428584447	9526586782	1051141354	7357395231	1342716610	2135969536	2314429524	8493718711	0145765403	5902799344
0374200731	0578539062	1983874478	0847848968	3321445713	8687519435	0643021845	3191048481	0053706146	8067491927
8191197939	9520614196	6342875444	0643745123	7181921799	9839101591	9561814675	1426912397	4894090718	6494231961
5679452080	9514655022	5231603881	9301420937	6213785595	6638937787	0830390697	9207734672	2182562599	6615014215
0306803844	7734549202	6054146659	2520149744	2850732518	6660021324	3408819071	0486331734	6496514539	0579626856
1005508106	6587969981	6357473638	4052571459	1028970641	4011097120	6280439039	7595156771	5770042033	7869936007
2305587631	7635942187	3125147120	5329281918	2618612586	7321579198	4148488291	6447060957	5270695722	0917567116
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7002378776	5913440171	2749470420	5622305389	9456131407	1127000407	8547332699	3908145466	4645880797	2708266830
6343285878	5698305235	8089330657	5740679545	7163775254	2021149557	6158140025	0126228594	1302164715	5097925923
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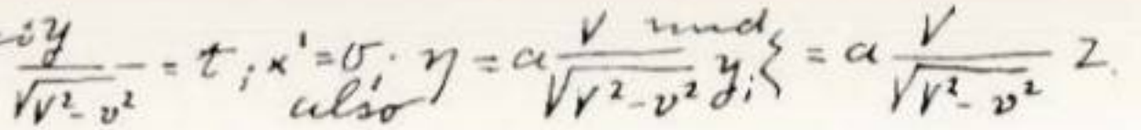
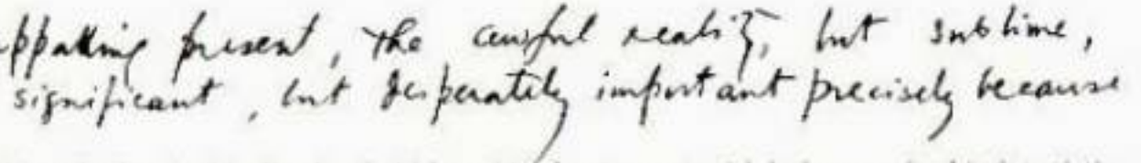
6222247715	8915049530	9844489333	0963408780	7693259939	7805419341	4473774418	4263129860	8099888687	4132604721

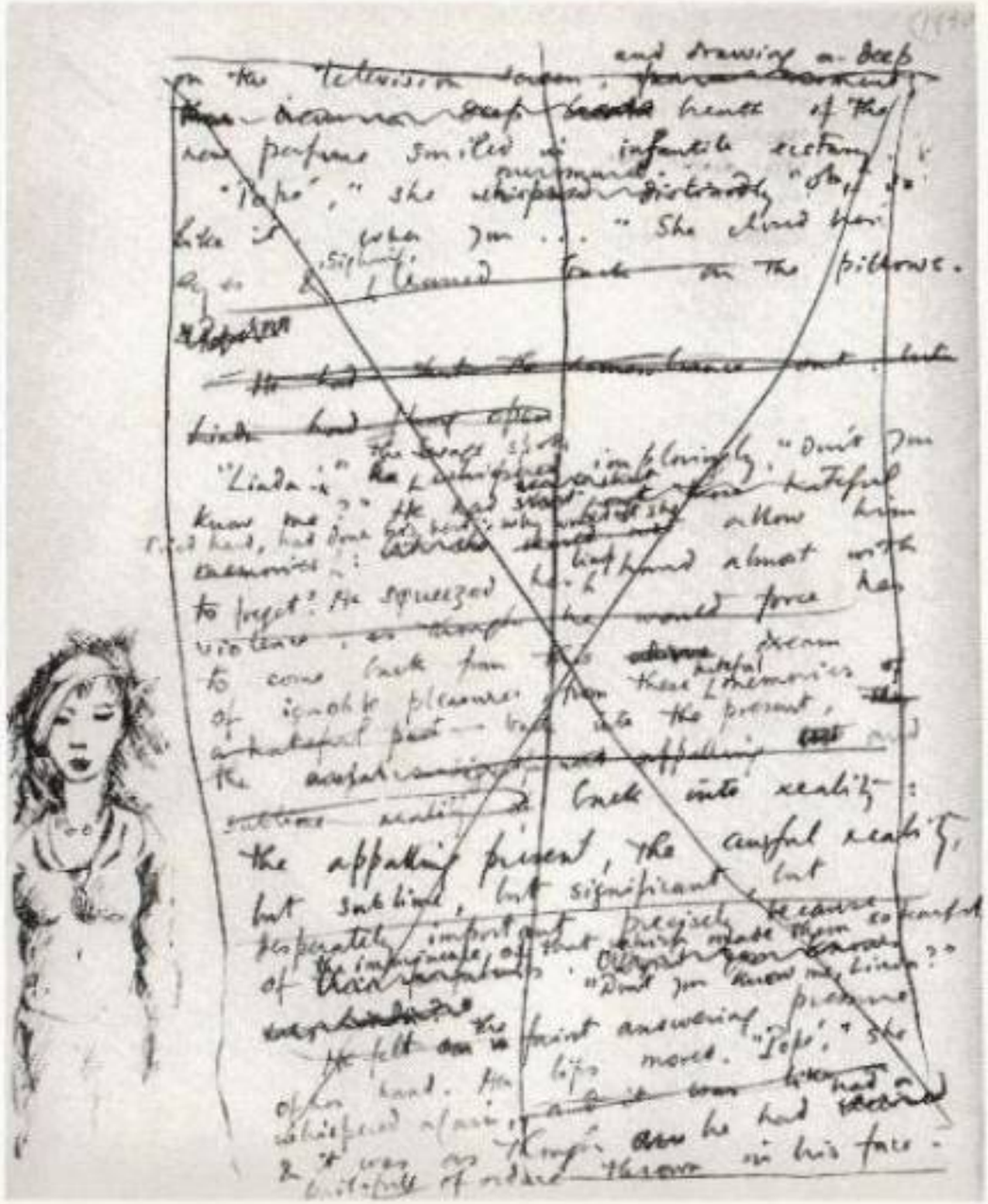
The result of the first usage of the steps on personal assistant by Sheila and Warren, who programmed on IBM 7094 to compute the 10,000 decimal [illegible] July, 1961



Albert Einstein This is the handwriting of theoretical physicist, Albert Einstein (1879-1955), whose research provided theoretical direction for the modern era. Born in Germany, Einstein left Germany and came to the United States to escape Nazi persecution. If music is one of the principal languages outside the word, mathematics is another. Einstein's accomplishments were inestimable in physics, but he also helped promote the idea that a scientist could have a conscience and a concern for humanity. More than ninety percent of all scientists known to human record are now living. Any discussion of future literacy will have to address itself, decisively, to the role of the mathematical sciences.



Aldous Huxley Born in 1894 and educated in England, Aldous Huxley is most widely known for his futuristic novel *Brave New World*, which was published in 1932. The excerpt here comes from the handwritten manuscript of that novel. Huxley died in 1963, having lived in Southern California during the later years of his life. Huxley believed, along with H. G. Wells, that human history is a race between education and disaster. He wrote continuously about the need for an understanding of the politics of information and communication media. Huxley's prediction for the age of advanced technology—a period no different from the present in many respects—describes a population that is habitually engaged in ambitious attempts to accommodate itself to technological distractions. In the end, what afflicted the characters in *Brave New World* was not that they were laughing instead of thinking, but that they did not know what they were laughing about or why they had stopped thinking.



and drawing a deep
on the television screen. ~~[illegible]~~
~~[illegible]~~ heart of the
rose perfume smiled in infantile ecstasy.
"Yes," she whispered distractedly. "Oh, I do
like it, John ..." She closed her
eyes, sighing. Leaned back on the pillows.

~~[illegible]~~

~~He had thought the remembrance would but~~
~~[illegible]~~

"Linda!" The [illegible] insistently. "Don't you
know me?" He had [illegible] hateful
memories? [illegible] allow him
to forget? He squeezed her hand almost with
violence, as though he would force her
to come back from the dream
of ignoble pleasures, from these memories of
unhappy past — back into the present,
the awful, [illegible] and appalling
~~[illegible]~~ reality. Back into reality:
the appalling present, the awful reality,
but sublime, but significant, but
desperately important, precisely because so awful
of their perfumes. "Don't you know me, Linda?"
~~[illegible]~~ pressure
He felt on the faint answering
other hand. The lips moved. "Yes," she
whispered at last. [illegible] had
& it was as though she had received
a blow of violent [illegible] in his face.

Aldous Huxley's *Brave New World*. The author's manuscript.

CHAPTER FOUR POOLS, WELLS, SPOUTS

LOS ANGELES
PUBLIC
LIBRARY

POOLS, WELLS, SPOUTS. The pools, variously titled "BRIGHT," "LUCID," and "CLEAR," act as chapters that describe the evolutionary process, from fish to amphibian to mammal (skipping reptile) to bird. The water reads as the continuous narrative flow. The pool titles are set in typefaces that allude to the periods of time which synchronize with the texts incised on the steps adjacent to each pool.

The first and largest pool is titled "BRIGHT." The typeface for the title is *Centaur* which was designed by an American, Bruce Rogers, after the Trajan column in Rome, an extract of which is on a step to the left. The water from the pool ends up in the "Well of the Scribes," which already has been described. The water spout is a circular artifact composed of the opened mouth and head of the Osteolepiform Rhipidistian "Eusthenopteron." The head, emerging through a forest of grasses and ferns, is crafted in glazed high-fire white stoneware. The water flows from the mouth. Rhipidistians were a fresh water predator fish from the late Paleozoic that gave rise to the amphibians.

In the pool itself, at a point one-third to the front, lies a large green rock on quartzite pavers. Adjacent to it, and subsurface to the water line, rests the skeleton of a type of Labyrinthodont. Originally constructed of individual bones in unglazed high-fired white stoneware, the bones were fastened together with stainless steel pins and epoxy on a stainless steel structure. The head and tail rest on red rocks (the larger red rock is actually the sliced bottom of the water source rock in Pool #3). The Labyrinthodont was the first "fish" to develop both feet and lungs, hence the first amphibian.

The second pool has the title, "LUCID." The typeface for this pool, *Cheltenham*, is significant. The typeface was designed by Bertram Grosvenor Goodhue, the architect of the original Central Library building. Like its predecessor, this pool has three parts. The well is built of ferrocement with a bronze powder-impregnated surface. The text images on the well are excerpts from the adjacent steps, featuring the Growth of Print. Then there is the Alphabet Spout: a spout of letter forms, built of bronze. It is a circular form that allows the water to emerge from the delta in the "alpha" letter, cascading down through a colander of intermeshed letter forms. Goodhue's Cheltenham type was used to create the spout's alphabetic weave, showing how language and artifact often are interconnected.

In the pool itself, at a point in the center, lies a large white rock on quartzite pavers. Adjacent to it, one-half submerged in water on a black granite rock, rests an enlarged replica of a California Newt, a contemporary amphibian, cast in red patinated bronze. The amphibian is the key evolutionary link leading to reptiles and eventually to birds and mammals. It is the smallest and most fragile of the main orders of animal life. Are the amphibians disappearing from the natural world? This Newt would seem to represent an aspect of the library, a place we take for granted: both are fragile, yet critically important.

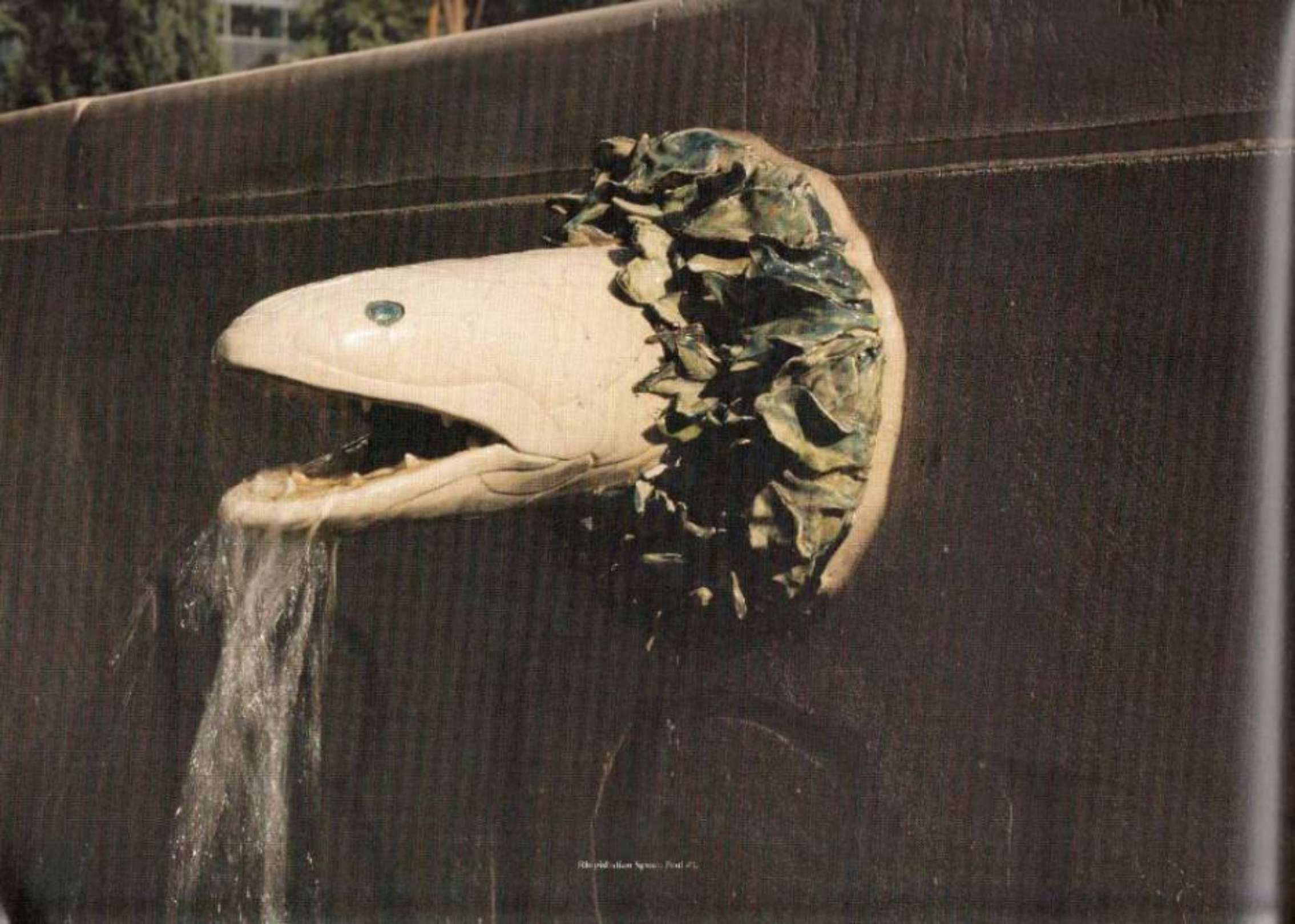
The third pool, titled "CLEAR" (typeface: *Optima*, a mid-twentieth century sans serif design by Hermann Zapf), also is composed of three parts. The spout, cast in polished stainless steel, is a full-scale generic female head, face up, the water bubbling up from her mouth and nose and flowing as a veil down and around her head. The well is built of white ferrocement with copper wool in the outer surface. The well features incised images in black, red, green, gold and silver that are drawn from the female head spout collar and the pictographs of the initial lowest steps.

Around the female's neck and fastened to the wall is a green bronze collar, incised with images that are repeated in the well. The images in the bronze collar come from multiple geographical locations: Africa, Europe, Egypt, Scandinavia, China, Sumeria, Japan, Central America, Near East, Northern Europe, and India. The bronze collar contains 13 signs: 4 of women, 4 of water, 4 of other (swim, dream, fertility, food), and the omphalos, or navel of the world—an image which has been used by many cultures since the earliest times to indicate that this place is the center of the world. For the well, these images have been augmented with four intrauterine device (IUD) images.

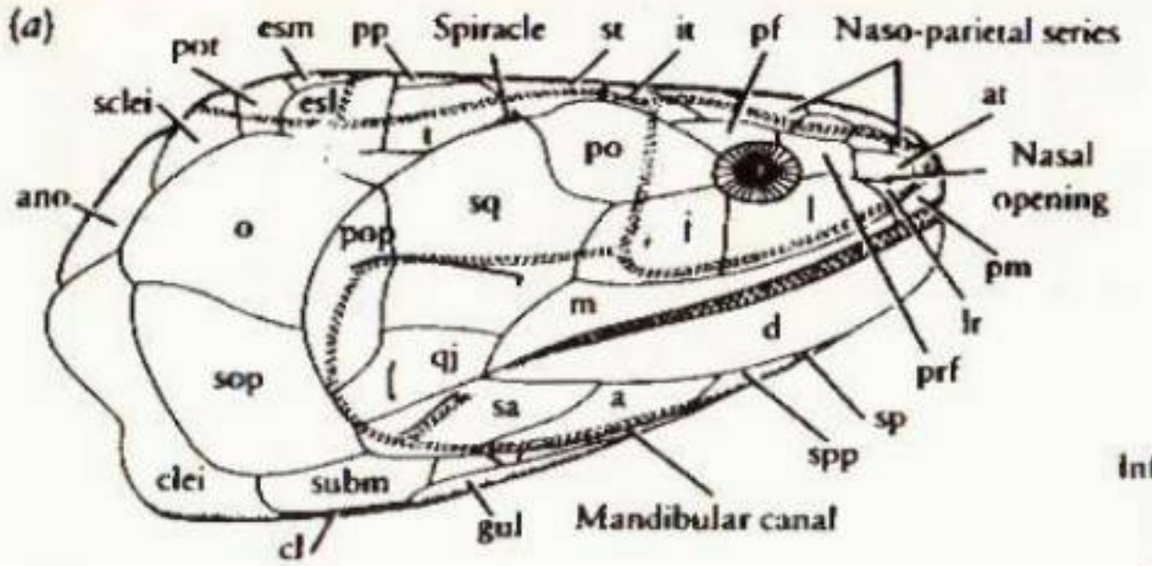
In the pool itself, set two-thirds back, is a large red rock on quartzite pavers. This rock has a central emergent hole from which water bubbles and cascades down the rock's surface. It appears to be the water source for all three pools. On the top forward edge of this rock is a patinated bronze replica of an anatomically correct (it's hoped) and to-scale female Peregrine falcon in the act of taking flight and heading toward Flower Street down the length of the pools. The Peregrine falcon, only recently close to extinction in California, has staged a comeback. It is the fastest bird, capable of flying 200 miles an hour in full dive, and it lives downtown, most notably on the top floors of the Union Bank skyscraper, a block west of the Central Library.

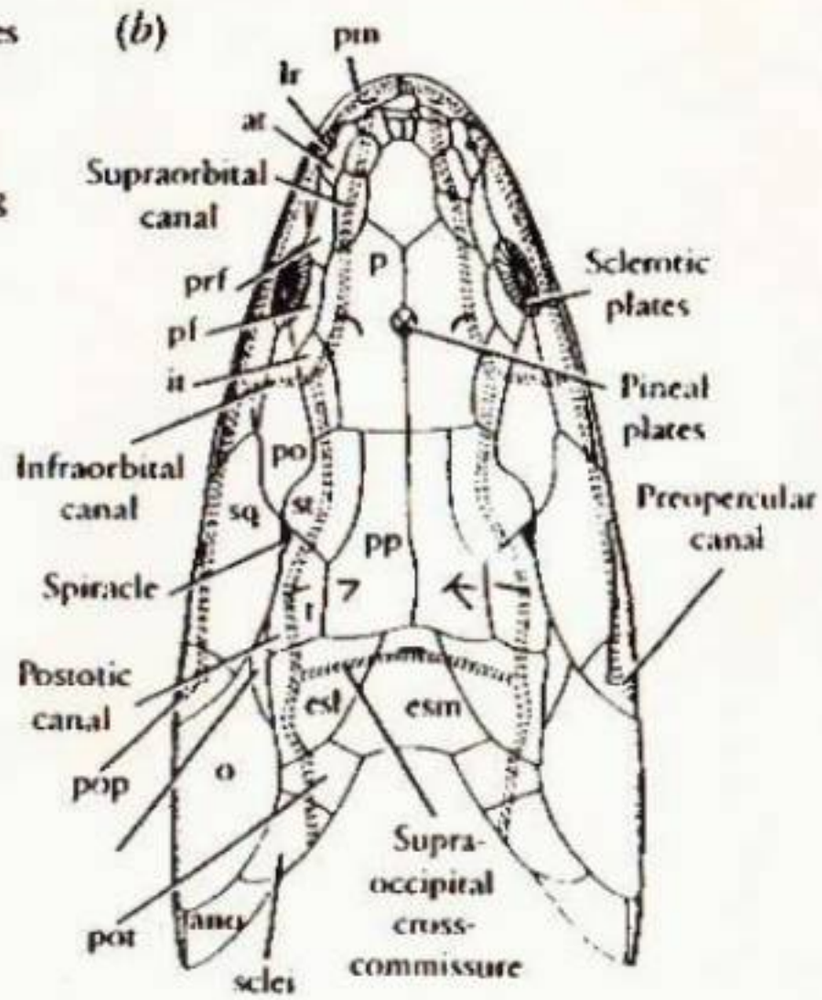
Overall, the pools and the steps represent different evolutionary time frames that are thematically grouped. The literate, alphabetic steps (or the emergence of writing) coincide with Pool #1, the emergence of the amphibian. The steps of the growth of print (that established the intellectual ground for the growth of libraries) coincide with Pool #2, the endangered, contemporary amphibian whose adaptability and endurance draw striking parallels to the knowledge contained in the library. The post-literate steps coincide with Pool #3, the Peregrine falcon taking flight: a combination of the virtues of great cunning and immense speed, tempered by an unseen environmental toxic threat, poised to fly, to soar.

RIGHT



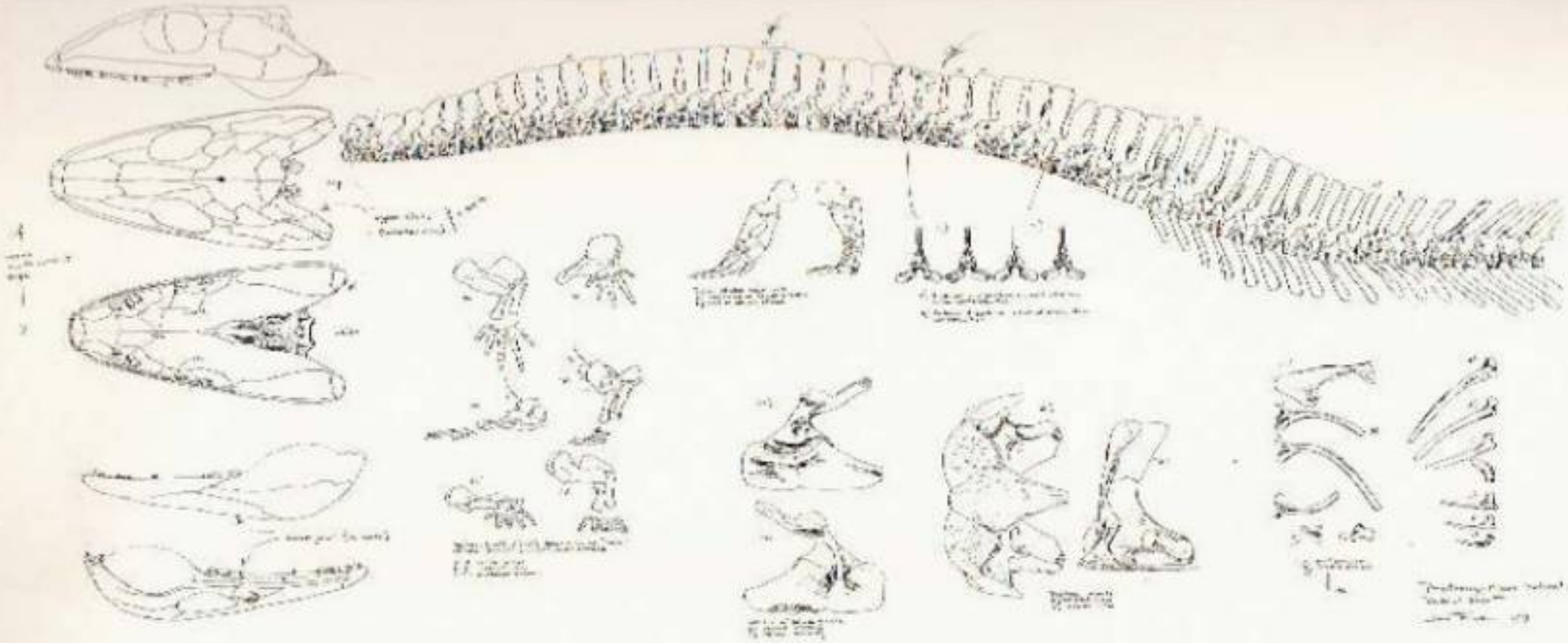
Rhetoric Spout, Pool #2





Osteolepiform Rhipidistian, [illegible] (1968 after Kiaer/Thomas and Miles, 1971, after Jarvik 1952).

RHIPIDISTIANS. The open-mouthed emergent fish head above the "Well of the Scribes" is that of an Osteolepiform Rhipidistian "Eusthenopteron." Rhipidistians were the dominant freshwater predators among the bony fish during the late Paleozoic. The most numerous and advanced group were the Osteolepiforms. These are typified by the Upper Devonian genus "Eusthenopteron," whose anatomy has served as the basis for description of most features common to rhipidistians as well as for comparison with amphibians. In the evolutionary chain, amphibians are the key link. They are the evolutionary factor between fish and eventually reptiles, birds, and mammals. Most paleontologists think that the ancestry of all tetrapods can be traced to the osteolepiform rhipidistians. Although there is not a continuous sequence of genera linking rhipidistians and amphibians, nearly all aspects of the skeleton of primitive amphibians can be traced directly to comparable features in well-known rhipidistians. Having adapted to a predatory way of life in shallow water, rhipidistians are clearly the ancestors of amphibians.



Scale for Labyrinthodont.

LABYRINTHODONTS. Amphibians are biological intermediaries between bony fish and reptiles. Paleozoic amphibians gave rise to both the living amphibians and, via reptiles, to all other groups of terrestrial vertebrates. The earliest amphibians, the Labyrinthodonts, were typically large animals, up to a meter in length, ponderous and clumsy-looking with large skulls, short trunks, and stocky limbs. Changes in the skeleton between rhipidistian fish and early amphibians are related to the requirements of support, feeding, and locomotion on land. The Labyrinthodonts range from the Upper Devonian to Lower Jurassic in age and were the dominant amphibians of the Paleozoic and early Mesozoic.

The Labyrinthodont re-created in bone structure here is a combination of the plan view of *Paracyclotosaurus davidi*, found in New South Wales, and side and detail views of *Proterogyrinus scheelei*, from Greer, West Virginia.

LUCID
POLIPHILO
le nombre
TENDRE
Verfuoni

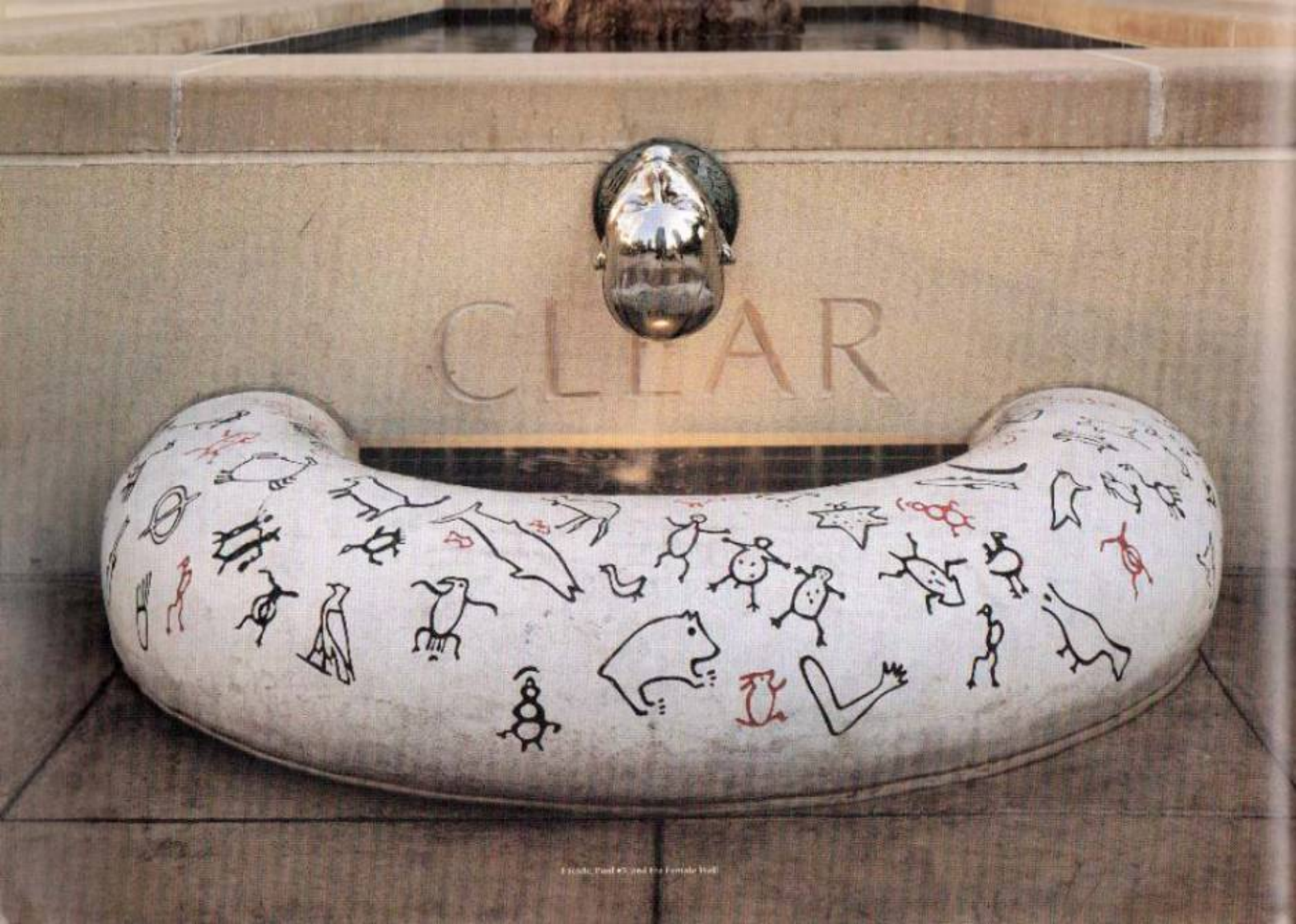
Alphabet Sphere, Part #2

California Newt: a, Red Orange; b, early stage.

NEWTS differ from all other California salamanders in having rough, dry skin when on land. With fall and winter rains, they emerge from underground retreats to forage. In winter and spring, they enter the water to breed. While females change little during this period, males develop a smooth, swollen skin, prominent tail fins, swollen vent region and rough dark-colored areas on the underside of their feet. The skin change is thought to prevent the male from becoming waterlogged during long periods spent in the water waiting for females.

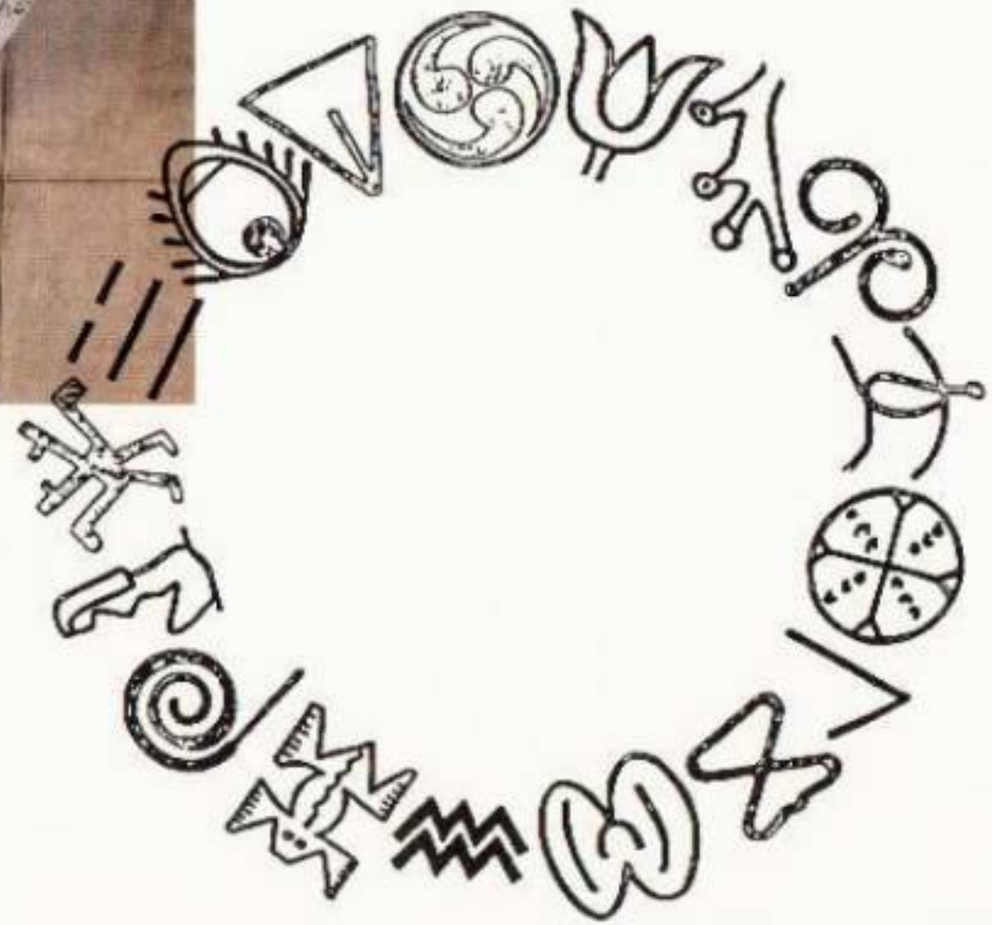
The California Newt (*Taricha torosa*) is about two and one-half to four inches in length. It can vary in color from tan to dark brown, orange to pale yellow. Its habitat is woodland, often interspersed with grassland, breeding in streams, ponds, lakes, and reservoirs. It ranges from the coastal mountains of north-central Mendocino County to southern California, where it frequents drainages on the south side of the San Gabriel and San Bernardino Mountains and the western slopes of the Peninsular Ranges.

Unlike other California salamanders, newts are active in daytime and can sometimes be seen in bright sun. A poisonous skin secretion protects them from most predators. A curled defensive posture assumed when the newt is threatened reveals bright orange or reddish ventral color. Since the California Newt symbolically and in fact is both fragile and beleaguered, the grossly enlarged Library Newt has been colored red.



Escale, Pool #5 and the Female Wall

Remote Well, Pool #1



Study for Serpent-head spout collar

African stone weight in the form of a frog, a widespread symbol of the amphibian principle.

Alchemical sign for water.

Intra-uterine device (IUD): spiral.

Egyptian hieroglyphic for woman.

Dream bird, "the bringer of sleep." Burned into bark, Scandinavia.

I Ching (China) symbol for water source.

IUD: shield.

Sumerian sign for woman (vulva).

The omphalos (divine navel, or Buddha's navel): center of life. Sign modeled in the frontal roof tiles of a Japanese monastery.

European: tulip, a sign of fertility.

Aztec pictogram for water, 1100 A. D.

IUD: double coil.

Archaic Chinese pictogram for woman.

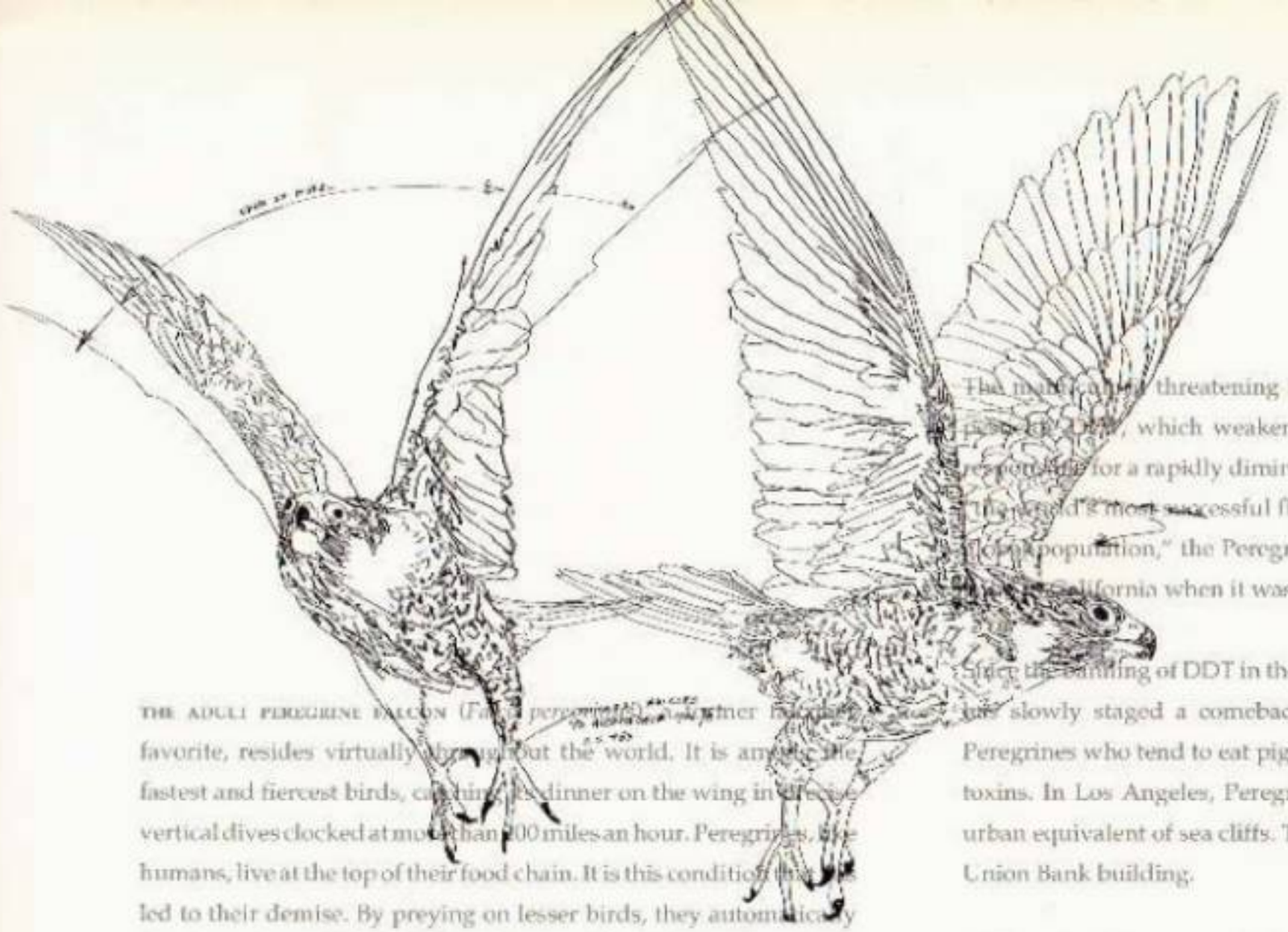
Ancient ornamental bakery mark from the Near East, pressed into dough before baking. Circa 1500 B. C.

Rune sign for water.

IUD: bow.

Vulva as a Tantric symbol. Indian drawing.

Peregrine Falcon



Study for Peregrine (Crow)

THE ADULT PEREGRINE FALCON (*Falco peregrinus*), another [illegible] favorite, resides virtually throughout the world. It is an [illegible] fastest and fiercest birds, catching its dinner on the wing in [illegible] vertical dives clocked at more than 200 miles an hour. Peregrines, like humans, live at the top of their food chain. It is this condition that led to their demise. By preying on lesser birds, they automatically ingest an accumulation of toxic pollutants. For this reason they have been labelled a "unique biological monitor of the quality of the world's environments." To quote further, they have been described as "a veritable mine canary that is telling us, by dying before our eyes, that the planet is being poisoned." (Galen Rowell, "Falcon Rescue," *National Geographic*, April 1991.)

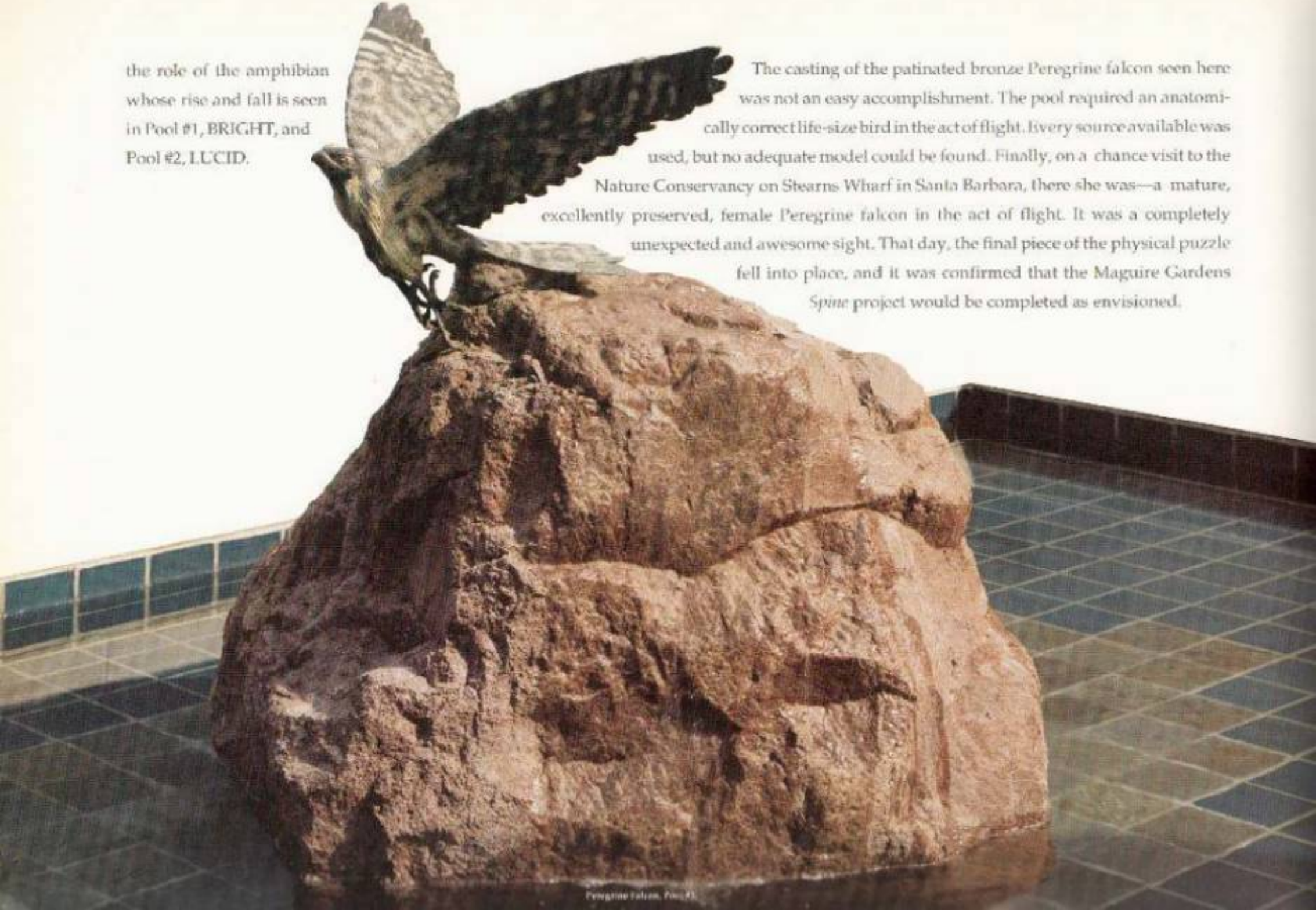
The most [illegible] threatening the Peregrine survival has been the [illegible] DDT, which weakens egg shell structure and has been responsible for a rapidly diminished reproductive rate. Once called "the world's most successful flying bird because of its stable, near-[illegible] population," the Peregrine was reduced to just two nesting [illegible] California when it was listed as endangered in 1970.

Since the banning of DDT in the United States in 1972, the Peregrine has slowly staged a comeback. This is especially true of urban Peregrines who tend to eat pigeons that contain little DDT or other toxins. In Los Angeles, Peregrines nest on skyscraper ledges, the urban equivalent of sea cliffs. There are nesting pairs on the nearby Union Bank building.

A Peregrine falcon seemed a logical choice for the final piece in the Maguire Gardens evolution puzzle. Taking off from the water source in the upper-most pool, she potentially (in that complete freedom associated with birds) wings down through and over all that has led up to her. She reflects the female nature of the final pool, CLEAR. At the same time, the Peregrine as an environmental barometer reprises

the role of the amphibian whose rise and fall is seen in Pool #1, BRIGHT, and Pool #2, LUCID.

The casting of the patinated bronze Peregrine falcon seen here was not an easy accomplishment. The pool required an anatomically correct life-size bird in the act of flight. Every source available was used, but no adequate model could be found. Finally, on a chance visit to the Nature Conservancy on Stearns Wharf in Santa Barbara, there she was—a mature, excellently preserved, female Peregrine falcon in the act of flight. It was a completely unexpected and awesome sight. That day, the final piece of the physical puzzle fell into place, and it was confirmed that the Maguire Gardens *Spine* project would be completed as envisioned.



Peregrine Falcon, Pool #1

CHAPTER FIVE GROTTO FOUNTAIN

POWER CONCEDES NOTHING WITHOUT A DEMAND • IT NEVER DID • IT NEVER WILL
PROCESS OF LAW • NOR DENY

THE GROTTO FOUNTAIN on the south side of the Maguire Gardens has a history separate from the rest of the art project. While the park's central, east-west axis, with three pools, steps, and the allée of Italian cypress trees, was a faithful reconstruction of the original Bertram Goodhue design, the areas to the north and south were re-designed by Lawrence Halprin, landscape architect. Halprin designed the Grotto Fountain, and he asked Jud Fine to activate the fountain with text to parallel the evolution system of the steps.

The original concept for the text of the central steps had excluded English because it was felt that any other language adjacent to an English citation would be erroneously perceived as a translation. In actuality, this proved not to be a problem, and there are several step panels in English. But given the original plan to exclude English on the steps, it was decided that the Grotto text should be in English.

In keeping with the ideal of a public library in a democratic society, a plan emerged for the Grotto Fountain text to provide a truncated history of the evolution of civil liberties. The initial concept was to begin with the Magna Carta, move to some passage on freedom or liberty from John Locke, then show Thomas Jefferson's Declaration of Independence, and, finally, conclude with the First Amendment of the Constitution of the United States.

In the first stage of research to determine both context and quotations, the concept collapsed. It quickly became apparent that showing the evolution of individual freedom (rights) by using the evolution of government was a contradiction. While it is true that rights do not exist without protection, in choosing the above progression—ending with the Constitution and its attendant Bill of Rights (1791)—the voices and efforts of the people were ignored. A flawed and transparent statement would be presented that any perceptive reader today, and particularly a library user, would see as false. Historical accuracy was not the issue; the plan needed to recognize a more complete sense of history, to incorporate current understanding of the evolution of our individual freedoms.

The Magna Carta (1215) was the first document granting certain rights that the king could not abridge. It had a nice blunt passage, essentially, "The king can't cut my wood without my permission." However, the Magna Carta was a document executed between nobles and king. The "wood" did not belong to the people on the land but to the feudal lord who ruled the land. Although it represents an initial breakdown of absolute autocracy, the Magna Carta is more about property rights than individual freedoms.

With John Locke there was a similar problem. While history books often cite Locke as the philosophical mentor of the Founding Fathers and the American system, Locke also wrote a constitution for the Carolinas which suggested a government of slaveowners run by forty wealthy land barons. Locke invested in the Royal African Co., a slave-trading monopoly. The "social contract" which gained Locke

recognition and acclaim was formed within, and designed to protect the interests of, a privileged elite.

Even quoting the Constitution itself proved problematic. As Charles Beard pointed out in 1935, all the Founding Fathers were well-off businessmen with a desire to produce a strong government that would protect their economic interests. George Washington was one of the richest men in America. Unquestionably brilliant, Thomas Jefferson nevertheless was a slaveholder all his life. The Declaration of Independence and the Constitution completely ignored and thereby disenfranchised a majority of the population—women, blacks, Indians, and all non-property owning males. For most residents of America, then, the successful conclusion of the American Revolution was simply the exchange of one oppression for another. Even worse, for native people it was a disaster, culminating in the worst excesses during Andrew Jackson's presidency. Jacksonian democracy was hardly that for the oppressed.

Therefore, in researching the art plan for the Grotto Fountain, it quickly became obvious that, as the culmination of a discourse on civil liberties, the U.S. Constitution was inadequate. What is redeeming about the Constitution, however, is that it can be, and indeed was, amended. The Amendments broaden and support individual legal rights. For example, the First Amendment guaranteed freedom of speech ("Congress shall make no law . . . abridging the freedom of speech, or of the press"). That made the First Amendment a logical choice for Grotto Fountain text. But, again, there was the overriding problem: whose rights were being guaranteed in 1791?

Today, the heart of the U. S. legal system, linking the Constitution to individual rights and equal protection, is the Fourteenth Amendment, ". . . nor shall any State deprive any person of life, liberty, or property, without due process of law," and the Amendment's subsequent interpretation by the Supreme Court. This Amendment altered the relationship between the States and the Federal Government, extending the rights of the Constitution to all citizens and prohibiting the States from abridging those rights. As Carl Sandburg said, "Before the Civil War and the Fourteenth Amendment, the United States were. After the Fourteenth Amendment, the United States is."

Before the Fourteenth Amendment, Dred Scott's humanity could be ignored by the courts because he was a piece of property and not a citizen. After the Fourteenth Amendment, in principle, that could not happen. The Fourteenth Amendment had to be included as a Grotto Fountain text. As the critical turning point in American social and political history, it clearly seemed to belong right in the center of the blank back wall of the niche in the Fountain.

With the addition of the Fourteenth Amendment, the problem inherent in Thomas Jefferson's Declaration of Independence became glaringly apparent. The Declaration's philosophical statement ("all men are created equal") is absolutely appropriate; but, the critical

flaws of its context and its writer cannot be ignored. Fortunately, a way was found to include Jefferson's Declaration, update it to the modern world by including the disenfranchised one-half of the population, and still maintain an historical context. A "Declaration of Principles" had been issued by the First Woman's Rights Convention (the first in history) held at Seneca Falls, New York, in 1849. This document slightly, but significantly, altered Jefferson: "We hold these truths to be self-evident that all men *and women* are created equal; that they are endowed . . . with . . . inalienable rights; that among these are life, liberty and the pursuit of happiness."

Four texts had now been chosen: Magna Carta, First Amendment, Fourteenth Amendment, and the Declaration from the First Woman's Rights Convention. They presented an ascendence of principles towards individual franchise—a succession of legal documents—that made conspicuous the missing, critical element . . . the voice of the people. The people were the foundation of thought that led to, that generated, the law. Another text was needed. John Locke and his Age of Enlightenment brethren were found wanting. Thomas Paine was considered. There was a great quote from *Common Sense* (1776): "We have it in our power to begin the world over again." But the problem was that of franchisement. Where was the voice of the ignored masses? What of all the *others*? Finally, the resolution was located in a stirring voice of the people: "Power concedes nothing without a demand. It never did and it never will." (Frederick Douglass, 1849.) [Note: Frederick Douglass was born a slave. Sent to Baltimore

Frederick Douglass

to work as a servant and as a laborer in the shipyard, he learned to read and write. In 1838, at the age of twenty-one, he escaped to the North, where he became the most famous black man of his time, as a writer, lecturer, and newspaper editor.]

With the addition of the Douglass quote, the plan for the Grotto Fountain contained five texts. The plan that was presented to the landscape architect was:

1st level: "Neither we nor our bailiffs will take another man's wood . . . without the owner's consent."

Magna Carta (1215)

2nd level: "Power concedes nothing without a demand. It never did and it never will."

Frederick Douglass (1849)

3rd level: "We hold these truths to be self-evident, that all men and women are created equal; that they are endowed . . . with . . . inalienable rights; that among these are life, liberty and the pursuit of happiness."

First Woman's Rights Convention (1849)

Arch/Fascia: "Congress shall make no law . . . abridging the freedom of speech, or of the press."

First Amendment (1789-1791)

Niche (Back Wall): ". . . nor shall any state deprive any person of life, liberty, or property, without due process of law. . ."

Fourteenth Amendment (1866-1868)

What followed this presentation was a friendly difference of opinion between the landscape architect and the artist. The content was a given and accepted. The difference centered around the aesthetic look of the fountain. The artist lost this argument and so was required to return to the drawing board to devise another solution. However, what had been learned could not be rejected. What evolved as the next solution was both a reduction and an expansion.

The first change was to reduce the progression toward civil liberties to the two most important statements. The Fourteenth Amendment is the embodiment of our society's equal rights and the key Amendment to the Constitution; the Frederick Douglass statement cites the human force, drive, and persistence that lead to equality.

The second change was an expansion upon what previously had been presented. A new, physical/visual addition was proposed to accompany the textual reduction. A circular emblem was designed as an inset in the blank back wall of the niche, above where the water makes its diagonal cascade down the fountain's sides. The emblem echoed an official city seal, and it was to have the possibility of becoming a seal for the Central Library. The emblem's image was a bas-relief of a female California Newt protecting her eggs, surrounded by a circle of signs from the Maya Ceramic Funerary Codex.

The Newt, an amphibian, emphasized the evolution of life—a progression seen in the three, central pools. In protecting her eggs, she was analogous to the library protecting information. The amphibian is both the most important and the weakest link in the evolutionary chain. Both amphibian and library are fragile in their respective environments, but they seem to prevail as metaphoric partners blessed with a native tenacity in the face of natural disaster and tyranny.

The Maya were the only fully literate native people in the Western Hemisphere. It is ironic that the proposed citation was from the Ceramic Funerary Codex, only recently seen as a "Book of the Dead," because Maya was a highly advanced "dead" sign system. (The language itself is not dead, however, and is spoken today.) The continuing history of Maya sign decipherment is a global cross-national effort, which is especially pertinent to the library as the storehouse for the future's tools.

The Maya/Newt emblem referenced the conceptual basis of much of *Spine*, specifically the central pools (life evolution with an emphasis on amphibian development), the steps (the evolution of print with an emphasis on diversity and on the expansion and consequent deconstruction of the sentence as the communicative unit), and water (the source and the continuum without which the progressive evolutionary life drive does not exist, symbolically and substantially embodying the absolute, continuous flow of time). The Maya/Newt image was conceived in the context of an emblem and, hence, in the context of coinage. Coins have always been used as propaganda and as symbolic image. Coins have been a reduction of the essence of

what is determined important by their makers. The coin here was seen as a stamp (a strike) of knowledge preserved and life replenished in an environment that logically evolved in water.

Unfortunately, the Maya/Newt emblem, presented as part of the second solution, did not survive into the final design. However, the two most crucial statements remained: the Fourteenth Amendment and the Frederick Douglass quote. The Grotto Fountain now reads:

Upper well:

• ALL • BORN OR NATURALIZED IN THE UNITED STATES • ARE CITIZENS •

Lower well:

• NO STATE • SHALL ABRIDGE THE PRIVILEGES OR IMMUNITIES OF CITIZENS • NOR SHALL ANY STATE DEPRIVE ANY PERSON OF LIFE, LIBERTY OR PROPERTY, WITHOUT DUE PROCESS OF LAW • NOR DENY • EQUAL PROTECTION •

Arch/Fascia:

• POWER CONCEDES NOTHING WITHOUT A DEMAND • IT NEVER DID • IT NEVER WILL •

How do the disenfranchised make a demand? They do it through education. The role of the free public library is basic to the breadth and diversity of American thought and, ultimately, action. Aside from the vote, it could be said that the public library, as a principle, is our nation's most important democratic institution . . . providing as it does an equal, accessible knowledge base for social and cultural understanding.

Study for Maya/Newt emblem

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NOTE: One of the lengthy citizen review meetings, held on May 7, 1991, was videotaped at the request of the West Lawn Coalition and the Central Business District Open Space Task Force. That tape and other videodocumentation of the *Spire* project have been donated to the Art and Recreation Department of Central Library.

Rosetta Stone

JUD FINE is an artist. A third generation Californian, he has lived and worked most of his career in Los Angeles. He has exhibited widely over the last twenty-five years, and his work is represented in numerous major public and private collections. While not a writer by profession, he has authored several obscure classics including: *OR: An Introduction*, 1974, *Discourse*, 1975, *Walk*, 1976, and *Red Green*, 1987. Fine received degrees from the University of California, Santa Barbara, and Cornell University. He currently is a Professor of Art at the University of Southern California. He has three children and is happily married for the last time. His earlier stints as pearl diver, postal worker, fire department weed-abater, plastic mold-injection operator, teamster truck driver, researcher, carpenter, and house painter give him a biography typical of most American authors; the comparison, however, ends there. His relationship, with collaborative undertones, with Harry Reese began in 1964.

Photo: Jud Fine

HARRY REESE was born in Fort Worth, Texas. He suspected he might have a life as an artist when he watched Jud Fine, starting with a strong will and a good reading list, teach himself to make art in the late 1960s. An autodidact himself, Reese nevertheless received degrees from the University of California, Santa Barbara, and later from Brown University, where in 1973 he determined that letterpress printing and bookmaking would bring art within his capabilities. His collaborations with his wife, Sandra Liddell Reese, at Turkey Press have continued since 1975, and the results are more than 50 hand-produced books of poetry and art in limited editions that are represented in many collections in the United States and Europe. Since 1978, he has taught book arts and printmaking at the University of California, Santa Barbara, in the College of Creative Studies and the Department of Art Studio. Currently, he paints, makes prints, creates books as portable sculpture, collaborates with artists and poets, and studies media ecology.

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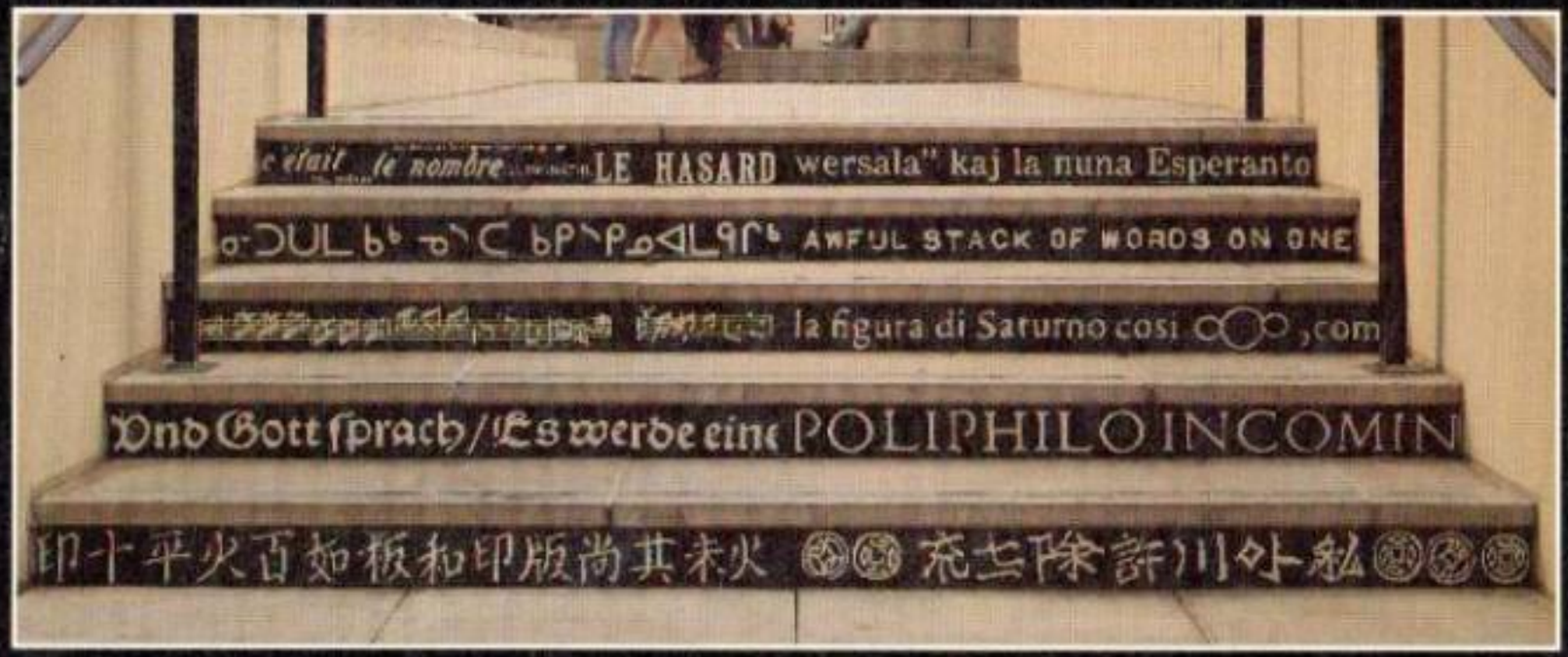
$$\Delta E \Delta \tau \cong \frac{h}{2\pi},$$

$$\Delta p \Delta d \cong \frac{h}{2\pi}$$

$$\frac{-h^2}{8\pi^2 m} \nabla^2(\psi) + V(\psi) = E(\psi)$$

$$\Delta E \Big|_{n}^{n'} = E_{n'} - E_n = \frac{2\pi^2 m e^4}{h^2} Z^2 \left(\frac{1}{n^2} - \frac{1}{n'^2} \right)$$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