ELLEN LUPTON

thinking with type

theory

practice

how

why

entertaining

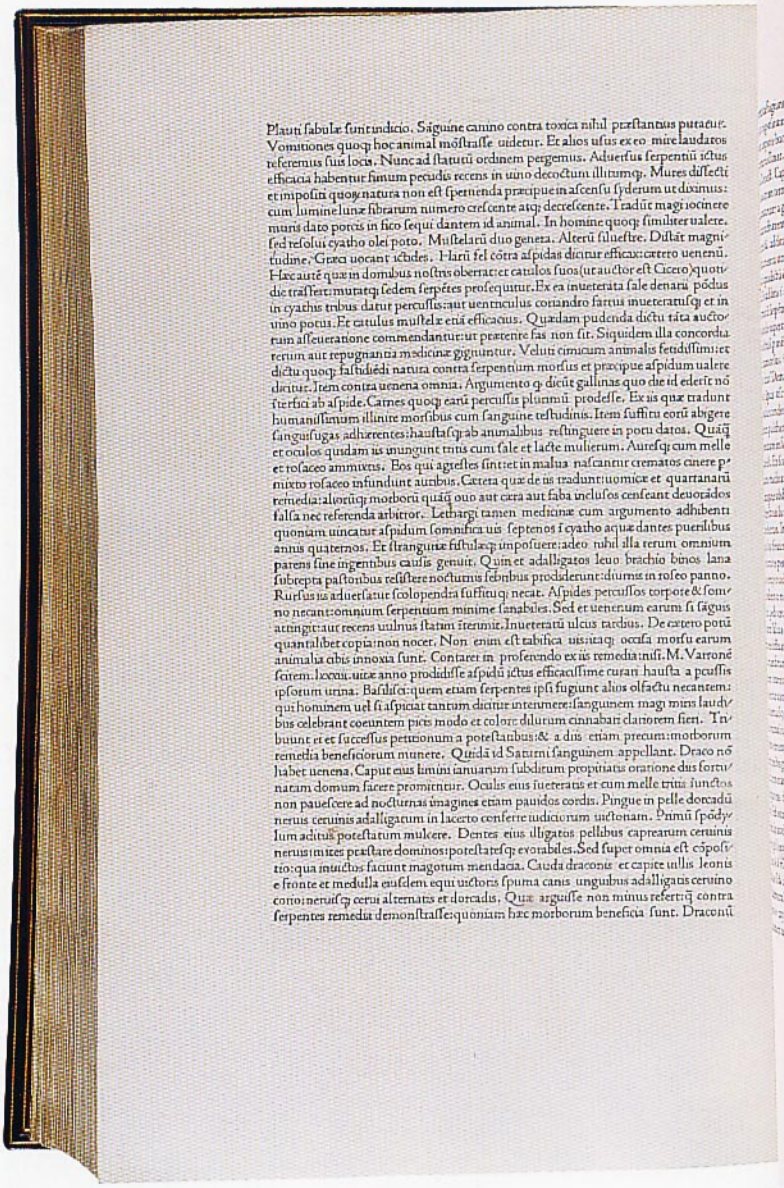
economical

essential

A CRITICAL GUIDE FOR DESIGNERS, WRITERS, EDITORS, & STUDENTS

A DESIGN HANDBOOK

GRID



HISTORIA NATURALIS
Book, 1472; printed by Nicolas Jenson, Venice
Collection of the Walters Art Museum, Baltimore
During the first century of printing, the French-born printer Nicolas Jenson established a printing business in Venice, a thriving commercial center. This book features an elegant, unbroken text block set in one of the first roman typefaces. The page has no line breaks or indents.

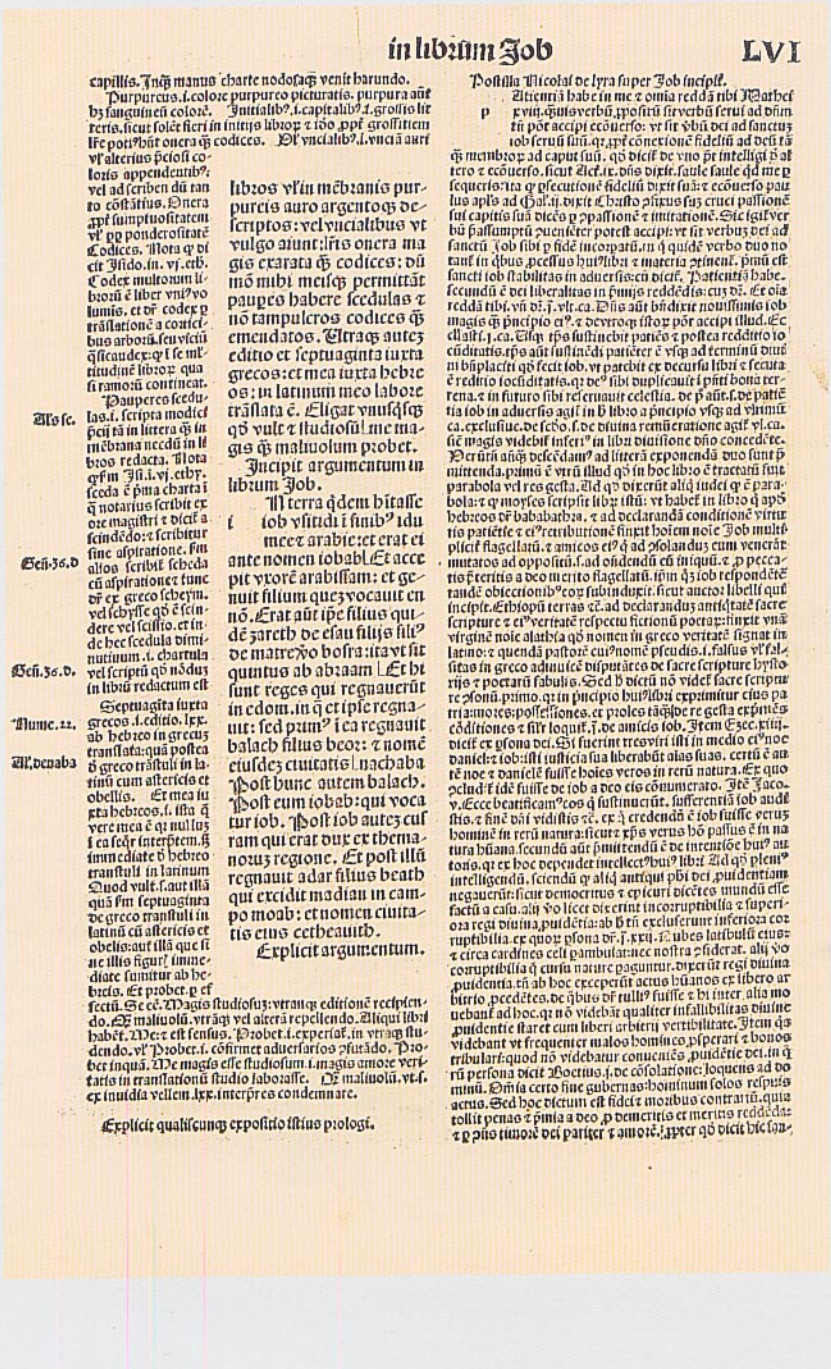
GRID

A GRID BREAKS SPACE OR TIME INTO REGULAR UNITS. A grid can be simple or complex, specific or generic, tightly defined or loosely interpreted. Typographic grids are all about control. They establish a system for arranging content within the space of page, screen, or built environment. Designed in response to the internal pressures of content (text, image, data) and the outer edge or frame (page, screen, window), an effective grid is not a rigid formula but a flexible and resilient structure, a skeleton that moves in concert with the muscular mass of information.

Grids belong to the technological framework of typography, from the concrete modularity of letterpress to the ubiquitous rulers, guides, and coordinate systems of graphics applications. Although software generates illusions of smooth curves and continuous tones, every digital image or mark is constructed—ultimately—from a grid of neatly bounded blocks. The ubiquitous language of the GUI (graphical user interface) creates a gridded space in which windows overlay windows in a haphazard way.

In addition to their place in the background of design production, grids have become explicit theoretical tools. Avant-garde designers in the 1910s and 1920s exposed the mechanical grid of letterpress, bringing it to the polemical surface of the page. In Switzerland after World War II, graphic designers built a total design methodology around the typographic grid, hoping to construct with it a new and rational social order.

The grid has evolved across centuries of typographic development. For graphic designers, grids are carefully honed intellectual devices, infused with ideology and ambition, and they are the inescapable mesh that filters, at some level of resolution, nearly every system of writing and reproduction.



in librum Job LVI

capillis. Inq̃ manus charte nodosq̃ venit harundo.

Purpureus.i.colore purpureo picturatis. purpura aũt bz sanguineũ colore. Intitulib⁹.i.capitalib⁹.i.grossis litteris. sicut solẽt fieri in initijs libro⁹ ꝛ ido ꝓpt grossitiem lke poti⁹ hũt onera q̃ codices. Vel vncialib⁹.i.vncia aurei vl alterius ꝓciosi colozis appendentib⁹: vel ad scriben dũ ranto cõstãtius. Onera ꝓpt sumptuositatem vl ꝓ ponderositate Codices. Nota q̃ dicit Isido.in. vj.etb. Codex multorum librozũ e liber vni⁹ volumis. et dr codex p trãslatione a corticibus arborũ.seu viciũ q̃ficaudex: q̃ I se multitudiné libro⁹ quasi ramozũ continet.

Pauperes scedulas.i. scripta modice pciẽtã in littera q̃ in mbrana necdũ in libros redacta. Nota q̃ fm Isi.i.vj.etby. sceda ẽ pma charta i q̃ notarius scribit ex ore magistri ꝛ dicit a scindẽdo: ꝛ scribitur sine aspiratione. Fm alios scribit scheda cũ aspiratione ꝛ tunc dr ex greco scheym. vel schysse q̃ ẽ scindere vel scissio. et in dee hec scedula diminutiuum.i. chartula vel scripũ q̃ nõdum in libũ redactum est

Septuagita iuxta grecos.i.editio. lxx. ab hebreo in grecu translata: quã postea ꝗ greco trãstuli in latinũ cum asterisci et obellis. Et mea iuxta hebreos.i. ista q̃ vere mea ẽ q̃ nullus I ea sedr interpetem.q̃ immediate ꝗ hebreo transtuli in latinum Quod vult.l.aut illã quã fm septuagintra de greco transtuli in latinũ cũ asterisci et obelis: aut illã que sine illis figur⁹ immediate sumitur ab hebreis. Et probet.p effectũ. Se cẽ. Magis studiosus: vtranq̃ editione recipiendo. Ꝑ maliuolũ. vtrãq̃ vel alterã repellendo. Aliqui libri habẽt. Me: ꝛ est sensus. Probet.i.experiat.in vtraq̃ studendo. vl Probet.i. cõfirmet aduersarios ꝓfutãdo. Probet inquã. Me magis esse studiosum.i.magis amore veritatis in translationũ studio laborasse. Ꝑ maliuolũ. vl.s. ex inuidia vellem.lxx.interpres condemnare.

Als sc.

Gen.36.d

Gen.36.d.

Nume.22.

Vl.denaba

libros vl in mẽbranis purpureis auro argentoq̃ descriptos: vel vncialibus vt vulgo aiunt: lris onera magis exarata q̃ codices: dũmõ mihi meisq̃ permittãt pauperes habere scedulas ꝛ nõ tampulcros codices q̃ emendatos. Vtraq̃ autez editio et septuaginta iuxta grecos: et mea iuxta hebreos: in latinum meo labore trãslata ẽ. Eligat vnusq̃q̃ qd vult ꝛ studiosũ me magis q̃ maliuolum probet.

Incipit argumentum in librum Job.

In terra q̃dem bitasse iob vsitidi i finib⁹ idumee ꝛ arabie: et erat ei ante nomen iobab. Et accepit vxorẽ arabissam: et genuit filium quez vocauit enõ. Erat aũt ipe filius quidẽ zareth de esau filijs silt⁹ de matre ẽo bosra: ita vt sit quintus ab abraam. Et hi sunt reges qui regnauerũt in edom. in q̃ et ipse regnauit: sed pum⁹ i ea regnauit balach filius beor: ꝛ nomẽ eiusdez ciuitatis nachaba Post hunc autem balach. Post eum iobab: qui vocatur iob. Post iob autez curam qui erat dux ex themanozu regione. Et post illã regnauit adar filius beath qui excidit madian in campo moab: et nomen ciuitatis eius cetheauith.

Explicit argumentum.

Explicit qualiscunq̃ expositio istius prologi.

Postilla Nicolai de lyra super Job incipit.

Attentiã habẽtes in me ꝛ omia reddã tibi Mathei xviij. Huius verbũ ꝓpositũ fit verbũ seruũ ad dñm tũ põt accipi ecõuerso: vt sit vbũ dei ad sanctũ iob seruũ suũ. qz ꝓpt cõnexionẽ fidelitũ ad deũ tã q̃ membzo⁹ ad caput suũ. qõ dicit de vno pt intelligi ꝗ altero ecõuerso. sicut Eccl.xl. dñs dixit. saule saule qd me p sequeris: ita q̃ pseculione fidelitũ dixit sua: ꝛ ecõuerso paulus apl⁹s ad Gal.vj. dixit Christo pfixus suz cruci passionẽ sui capitis sua dicẽs ꝓ ꝓpassione ꝛ imitatione. Sic igit vbũ bũ passumptũ ꝗuenẽter potest accipi: vt sit verbuz dei ad sanctũ Job sibi p fidẽ incorpatũ. in q̃ quidẽ verbo duo notant in q̃bus ꝓcessus hui⁹ libri ꝛ materia ꝓtinent. primũ est sancti iob stabilitas in aduersis: cũ dicit. Patientiã habe. secundũ ẽ dei liberalitas in fmjs reddẽdis: cuz dr. Et oia reddã tibi. vũ dr. j. vlt. ca. Dñs aũt bñdixit nouissimis iob magis q̃ pncipio ei⁹. ꝛ deuteroq̃ istoz põt accipi illud. Ecclastic. j. ca. Ilq̃ ipse sustinebit pariẽs ꝛ postea reddẽtur io cũditatis. ipse aũt sustinẽdi patiẽtes ẽ vsq̃ ad terminũ diuini bũplacẽti qõ fecit iob. vt patebit ex decursu libri ꝛ secuta ẽ reditio iocũditatis. q̃ de⁹ sibi duplicauit i pñti bona terrena. ꝛ in futuro sibi reseruauit celestia. de p aũt. s. de patientia iob in aduersis agit in b libro a pncipio vsq̃ ad vltimũ ca. exclusiue. de scõ. s. de diuina remũeratione agit vl. cũ. magis videbit inferi⁹ in libri diuisione dño concedente. Ꝑ cũrũ aũ q̃ deẽdam⁹ ad litterã exponendã duo sunt p mittenda. primũ ẽ virũ illud qõ in hoc libro ẽ tractatũ fuit parabola vel res gesta. Ad q̃ dicerũt aliq̃ iudei q̃ ẽ parabola: ꝛ q̃ moyses scripsit libr̃ istũ: vt habẽt in libro q̃ apõ hebreos dr bababarbra. ꝛ ad declarandã conditionẽ virtutis patiẽtie ꝛ ei⁹ retributionẽ finxit hoiem noie Job multiplicit flagellatũ. ꝛ amicos ei⁹ q̃ ad ꝓlandu⁹ cum venerãt mutatos ad oppositũ. s. ad offendũ cũ intiquũ. ꝛ ꝓ peccatis fr̃eritis a deo merito flagellatũ. ipsm q̃z iob respondẽte tandẽ obiectionib⁹ eoz subinduxit. sicut auctor libelli qui incipit. Ethiopũ terras cẽ. ad declarandu⁹ antiq̃tatẽ sacre scripture ꝛ ei⁹ veritatẽ respectu fictionũ poetarũ: finxit vnã virginẽ noie alathia qõ nomen in greco veritatẽ signat in latino: ꝛ quendã pastorẽ cui⁹ nomẽ pseudis. i. falsus vl falsitas in greco adhuc cẽ dispuratẽs de sacre scripture hystoriis ꝛ poetarũ fabulis. Sed h̃ dictũ nõ videt sacre scripture ꝛ ꝓfonũ. primo. qz in pncipio hui⁹ libri expimitur eius patriamores: possessiones. et proles tãq̃ de re gesta expimẽs cõditiones ꝛ sit loquit. s. de amicis iob. Item Ezec. xiiij. dicit ex ꝓfona dei. Si fuerint tres viri isti in medio ei⁹ noe daniel ꝛ iob: isti iustitia sua liberabũt alas suas. certũ ẽ autẽ noe ꝛ daniel fuisse homines veros in rerũ natura. Ex quo ꝓclud⁹ idẽ fuisse de iob a deo eis cõnumerato. Itẽ Iacob. v. Ecce beatificam⁹ eos q̃ sustinuerũt. sufferentiã iob audẽstis. ꝛ finẽ dñi vidistis rẽ. ex q̃ credendũ ẽ iob fuisse verus hominẽ in rerũ natura: sicut ꝛ ipse verus hõ passus ẽ in natura hũana. secundũ aũt ꝓmittendũ ẽ de intentione hui⁹ autoris. qz ex hoc dependet intellect⁹ hui⁹ libri. Ad q̃ plenior intelligendũ. sciendũ q̃ aliq̃ antiqui pbi dei ꝓuidentiam negauerũt: sicut democritus ꝛ epicuri dicẽtes mundũ esse factũ a casu. aliq̃ vo licet dicerint incorruptibilia ꝛ superiora regi diuina ꝓuidẽtia: ab h̃ tũ excluserunt inferiora corruptibilia. ex quo ꝓfona dr. j. xxj. Nubes latibulũ eius: ꝛ circa cardines celi ambulat: nec nostra ꝓsiderat. aliq̃ vo corruptibilia q̃ cursu nature paguntur. dixerũt regi diuina ꝓuidentia. tũ ab hoc exceperũt actus hũanos ex libero arbitrio. peccẽtes. de q̃bus dr nullũ fuisse ex hi inter alia mouebant ad hoc. qz nõ videbãt qualiter infallibilitas diuine ꝓuidentie stare cum liberi arbitrij vertibilitate. Item q̃s videbant vt frequenter malos hominẽs ꝓsperari ꝛ bonos tribulari: quod nõ videbatur conuenire ꝓuidẽtie dei. in q̃ rũ persona dicit Boetius. s. de cõsolatione: Iocunes ad domũ. Omnia certo fine gubernas: hominum solos respuis actus. Sed hoc dictum est fidei ꝛ moribus contrariũ. quia tollit penas ꝛ ꝓmia a deo. ꝓ demeritis et meritis reddẽdis ꝛ ꝓ pio timore dei pariter ꝛ amore. ꝛ ꝓpter qõ dicit dic Iob.

LATIN BIBLE (LEFT)
Book page, 1497
Printed by
Anton Koberger
A two-column grid engulfs a second set of columns. Each page is a dense mass incised with narrow gutters and open spaces and illuminated capitals would have been added by hand. The layout changes from page to page.

GRID AS FRAME

Alphabetic writing, like most writing systems, is organized into columns and rows of characters. Whereas handwriting flows into connected lines, the mechanics of metal type impose a stricter order. Each letter occupies its own block, and the letters congregate in orderly rectangles. Stored in gridded cases, the characters become an archive of elements, a matrix of existing forms from which each page is composed.

Until the twentieth century, grids served as frames for fields of text. The margins of a classical book page create a pristine barrier around a flush, solid block of text. A page dominated by a solitary field of type remains today's most common book format, although that perfect rectangle is now broken with indents and line breaks, and the margins are peppered with page numbers and running heads (text indicating the book or chapter title).

In addition to the classical norm of the single-column page, various alternative layouts existed during the first centuries of printing, from the two-column grid of Gutenberg's Bible to more elaborate layouts derived from the medieval scribal tradition, where passages of scripture are surrounded by scholarly commentary. Polyglot (multilingual) books display a text in several languages simultaneously, demanding complex divisions of the surface.

Such formats permit multiple streams of text to coexist while defending the sovereignty of the page-as-frame. The philosopher Jacques Derrida has described the frame in Western art as a form that seems to be separate from the work yet is necessary for marking its difference from everyday life. A frame or pedestal elevates the work, removing it from the realm of the ordinary. The work thus depends on the frame for its status and visibility.

Typography is, by and large, an art of framing, a form designed to melt away as it yields itself to content. Designers focus much of their energy on margins, edges, and empty spaces, elements that oscillate between present and absent, visible and invisible. With print's ascent, margins became the user interface of the book, providing space for page numbers, running heads, commentary, notes, and ornaments.

The frame…disappears, buries itself, effaces itself, melts away at the moment it deploys its greatest energy. The frame is in no way a background…but neither is its thickness as margin a figure. Or at least it is a figure that comes away of its own accord. Jacques Derrida, 1987

CAPVT PRIMVM.

1 IN principio creauit Deus cœlum & terrã. 2 Terra autem
A erat inanis & vacua: & tenebræ erant super facié abyssi:
& spiritus Dei ferebatur su-
3 per aquas. Dixitq; Deus, Fiat lux. Et facta est
4 lux. 5 Et vidit Deus lucem quòd esset bona: &
5 diuisit lucem à tenebris. 6 Appellauitq; lucem
diem; & tenebras noctẽ. Factumq; est vespere
6 & mane dies vnus. 7 Dixit quoque Deus, Fiat
firmamentũ in medio aquarum; & diuidat a-
7 quas ab aquis. 8 Et fecit Deus firmamentum,
diuisitq; aquas quæ erant sub firmamento, ab
his quæ erant super firmamentũ. Et factum est
8 ita. 9 Vocauitq; Deus firmamentũ, cælum: &
factum est vespere, & mane dies secundus.
9 10 Dixit verò Deus, Congregentur aquæ quæ
sub cælo sunt, in locum vnum: & appareat ari-
10 da. Et factum est ita. 11 Et vocauit Deus aridã,
terram: congregationesq; aquarum appellauit
11 maria. Et vidit Deus quòd esset bonum. 12 Et
B ait, Germinet terra herbã virentem & facien-
tem semen; & lignum pomiferũ faciens fructũ
iuxta genus suum, cuius semen in semetipso sit
12 super terram. Et factũ est ita. 13 Et protulit terra
herbam virentẽ, & facientẽ semen iuxta genus
suũ; lignumq; faciens fructũ; & habens vnum-
quodq; sementem secundũ speciem suam. Et
13 vidit Deus quòd esset bonum. 14 Et factum est
14 vespere & mane dies tertius. 15 Dixit autẽ Deus,
Fiant luminaria in firmamento cæli; & diui-
dant diem ac noctẽ; & sint in signa & tẽpora
15 & dies & annos: 16 Vt luceãt in firmamẽto cæli,
16 & illuminent terrã. Et factum est ita. 17 Fecitq;
Deus duo luminaria magna: luminare maius,
vt præesset diei: & luminare minus, vt præesset
17 nocti: & stellas. 18 Et posuit eas Deus in firma-
18 mẽto cæli, vt lucerẽt super terrã: 19 Et præessent
diei ac nocti; & diuiderent lucem ac tenebras.
19 Et vidit Deus quòd esset bonũ. 20 Et factum est
20 vespere, & mane dies quartus. 21 Dixit etiam
Deus, Producant aquæ reptile animæ viuentis,
& volatile super terram sub firmamento cæli.

1 בְּרֵאשִׁית בָּרָא אֱלֹהִים אֵת הַשָּׁמַיִם וְאֵת
2 הָאָרֶץ׃ וְהָאָרֶץ הָיְתָה תֹהוּ וָבֹהוּ וְחֹשֶׁךְ
3 עַל־פְּנֵי תְהוֹם וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל־
4 פְּנֵי הַמָּיִם׃ וַיֹּאמֶר אֱלֹהִים יְהִי־אוֹר
5 וַיְהִי־אוֹר׃ וַיַּרְא אֱלֹהִים אֶת־הָאוֹר כִּי־טוֹב וַיַּבְדֵּל
6 אֱלֹהִים בֵּין הָאוֹר וּבֵין הַחֹשֶׁךְ׃ וַיִּקְרָא אֱלֹהִים לָאוֹר
7 יוֹם וְלַחֹשֶׁךְ קָרָא לָיְלָה וַיְהִי־עֶרֶב וַיְהִי־בֹקֶר יוֹם אֶחָד׃
8 וַיֹּאמֶר אֱלֹהִים יְהִי רָקִיעַ בְּתוֹךְ הַמָּיִם וִיהִי מַבְדִּיל
9 בֵּין מַיִם לָמָיִם׃ וַיַּעַשׂ אֱלֹהִים אֶת־הָרָקִיעַ וַיַּבְדֵּל בֵּין
10 הַמַּיִם אֲשֶׁר מִתַּחַת לָרָקִיעַ וּבֵין הַמַּיִם אֲשֶׁר מֵעַל לָרָקִיעַ
11 וַיְהִי־כֵן׃ וַיִּקְרָא אֱלֹהִים לָרָקִיעַ שָׁמָיִם וַיְהִי־עֶרֶב
12 וַיְהִי־בֹקֶר יוֹם שֵׁנִי׃ וַיֹּאמֶר אֱלֹהִים יִקָּווּ הַמַּיִם
13 מִתַּחַת הַשָּׁמַיִם אֶל־מָקוֹם אֶחָד וְתֵרָאֶה הַיַּבָּשָׁה וַיְהִי־
14 כֵן׃ וַיִּקְרָא אֱלֹהִים לַיַّבָּשָׁה אֶרֶץ וּלְמִקְוֵה הַמַּיִם קָרָא
15 יַמִּים וַיַּרְא אֱלֹהִים כִּי־טוֹב׃ וַיֹּאמֶר אֱלֹהִים תַּדְשֵׁא
16 הָאָרֶץ דֶּשֶׁא עֵשֶׂב מַזְרִיעַ זֶרַע עֵץ פְּרִי עֹשֶׂה פְּרִי לְמִינוֹ
17 אֲשֶׁר זַרְעוֹ בוֹ עַל־הָאָרֶץ וַיְהִי־כֵן׃ וַתּוֹצֵא הָאָרֶץ דֶּשֶׁא
18 עֵשֶׂב מַזְרִיעַ זֶרַע לְמִינֵהוּ וְעֵץ עֹשֶׂה־פְרִי אֲשֶׁר זַרְעוֹ־בוֹ
19 לְמִינֵהוּ וַיַּרְא אֱלֹהִים כִּי־טוֹב׃ וַיְהִי־עֶרֶב וַיְהִי־בֹקֶר
20 יוֹם שְׁלִישִׁי׃ וַיֹּאמֶר אֱלֹהִים יְהִי מְאֹרֹת בִּרְקִיעַ
21 הַשָּׁמַיִם לְהַבְדִּיל בֵּין הַיּוֹם וּבֵין הַלָּיְלָה וְהָיוּ לְאֹתֹת
22 וּלְמוֹעֲדִים וּלְיָמִים וְשָׁנִים׃ וְהָיוּ לִמְאוֹרֹת בִּרְקִיעַ
23 הַשָּׁמַיִם לְהָאִיר עַל־הָאָרֶץ וַיְהִי־כֵן׃ וַיַּעַשׂ אֱלֹהִים
24 אֶת־שְׁנֵי הַמְּאֹרֹת הַגְּדֹלִים אֶת־הַמָּאוֹר הַגָּדֹל לְמֶמְשֶׁלֶת
25 הַיּוֹם וְאֶת־הַמָּאוֹר הַקָّטֹן לְמֶמְשֶׁלֶת הַלַּיְלָה וְאֵת
26 הַכּוֹכָבִים׃ וַיִּתֵּן אֹתָם אֱלֹהִים בִּרְקִיעַ הַשָּׁמַיִם לְהָאִיר
27 עַל־הָאָרֶץ׃ וּלְמִשְׁל בַּיּוֹם וּבַלַּיְלָה וּלְהַבְדִּיל בֵּין הָאוֹר
28 וּבֵין הַחֹשֶׁךְ וַיַּרְא אֱלֹהִים כִּי־טוֹב׃ וַיְהִי־עֶרֶב וַיְהִי־
29 בֹקֶר יוֹם רְבִיעִי׃ וַיֹּאמֶר אֱלֹהִים יִשְׁרְצוּ הַמַּיִם שֶׁרֶץ
30 נֶפֶשׁ חַיָּה וְעוֹף יְעוֹפֵף עַל־הָאָרֶץ עַל־פְּנֵי רְקִיעַ הַשָּׁמָיִם׃

תרגום אונקלוס

בְּקַדְמִין בְּרָא יְיָ יָת שְׁמַיָּא וְיָת אַרְעָא׃ 2 וְאַרְעָא הֲוַת צְרִיָא וְרִקְנָא וַחֲשׁוֹכָא עַל־אַפֵּי תְהוֹמָא וְרוּחָא דְיְיָ מְרַחֶפָא עַל
אַפֵּי מַיָּא׃ 3 וַאֲמַר יְיָ יְהֵי נְהוֹרָא וַהֲוָה נְהוֹרָא׃ 4 וַחֲזָא יְיָ יָת נְהוֹרָא אֲרֵי טָב וְאַפְרֵשׁ יְיָ בֵּין נְהוֹרָא וּבֵין
חֲשׁוֹכָא׃ 5 וּקְרָא יְיָ לְנְהוֹרָא יוֹמָא וְלַחֲשׁוֹכָא קְרָא לֵילְיָא וַהֲוָה רַמְשָׁא וַהֲוָה צַפְרָא יוֹם חַד׃ 6 וַאֲמַר יְיָ יְהֵא רְקִיעָא בְּמֵצִיעוּת מַיָּא
וִיהֵא מְפַרֵּשׁ בֵּין מַיָּא לְמַיָּא׃ 7 וַעֲבַד יְיָ יָת רְקִיעָא וְאַפְרֵשׁ בֵּין מַיָּא דְּמִלְּרַע לְרְקִיעָא וּבֵין מַיָּא דְּמִלְּעֵל לְרְקִיעָא וַהֲוָה כֵן׃ 8 וּקְרָא יְיָ
לְרְקִיעָא שְׁמָיָא וַהֲוָה רַמְשָׁא וַהֲוָה צַפְרָא יוֹם תְּנִין׃ 9 וַאֲמַר יְיָ יִתְכַּנְּשׁוּן מַיָּא מִתְּחוֹת שְׁמַיָּא לְאַתַר חַד וְתִתְחֲזֵי יַבֵּשְׁתָּא וַהֲוָה כֵן׃ 10 וּקְרָא
יְיָ לְיַבֵּשְׁתָּא אַרְעָא וּלְכִנְשׁוּת מַיָּא כְּנִישָׁתָא קְרָא יַמִּין וַחֲזָא יְיָ אֲרֵי טָב׃ 11 וַאֲמַר יְיָ תַּדְשֵׁי אַרְעָא עֲשָׂבָא דְּרַע זַרְעָה אִילָנִין עֲבַד פֵּרִין דְּרַע זַרְעֵה
פֵּרִין לְזִנְהוֹן דְּבַר זַרְעֵה בַּהּ עַל אַרְעָא וַהֲוָה כֵן׃ 12 וְאַפִּקַת אַרְעָא דְּתַדְשֵׁי עֲשָׂבָא דְּרַע זַרְעָה לְזִנְהוֹן וְאִילָנִין עֲבַד פֵּרִין דְּרַע זַרְעֵה
בַּהּלְזִנְהוֹן וַחֲזָא יְיָ אֲרֵי טָב׃ 13 וַהֲוָה רַמְשָׁא וַהֲוָה צַפְרָא יוֹם תְּלִיתָאי׃ 14 וַאֲמַר יְיָ יְהוֹן נְהִירִין בִּרְקִיעָא דִשְׁמַיָּא לְאַפְרָשָׁא בֵּין יוֹמָא
וּבֵין לֵילְיָא וִיהוֹן לְאָתִין וּלְזִמְנִין וּלְסִגֵי בְּהוֹן יוֹסִין וּשְׁנִין׃ 15 וְעִבְדוּ יְיָ
יְהוֹן לִנְהוֹרִין בִּרְקִיעָא דִשְׁמַיָּא לְאַנְהָרָא עַל אַרְעָא וַהֲוָה כֵן׃ 16 וְעַבַד יְיָ
יָת תְּרֵין נְהוֹרִין רַבְּרְבִין יָת נְהוֹרָא רַבָּא לְמִשְׁלַט בְּיוֹמָא וְיָת נְהוֹרָא זְעֵירָא לְמִשְׁלַט בְּלֵילְיָא וְיָת כּוֹכְבַיָּא׃ 17 וְיַהַב יְהוֹן יְיָ בִּרְקִיעָא
דִשְׁמַיָּא לְאַנְהָרָא עַל אַרְעָא׃ 18 וּלְמִשְׁלַט בְּיוֹמָא וּבְלֵילְיָא וּלְאַפְרָשָׁא בֵּין נְהוֹרָא וּבֵין חֲשׁוֹכָא וַחֲזָא יְיָ אֲרֵי טָב׃ 19 וַהֲוָה רַמְשָׁא וַהֲוָה
צַפְרָא יוֹם רְבִיעָאי׃ 20 וַאֲמַר יְיָ יִרְחַשׁוּן מַיָּא רַחְשָׁא נַפְשָׁא חַיְתָא וּעוֹפָא דְּפָרַח עַל אַרְעָא עַל אַפֵּי אִיזֵר רָקִיעָא שְׁמָיָא׃

CAPVT PRIMVM.

IN principio fecit Deus cælum & terrã. [2] At terra erat inuisibilis et incõposita, et tenebræ super abyssum: & spiritus Dei ferebatur super aquam. [3] Et dixit Deus, Fiat lux, & facta est lux. [4] Et vidit Deus lucẽ, quòd bona: & diuisit Deus inter lucem, & inter tenebras. [5] Et vocauit Deus lucẽ diẽ: & tenebras vocauit noctẽ: & factũ est vespere, & factũ est mane, dies vnus. [6] Dixit Deus, Fiat firmamentũ in medio aquæ: & sit diuidẽs inter aquã, & aquã. [7] Et fecit Deus firmamentũ, & diuisit Deus inter aquã, quæ erat sub firmamento: & inter aquã, quæ super firmamentũ. [8] Et vocauit Deus firmamentũ cælũ: & vidit Deus, quòd bonũ. Et factũ est vespere, & factũ est mane, dies secũdus. [9] Et dixit Deus, Cõgregetur aqua quæ sub cælo, in cõgregatione vnã, & appareat arida. Et factũ est ita: et cõgregata est aqua quæ sub cælo, in cõgregationẽ suã: & apparuit arida. [10] Et vocauit Deus aridã, terram: et cõgregationes aquarũ, vocauit maria. Et vidit Deus quòd bonũ. [11] Et dixit Deus, Germinet terra herbã fœnũ seminantẽ semẽ secũdũ genus et secũdũ similitudinẽ: & ligni pomiferũ faciens fructũ, cuius semẽ ipsius in ipso secũdũ genus super terrã. Et factum est ita. [12] Et protulit terra herbã fœni seminantẽ semẽ secũdũ genus & secũdũ similitudinẽ: & ligni pomiferũ faciens fructũ, cuius semẽ eius in ipso, secũdũ genus super terrã. Et vidit Deus quòd bonũ. [13] Et factũ est vespere, & factũ est mane, dies tertius. [14] Et dixit Deus: Fiant luminaria in firmamento cæli, vt luceant super terrã, ad diuidendum inter diẽ, & inter noctẽ: & sint in signa, & in tẽpora, & in dies, & in annos. [15] Et sint in illuminationẽ in firmamento cæli, vt luceant super terram. Et factũ est ita. [16] Et fecit Deus duo luminaria magna: luminare magnum in principatũ diei: & luminarẽ minus in principatũ noctis: et stellas. [17] Et posuit eas Deus in firmamẽto cæli: vt lucerẽt super terrã, [18] Et præessent diei, & nocti, & diuiderẽt inter lucẽ et inter tenebras: et vidit Deus quòd bonũ. [19] Et factũ est vespere, & factũ est mane, dies quartus. [20] Et dixit Deus, Producant aquæ reptilia animarũ viuentũ, & volatilia volãtia super terrã, secũdũ firmamentũ cæli: & factũ est ita.

[1] ΚΑΙ Ν ἀρχῇ ἐποίησεν ὁ θεὸς τὸν οὐρανὸν καὶ τὴν γῆν. [2] ἡ δὲ γῆ ἦν ἀόρατος καὶ ἀκατασκεύαστος· καὶ σκότος ἐπάνω τῆς ἀβύσσου. καὶ πνεῦμα θεοῦ ἐπεφέρετο ἐπάνω τοῦ ὕδατος. [3] καὶ εἶπεν ὁ θεός, γενηθήτω φῶς· καὶ ἐγένετο φῶς. [4] καὶ εἶδεν ὁ θεὸς τὸ φῶς, ὅτι καλόν· καὶ διεχώρισεν ὁ θεὸς ἀνὰ μέσον τοῦ φωτὸς, καὶ ἀνὰ μέσον τοῦ σκότους. [5] καὶ ἐκάλεσεν ὁ θεὸς τὸ φῶς ἡμέραν, καὶ τὸ σκότος ἐκάλεσε νύκτα. καὶ ἐγένετο ἑσπέρα, καὶ ἐγένετο πρωὶ, ἡμέρα μία. [6] καὶ εἶπεν ὁ θεὸς, γενηθήτω στερέωμα ἐν μέσῳ τοῦ ὕδατος· καὶ ἔστω διαχωρίζον ἀνὰ μέσον ὕδατος καὶ ὕδατος. [7] καὶ ἐποίησεν ὁ θεὸς τὸ στερέωμα. καὶ διεχώρισεν ὁ θεὸς ἀνὰ μέσον τοῦ ὕδατος ὃ ἦν ὑποκάτω τοῦ στερεώματος, καὶ ἀνὰ μέσον τοῦ ὕδατος τοῦ ἐπάνω τοῦ στερεώματος. [8] καὶ ἐκάλεσεν ὁ θεὸς τὸ στερέωμα οὐρανόν. καὶ εἶδεν ὁ θεὸς, ὅτι καλόν. καὶ ἐγένετο ἑσπέρα, καὶ ἐγένετο πρωὶ, ἡμέρα δευτέρα. [9] καὶ εἶπεν ὁ θεὸς, συναχθήτω τὸ ὕδωρ τὸ ὑποκάτω τοῦ οὐρανοῦ εἰς συναγωγὴν μίαν, καὶ ὀφθήτω ἡ ξηρά· καὶ ἐγένετο οὕτως· καὶ συνήχθη τὸ ὕδωρ τὸ ὑποκάτω τοῦ οὐρανοῦ εἰς τὰς συναγωγὰς αὐτῶν, καὶ ὤφθη ἡ ξηρά. [10] καὶ ἐκάλεσεν ὁ θεὸς τὴν ξηρὰν, γῆν· καὶ τὰ συστήματα τῶν ὑδάτων ἐκάλεσε θαλάσσας. καὶ εἶδεν ὁ θεὸς, ὅτι καλόν. [11] καὶ εἶπεν ὁ θεὸς, βλαστησάτω ἡ γῆ βοτάνην χόρτου σπείρον σπέρμα κατὰ γένος καὶ καθ' ὁμοιότητα, καὶ ξύλον καρπιμον ποιοῦν καρπὸν οὗ τὸ σπέρμα αὐτοῦ ἐν αὐτῷ κατὰ γένος ἐπὶ τῆς γῆς. καὶ ἐγένετο οὕτως. [12] καὶ ἐξήνεγκεν ἡ γῆ βοτάνην χόρτου σπείρον σπέρμα κατὰ γένος καὶ καθ' ὁμοιότητα, καὶ ξύλον καρπιμον ποιοῦν καρπὸν οὗ τὸ σπέρμα αὐτοῦ ἐν αὐτῷ κατὰ γένος ἐπὶ τῆς γῆς. καὶ εἶδεν ὁ θεὸς, ὅτι καλόν. [13] καὶ ἐγένετο ἑσπέρα καὶ ἐγένετο πρωὶ, ἡμέρα τρίτη. [14] καὶ εἶπεν ὁ θεὸς, γενηθήτωσαν φωστῆρες ἐν τῷ στερεώματι τοῦ οὐρανοῦ εἰς τὸ φαίνειν ἐπὶ τῆς γῆς, καὶ διαχωρίζειν ἀνὰ μέσον τῆς ἡμέρας καὶ ἀνὰ μέσον τῆς νυκτὸς· καὶ ἔστωσαν εἰς σημεῖα, καὶ εἰς καιροὺς, καὶ εἰς ἡμέρας, καὶ εἰς ἐνιαυτούς· [15] καὶ ἔστωσαν εἰς φαῦσιν ἐν τῷ στερεώματι τοῦ οὐρανοῦ, εἰς τὸ φαίνειν ἐπὶ τῆς γῆς. καὶ ἐγένετο οὕτως. [16] καὶ ἐποίησεν ὁ θεὸς τοὺς δύο φωστῆρας τοὺς μεγάλους, τὸν φωστῆρα τὸν μέγαν εἰς ἀρχὰς τῆς ἡμέρας· καὶ τὸν φωστῆρα τὸν ἐλάσσω εἰς ἀρχὰς τῆς νυκτὸς· καὶ τοὺς ἀστέρας. [17] καὶ ἔθετο αὐτοὺς ὁ θεὸς ἐν τῷ στερεώματι τοῦ οὐρανοῦ, εἰς τὸ φαίνειν ἐπὶ τῆς γῆς, [18] καὶ ἄρχειν τῆς ἡμέρας καὶ τῆς νυκτὸς· καὶ διαχωρίζειν ἀνὰ μέσον τοῦ φωτὸς καὶ ἀνὰ μέσον τοῦ σκότους· καὶ εἶδεν ὁ θεὸς, ὅτι καλόν. [19] καὶ ἐγένετο ἑσπέρα καὶ ἐγένετο πρωὶ, ἡμέρα τετάρτη. [20] καὶ εἶπεν ὁ θεὸς, ἐξαγαγέτω τὰ ὕδατα ἑρπετὰ ψυχῶν ζωσῶν, καὶ πετεινὰ πετόμενα ἐπὶ τῆς γῆς, κατὰ τὸ στερέωμα τοῦ οὐρανοῦ· καὶ ἐγένετο οὕτως.

CHALDAICAE PARAPHRASIS TRANSLATIO.

CAPVT PRIMVM.

IN principio creauit Deus cælum & terram. [2] Terra autem erat deserta & vacua; & tenebræ super faciem abyssi: & spiritus Dei insultabat super faciem aquarum. [3] Et dixit Deus, Sit lux; & fuit lux. [4] Et vidit Deus lucem quòd esset bona. Et diuisit Deus inter lucem & inter tenebras. [5] Appellauitque Deus lucem diem, & tenebras vocauit noctem. Et fuit vespere & fuit mane: dies vnus. [6] Et dixit Deus, Det firmamentum in medio aquarum: & diuidat inter aquas & aquas. [7] Et fecit Deus firmamentum: & diuisit inter aquas quæ erant subtus firmamentum: & inter aquas quæ erant super firmamentum: & fuit ita. [8] Et vocauit Deus firmamentum cælum. Et fuit vespere & fuit mane, dies secundus. [9] Et dixit Deus, Congregentur aquæ quæ sub cælo sunt, in locum vnum: & appareat arida. Et fuit ita. [10] Et vocauit Deus aridam terram: & locum congregationis aquarum appellauit maria. Et vidit Deus quòd esset bonum. [11] Et dixit Deus, Germinet terra germinantem herbã, cuius filius sementis seminatur: arboremque fructiferam facientem fructus secundum genus suum; cuius filius sementis in ipso sit super terram. Et fuit ita. [12] Et produxit terra germen herbæ, cuius filius sementis seminatur secundum genus suum; & arborem facientem fructũ, cuius filius sementis in ipso secundum genus suum. Et vidit Deus quòd esset bonum. [13] Et fuit vespere & fuit mane, dies tertius. [14] Et dixit Deus, Sint luminaria in firmamento cæli, vt diuidant inter diem & noctem: & sint in signa & in tempora: & vt numerentur per ea dies & anni. [15] Et sint in luminaria in firmamento cæli ad illuminandum super terram: & fuit ita. [16] Et fecit Deus duo luminaria magna; luminare maius, vt dominaretur in die; & luminare minus, vt dominaretur in nocte: & stellas. [17] Et posuit eas Deus in firmamento cæli ad illuminandum super terram. [18] Et vt dominarentur in die & in nocte: & vt diuiderent inter lucẽ & tenebras: & vidit Deus quòd esset bonum. [19] Et fuit vespere & fuit mane, dies quartus. [20] Et dixit Deus, Serpant aquæ repilia animæ viuentis: & auem quæ volat super terrã super faciẽ aëris firmamenti cælorum.

BIBLIA POLYGLOTTA
Book pages, 1568
Printed by Christopher Plantin, Antwerp
Plantin's polyglot Bible is zoned for five different translations (Hebrew, Greek, Aramaic, Syriac, and Latin). Each zone is uniquely proportioned to accommodate the verbal and typographic texture of a particular script. The page is a dense rectangle cut into parts. The pieces—though highly individualized—fit together into a unified whole. Reproduced from William Dana Orcutt, In Quest of the Perfect Book *(New York: Little, Brown and Co., 1926).*

CHAPITRE SECOND.

I. La colonne de Pompée. II. On ne convient pas sur ses mesures. III. Colonne d'Alexandre Severe.

I. LA fameuse [1] colonne de Pompée est auprès d'Alexandrie : on ne sait pour quelle raison elle porte le nom de Pompée ; je croirois volontiers que c'est par quelque erreur populaire. Plusieurs voiageurs en ont parlé, tous conviennent qu'elle est d'une grandeur énorme. Deux des plus modernes en ont donné le dessein & les mesures ; mais ils different considerablement entre eux sur la hauteur du piedestal, de la colonne & du chapiteau : cependant tous deux disent qu'ils l'ont mesurée.

„ Pour ce qui est de la colonne, dit l'un, (c'est Corneille Brun p. 241.) „ elle est sur un piedestal quarré, haut de sept ou huit pieds & large de quatorze à chacune de ses faces. Ce piedestal est posé sur une base quarrée, „ haute d'environ un demi pied, & large de vingt, faite de plusieurs pierres „ maçonnées ensemble. Le corps de la colonne même n'est que d'une seule „ pierre, que quelques-uns croient être de granit ; d'autres disent que c'est „ une espece de pâte ou de ciment, qui avec le tems a pris la forme de pierre. „ Pour moi je croi que c'est une vraie pierre de taille, du moins autant que „ j'ai pu le reconnoitre par l'épreuve que j'en ai faite. Et si cela est vrai, com- „ me personne presque n'en doute, il y a sujet de s'étonner comment on a „ pu dresser une pierre de cette grandeur : car après l'avoir mesurée, j'ai trou- „ vé qu'elle a quatre-vingt-dix pieds de haut, & que sa grosseur est telle, que „ six hommes peuvent à peine l'embrasser ; ce qui revient, selon la mesure „ que j'en ai prise, à trente-huit pieds. Au haut il y a un beau chapiteau pro- „ portionné à la grosseur de la colonne, mais fait d'une piece separée.

L'autre, qui est M. Paul Lucas, en parle en cette maniere : „ Un de mes „ premiers soins fut d'aller examiner la colonne de Pompée, qui est près d'A- „ lexandrie du côté du couchant, & je croi qu'il seroit difficile de rien ajou-

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CAPUT SECUNDUM.

I. Columna Pompeii. II. De ejus mensuris non convenit inter eos qui illuc loca adierunt. III. Columna Alexandri Severi.

I. CElebertima [1] illa Pompeii columna prope Alexandriam erigitur. Cur Pompeii columna vocetur, ignoratur. Libenter crederem hujusmodi denominationem ex populari errore manavisse. Ex peregrinantibus omnes enormis magnitudinis esse narrant. Duo recentiores & figuram & mensuras dederunt, at inter illos non convenit de stylobata, columnæ & capitelli magnitudine. Attamen ambo dicunt se mensuras excepisse.

» Quantum ad columnam, inquit Cornelius » Bruinus p. 241, ea imposita est quadrato stylobate cujus altitudo est septem octove pedum, latera vero singulis in faciebus sunt quatuordecim » pedum. Stylobates autem ille quadratæ basi imponitur, altitudine dimidii pedis, ex lapidibus » plurimis structa basis est, longitudinis circumquaque viginti pedes habens. Columna ex uno » lapide est, plurimi putant ex marmore graeco » esse, alii vero quasi cementum & compactam » materiam esse, quæ procedente tempore, formam » lapidis sumserit. Puto ego esse lapidem quantum » saltem experiri licuit. Quod si ita sit, id autem » nemo hodie in dubium vocat ; plane mirum » quo pacto tantum lapidem erigere potuerint. » Nam cum mensuram daissem, nonaginta pedes » altitudinis habere comperi, tantaque ejus est spissitudo, ut sex viri simul vix illam amplecti possint ; id quod ad mensuram a me sumtam reducitur, circuitus enim ejus est triginta & octo » pedum. In culmine capitellum est ex uno lapide » secundum columnæ proportionem.

Alius, nempe Paulus Lucas, columnam sic describit. » Ubi primum porti columnam Pompeii » adii, quæ prope Alexandriam est versus occidentem. Difficile autem esset ejus mensuras

SUPPLEMENT AU LIVRE DE L'ANTIQUITÉ (LEFT)
Book. Paris, 1724
The two-column grid devised for this bilingual book provides a large, single-column block for the French text, with two columns below for the Latin. The quotation marks serve as a frame along the left edge of the quoted passage.

THE ILLUSTRATED LONDON NEWS (RIGHT)
Newspaper page, 1861
Early newspaper advertisements were designed by the paper's printer, not supplied by the client or an advertising agency. This dense field of entries occupies a four-column grid, with ruled lines to create order.

HOSPITAL for CONSUMPTION and DISEASES of the CHEST, Brompton, London, S.W.—Early Treatment prevents consumption and many hundreds of the patients are annually cured. PATIENTS in order to seek the expenses, which are necessarily heavy.—Patron, Queen. Hon. Sec., Henry Bateman, Esq.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C. The Lord MAYOR—Chairman. ADDITIONAL FUNDS are still urgently REQUIRED for this the only Homœopathic Hospital in the metropolis. Bankers—The Union Bank, Argyll-place, Regent-street. HENRY BONHAM, Hon. Sec. By order.

ROYAL ASYLUM of ST. ANN'S SOCIETY for OUTDOOR and other REMARKABLE CHILDREN of PARTICULAR PROPERTY. Patron—Her MAJESTY and the Royal Family. President—The Archbishop of Canterbury. Three Hundred Children are receiving the benefits of this Institution, and nearly Twenty Thousand have been admitted to the children, a little under the value may be purchased on the Anglican, Wellington, Kensington, and Kew Estates. Bankers, Messrs. Coutts and Co. Secretary of Benefactors by Will have the privilege of Life Governorship for every £50 bequeathed.

THE PALACE HOTEL, Buckingham-gate, London, S.W., is now open to gentlemen exclusively. There are various suites of Apartments, a coffee-room and dining-room for the reception of Ladies and Gentlemen, with Reading-room adjacent, spacious commodious smoking-room, and Waiting Breakfasts or parties of a similar description, and fully about 50 yards from the new Victoria Railway Terminus.—J. G. BERARD, Proprietor.

NATAL, South Africa.—The LONDON and COLONIAL ASSURANCE, Parliament-street, London, KNIGHT RIGHTS for sums of, and grants LETTERS OF CREDIT on, the NEW ORLEANS AGRICULTURAL BANK of NATAL, payable at Pietermaritzburg or Durban free of charge. The present International on fixed deposits are:—

For 6 months	..	..	6 per cent per annum.
12	..	..	7
18	..	..	8
24	..	..	9

Interest payable half yearly in London, Cape Town, or Natal.
J. A. LAMBERT, General Manager.
Commercial and Agricultural Bank of Natal.
Durban, Port Natal, Sept. 20, 1861.

EDUCATION.—RICHMOND-HILL.—In a Family and Grammar Preparatory Establishment, permanently organized for resident Gentlemen and for extra-mural Masters for Latin, Italian, French, German, Scientific Lectures, Drawing, Fencing, Lathe, Mr. R. Gearing, Surrey. Religious Education by a Clergyman. GENTLEMEN BOARDERS (under tuition from age of 10) remain with them, board, for 40 to 50 guineas per annum inclusive. Professionally for English, Drawing, Painting, French, and German and instrumental period for a short time. Awards and Certificates. The Principal, assisted by a Lady, Governess, and Masters, ensures the moral and intellectual improvement of the Pupils (certain) and appreciates the domestic management, which includes single beds, by inspection and reference. The home is as a healthy nursery in the best part of Richmond, near the Park; it is detached, surrounded by five acres of land, of shrubbery and play ground, thoroughly ventilated, and accessible from four miles round and four hackneys.—THORP, post-office, Richmond, Surrey.

RIDING LESSONS During the Holidays. Small Ponies kept for Young Ladies and Gentlemen. Saddle Horses, Cobs, and Ponies for Hire, at the MANCHESTER RIDING SCHOOL, 19, South-street, Park-lane, W. N.B.—The School is lighted with gas for Evening Parties. For Terms, &c., apply to Mr. John Dale.

THE IRON BRIDGE ASSOCIATION, 58, Pall-mall, London, manufacture and erect iron bridges, piers, and schemes of every description. Agents wanted in California, Hill, Bridal-Gulcinda, Paris, Brazil, and Barbados.

CHIMNEYPIECES, TOMBS, MONUMENTS, FONTS, &c.—EDWARDS BROTHERS and SICKER, Warwick Works, 132 and 134, Regent-street, beg to inform the Nobility and Gentry that they manufacture, at their own shops, Chimneypieces, Tombs, Fonts, &c., in the most elegant and tasteful description of Marble-work at the lowest possible prices. Chief Office for exclusive specimens of all Ancient and British Marbles procured in Chimneypieces, from 20s. to 100 guineas each; Monuments and Tablets, from £5; Head and Foot Stones from 30s. each. Manufactories—Carrara, Rimmels, and 12, Berners-street, Oxford-street, London, W. Sketches and Drawings upon application. Sole Agents for the Inverness Granite Company.

LOCK-STITCH SEWING-MACHINES, manufactured by the WHEELER and WILSON MANUFACTURING COMPANY, with vessel improvements. Crystal Chamber, Exhibition, Regent-street, W. Also, Sewing-Machines, Instruction guides to every purchaser. Illustrated Prospectus, with Testimonials, gratis and post-free.

SEWING-MACHINES.—Double Lock-stitch, for Families, to which have been awarded the first medals of the Exhibitions, Sewing-Machines Institute, New York State Fair, and Mechanics' Institute. These machines are guaranteed, and to make up the finest sheet as fair half as the best sewing-machines and on hire. Illustrated Catalogue free.—FINKLE, LYON, and CO., 139, New Oxford-street.

W. F. THOMAS and CO.'S PATENT SEWING-MACHINES.—In these machines are combined the most approved construction, as shown by Actions made on patents, and the latest additions and improvements. For simplicity of construction, economy of thread, beauty and strength of work, they are unrivalled. The stitching produced is alike on both sides of the material, there is no need to chign, and the thread remains in perfect set. Lists of prices and specimens of the work may be had at 86, Cheapside, London, City; and 18, Market-street, Manchester.

SEWING and EMBROIDERING MACHINES.—The best Machine, and the only one that will do both plain and fancy work. A morsel of fabric free to Exhibitors exhibited. Samples of work in the different stitches with Catalogue, from HOWTON, WILKES, and CO., 150, Bow-lane, E.C.

HAIR JEWELLERY.—GEORGE HOOPER, Artist in Hair, Ladies and Gentlemen's Hair worker, Long Display, Elizabeth-terrace of Kings, Bow-road, Mile-end, Gent. Only address Hills, Regent-street, London, W.

MOURNING JEWELLERY.—A large and choice selection of Mourning Jewellery, in real Whitby Jet, Onyx Brilliants, with Brooch to match, 21 to 42 shs. Lockets, Bracelets, Rings, Pins, Ear-rings, Necklaces, Crosses, Chains, Sets, Gold Brooches, &c., at very moderate prices.—RICHARD HAWLEY, Jeweller, 168, Regent-street, W.

TO LADIES.

WALLES'S PRIZE LIST of HAIR PLAITS, in gold, free on application.—WALLES'S PRACTICAL PERFUMERY, with Illustrated Catalogue, free on application, post-free, Fifty-three Years' Reputation, 130, 131, 132, and 134, Regent-street, Perfumer to the Queen, Prince of Wales, and Royal Family, Perfumer and Manufacturer of Ladies' Toilet Requisites, Dressing-case Furniture, Brushes, Dressing-case and Pocket Hair, of every description.
W. Walles, Queen Hairdresser,
11, Cambridge-terrace, Cambridge-road, N.W.

BEFORE YOU HAVE YOUR LIKENESS TAKEN send for DEVONSHIRE PATTERNS of BRACELETS, Lockets, Brooches, &c., which are sent post-free. Engraving, visiting Brooches, in solid Gold, to commemorate Liberties or Marriages of women, from £1 each.—Devonshire Manufacturing Goldsmith and Jeweller, 176, Bishopsgate-street, City, London.

LADIES' GEM RINGS.—A beautiful assortment of Gem Rings, 10s. to 10 guineas each. FREDERIC HAYLES, Goldsmith, 148, Regent-street, W.

ALBUMS FOR PHOTOGRAPHS.—A superior selection of Albums, elegantly bound in silver, suitable as presents at Christmas, the new year, birthdays, and weddings, 1s. 6d., 2s. 6d. each, and upwards; forwarded by return of post, on receipt of postage order by Manufacturer.
FREDERIC HAWLEY, 168, Regent-street, W.
N.B. Inspection of Large Stock invited.

NOVELTIES and ELEGANCIES for PRESENTATION.—Gray Gray Guides, 2s. 6d. each; Diamond Black Sketch, in the form of a chaise of state, 3s.; Gray Swan Boots, 1s. 6d. to 3s.; gem Crystal Confectionery, Harvest Vases, Grass and Seed Combs, Hand Jugs, Tomahawk Corals, Indian Ink Stands, Ivory Fans, Ivory Work Boxes, &c., &c., &c.—FREDERIC HAWLEY, 168, Regent-street, W.

DENT'S CHRONOMETERS, WATCHES, and CLOCKS.—M. Dent, 33, Cockspur-street, Charing-cross, Watch Clock, and Chronometer Maker by special appointment to her Royal the Queen.
12 Cockspur-street is one of the largest shops in London.

BROADBAM and BAKER, Chronometer Makers to the Admiralty, Clerkenwell-close, Jewellers, Watch Manufacturers, Repairers, and Lever Watches of the most improved manufacture, at reasonable prices. Astronomical and Astral Clocks, Alarms, &c. Clerkenwell-close, City. Established 1765.

DENT, Chronometer, Watch, and Clock Maker to the Queen and the late Prince Consort, and maker of the Great Clock for the Houses of Parliament, 82, Strand (adjoining Exeter Hall), and 34, Royal Exchange.

PLATE.—A. R. SAVORY and SONS Manufacturers (Silversmiths), 11 and 12, Cornhill, London, and 158, Bath. The best enough SILVER SPOONS and FORKS. Table pattern, 1s. 6d. per ounce; Queen's pattern, 1s. 6d. per ounce. Heavy silver stamens recently finished, plain or highly ornamented.

12 Table Spoons	30	..	1	4	12 Dessert Knives	18	.. 1
12 Table Forks	30	..	1	4	12 Dessert Forks	18	.. 1
12 Table Forks	30	..	1	4	12 Dessert Spoons	18	.. 1
12 Dessert Spoons	20	..	1	4	12 Dessert Forks	18	.. 1
12 Dessert Forks	20	..	1	4	1 Gravy Spoon	12	.. 0
1 Gravy Spoon	12	..	0	12	1 Sauce Ladle	12	.. 0
1 Sauce Ladle	10	..	0	10	1 Soup Ladle	12	.. 0
1 Soup Ladle	10	..	0	10	1 Sugar Sifter	12	.. 0
4 Salt Spoons (gilt)	12	..	0	4	4 Salt Spoons (gilt)	8	.. 0
1 Fish Slice	30	..	0	12	1 Fish Slice	18	.. 0
12 Tea Spoons	12	..	0	12	12 Tea Spoons	14	.. 0
1 Pair Sugar Tongs	6	12	0	1	1 Pair Sugar Tongs	8	.. 0

A Pamphlet is delivered with the Expense Account, and a Copy of the Illustrations in receipt of a stamp. In consider the weight and pattern of silver spoons, forks, ladles, and other services, and table-plate, with particulars of occasional plate for private use or presentation; also of the best electro-plated nickel-silver, and other metals, sent free on receipt of inventory. Orders, on application, and post-free any part of the United Kingdom. For the use of customers a proper scale is provided, with indisputable descriptions of plate kept ready for immediate reference.

MAPLE and CO.'S FIRST-CLASS FURNITURE.
Bedroom Wax Bottom Chairs, 4ft. 6in., with plate-glass doors, 11 guineas; ditto, in painted wood, with plate-glass doors, 12 guineas; ditto, of every description, in wood, cane, and brass, fitted with drapery and bedding complete; several ranges of Bedroom Furniture, from 12 to 20 guineas; the Regina Sofa-chair, for Cards in embossed, 3 guineas; many thousands, with plate-glass and marble, from 12 to 120 guineas; Marquetrie Cabinets, from Napoleon's very large table, in bed, from £10 to £30; Bedroom, from £6 upwards.
Illustrated Catalogue, post-free.
MAPLE and CO.
145, Tottenham-court-road.

DINING and DRAWING ROOM FURNITURE.
The Regina Dining-chair, price 6s.
The Prince of Wales Chair, price 6s.
The Victoria Sofa, price 3 guineas.
The Victoria Sofa-bed, price 4 guineas.
The Prince of Wales Couch, price 4 guineas.
MAPLE and CO.

TURKEY CARPETS.
A Fresh Importation.
Prices very moderate.
The trade supplied.
J. MAPLE and CO., 145, Tottenham-court-road.

J. MAPLE and CO. for CARPETS and FURNITURE.
Five Thousand Pieces good Brussels, 2s. 6d. yard; Best Brussels, 3s. The Public Call for Curtains, Rugs, and all the new Materials.

CAUTION.—MEM'S SPRING MATTRESS, Patented September, 1861, Comfortable, elastic, simple, portable, and inexpensive. Purchasers are respectfully requested to examine the Spring Mattress, in which economy is the general appearance of the Bedding Spring Mattress is carefully adapted to the shape of the human form, and is elastic.
Prices from and Sizes, 2ft. 6in. by 4ft. 6in. to the extent of the patent right are able to announce the following unanimously.
REDUCED SELLING PRICES.
Size No. 1 for Bedsteads 3 feet wide 25s. 6d.
" 2 " 4 " 30s. 6d.
" 3 " 5 " 38s. 6d.
Other sizes in proportion. To be obtained of ironmongers and all respectable Upholsterers and Bedding Manufacturers.
Wholesale Manufactory, 3, Charles-street, Hatton-garden (adjoining the Island "Barbara's Tavern."

BIRCH FURNITURE versus DEAL.—Messrs. R. GREEN and Co., 35, Mortimer-street, have completed a very extensive and well-selected stock of BIRCH FURNITURE, at the same prices as plated deal. Those who have tried it will bear us out. An inspection solicited.

MESSRS. R. GREEN and CO., 34, Mortimer-street, Regent-street, are the only Manufacturers who have received Gold Medals for CANE DINING-ROOM SET OF FURNITURE, consisting of a 10 ft. sideboard (Holtzapffel's new design), 3 ft. dining table with plate-glass backs, and a 10ft. by 12ft. Brussels dining table. Highly-polished 10ft. 6in. chairs, 1s. to 2s. each.

WALNUT SUITE DRAWING-ROOM FURNITURE, a good bounds, of sterling quality, equal to new, consisting of a 10ft. by 12ft. Brussels carpet, 3ft. 6in. chairs, 1s. 6d. each, 3ft. 6in. Sofa, 3 guineas, 3ft. 6in. Cabinet and Gem, a magnificent Sideboard, 3 ft. 6in. Pier-glass, and a Drawing-room Table, complete, 50 guineas. Illustrated Catalogue, post-free.

FURNITURE CARRIAGE FREE TO ANY PART OF THE KINGDOM.
F. and J. BETTER,
34, Ely-place, E.C.
Illustrated Catalogue, post-free, on application.

FURNISHING WAREHOUSE, 69, 70, 71, 72, 73, 74, 75, Westbourne-place, Lancaster-road, Notting-hill. Gentlemen and Ladies are invited to call and examine the Stock, which is the largest and most complete in London, and consists of every requisite for furnishing a house. Furniture, Carpets, Bedsteads, Bedding, Ironmongery, Kitchen-range, Gas-fittings, Glass, China, Earthenware, Plate, Table-linen, Cutlery, Clocks, Lamps, Oil-cloths, Brushes, Brooms, Baskets, Perfumery, Wood and rattan chairs, tables, stools, cornices, table-covers, washstands, and every other thing, also of durable drapery.
HALL and SON'S RIDKEDOWN QUILTS.
Hall and Son's Illustrated Catalogue of Bedsteads and Priced List of Bedding, sent post-free. 184, Tottenham-court-road, W.

LONDON CARPET WAREHOUSE.
WAUGH and SONS, 2 and 4, Goodge-street (and Grand Wharf, Wolverhampton), W. Carpets, Rugs, Linoleum, Oil-cloth, Bedsteads, Bedding, Furniture, Ironmongery, &c.

WASHING, WRINGING, MANGLING.—"Keep one should remember this—and be the general utility of Hudson's invaluable machines." A pamphlet free by post.—HUDSON BRAMWELL, Patentee, 48, Fleet-street, London; and Oldbury-place, Birmingham.

CHUBB'S LOCKS and FIREPROOF SAFES, with all the recent improvements. Street-door Latches, Lock and Door Bolts. Full illustrated catalogue sent free.
CHUBB and SON, 57, St. Paul's Churchyard, London.

THE IMPERIAL WINE COMPANY, 314, Oxford-street, W., near Hanover-square, sole highly recommended their sound Clarets, at 18s. and upwards. Imperial Sherry, at 36s. 36s., Port at 36s., fine qualities and rare old vintage Ports, very old, in bottles, at wholesale prices.

EAU-DE-VIE.—This Pure PALE BRANDY, in 1 dozen quarts, is recommended for medicinal purposes, to be peculiarly free from acidity, and very superior to most imported Cognac Brandies. Sample bottle, 3s. 6d. Pint, 4s. 6d. Quart, 7s. 6d. Gallon, 30s. Sent carriage paid. Orders, &c., to be addressed to the Proprietor of HENRY BRETT and Co., Old Distillery Distillery, Holborn, E.C.

KINAHAN'S LL WHISKY v. COGNAC BRANDY.—The celebrated KINAHAN'S WHISKY stands the test, between Brandy and Whisky, the Whisky is preferred, and is fast displacing the Brandy, as a more wholesome spirit. Sold by Grocers and wine merchants in the principal towns in England; or wholesale at 9, Great Windmill-street, Haymarket, W.—Sample of the real and pale, bold, and rich, bottled "Kinahan's LL Whisky."

ROBINSON'S PATENT BARLEY for invalids and all persons requiring a nourishing food, is recommended as a favourite food, owing to Power, or the cooked mucilage, and universally acknowledged to be the best.
ROBINSON'S PATENT GROATS,
the most enhanced and best-known preparation for making porridge, Pleasant and wholesome. Sold by all Grocers and other general dealers throughout the Kingdom.
ROBINSON, BELLVILLE, and CO., Purveyors to the Queen, 25, Red-lion-street, Holborn, London, and Nottingham.
The Original and Genuine Article. Established 1816.
BEWARE OF INFERIOR IMITATIONS.

OSWEGO PREPARED CORN, for Puddings, Gruels, &c., has a delicate and purity not possessed by any of the English imitations.
Wholesale Agents, 2, Cheapside, E.C.; BRAYNE, PELVILLE, and Co.

FLOUR, to any part of London (not less than 14lb.), free. Wheat, for malting, at the market (63lb.), 7s. 6d.; Hundredweight, 7s. 6d.; Sack (2 cwt.), 7s. 6d. Superfine Flour, Wheat meal, the lowest level 14s. 6d.; best fine and coarse bakers Outmeal, Oatmeal, HOMINY, and CONFECT, Bulbed Kidney, Wilmot, Beans; or W. Hundredweight, Cwt.-sack, £1. Directions for bread making gratis. Terms, cash.
TAYLOR BROTHERS.

HOMŒOPATHIC COCOA, for cocoa of high quality combined with vegetable food. Sold by all Homœopathic chemists.

EPPS'S COCOA, "cocoa's cocoa" Sold by all Homœopathic chemists.
TAYLOR BROTHERS' BREAKFAST BEVERAGE.

TAYLOR BROTHERS'
ICELAND MOSS COCOA is an invaluable article of diet for invalids and persons of weak digestion. Sold by all chemists, 1s. per lb.

DERBY GIFTS.

WOTHERSPOON'S VICTORIA Gold Medal Prize Medal Silver Medal Medals awarded for improved sheet by patent cross-cutting, shaking and equalizing machinery, for the manufacture of the hands is obtained, in long and up to and packages at 12, 24, 36, 48, and 60 in. Sold by all Stationers.
To be had in Paperwood, Cross-cut, Lawns, Ness, Glasgow, Hawk, Lavender, Gilt, and Gilt Edge, Ruled, Plain, and Tinted.
Wotherspoon and Co., Glasgow and London.
Agents in every Town.

GLENFIELD PATENT STARCH.
Exclusively used in her Majesty's Laundry, and pronounced by her Laundress to be the best she has ever used for her purpose.
The great and ever increasing demand for this world-renowned Starch is a proof of its superiority over all other Starches.
THE GLENFIELD PATENT STARCH,
which is about a fine gloss, imparts to the linen a delicacy of texture, and a beauty of finish, not to be obtained from any other Starch.
THE GLENFIELD PATENT STARCH
possesses the peculiar property of imparting to the fabric to which it is applied a PURITY, a CRISPNESS, and a PERFECT FRESHNESS, which will be appreciated by all who use it.
PLACE OF GRACE and FRIZLY TRANSPARENCY.
It does not impart the peculiar gloss to fabrics which other Starches do, but has, on the contrary, the effect of keeping them free from that stiffness so disagreeable.
The Manufacturers have no hesitation in affirming that the Glenfield Patent Starch is
THE BEST PRODUCT,
AND, AFTER TRIALS,
THE ONLY ONE THEY WILL USE,
and if, despite by any other starch has done so, they are strongly recommended to give the Glenfield a trial.
Sold by all Grocers, Oilmen, and Druggists, in packets, 1d., 2d., and 4d., and upwards, and in boxes, 1s. 6d., 2s. 6d., and 5s. each; and in packets, 1d., 2d., and 4d., and upwards, and in boxes, 1s. 6d., 2s. 6d., and 5s. each.
Sold in Packages of 2d., 1d., 2d., 4d., and 6d. each, by Grocers, Chandlers, Chemists, Oilmen, &c.

LADIES' DRESSES, CLOTHS, and FURNITURE.—Ladies' Dresses, Cloths, and Furniture, and sent quick, by using the DESIRE COLLAR, which will have to cause. To be had of all Drapers, and of A. DESIRE, 116 Oxford-street, W. Price 1s 6d. per bottle.

BOND'S PERMANENT MARKING INK (Registered) for marking on Linen, Silk, or Cotton. Requires no preparation, and is fit for the book. Makes—Observe the Name of the Patent Marking Ink, and a Wax specially made for the book. Sold by all the chemists and stationers throughout the Kingdom.
A STIMA SPECIFIC.—DATURA TATULA.—By the immediate contact with the air cuts and sponges the Lungs of the phlegm which hinders breathing, and the cough is stopped for ever by all patients. Gives in the country and prepared only by the Inventor, HIRT and Co., Medical Chemists, 51, New Bond-street; 38, Chapel-street, Belgrave-square; and, 1, Leicester-square, Soho Square, London.

DINSFORD'S FLUID MAGNESIA is an excellent remedy for Acidity of the Stomach, Heartburn, Headache, Gout, Indigestion, and are only medicine for delicate constitutions. 18, New Bond-street, London; and all Chemists.

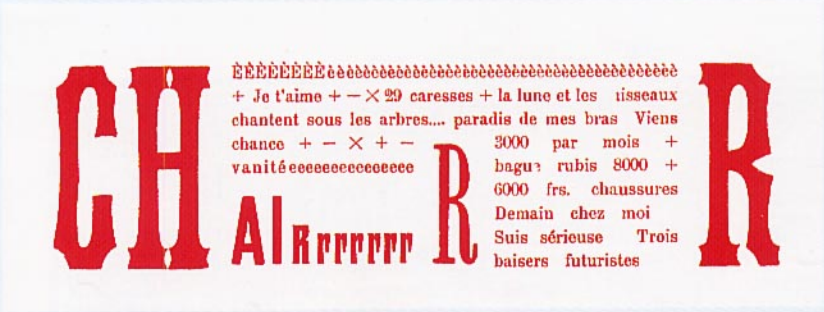
SIR J. MURRAY'S PATENT FLUID MAGNESIA, GUINDAL CAPSULES, &c., &c. (of Angelica).
BY HER SOVEREIGN'S
(Knight of the Order of Leopold of Belgium)
LIGHT-BROWN COD-LIVER OIL, as prescribed by the most eminent Medical Men throughout the World as the safest, speediest, and most effectual remedy for DYSPEPSIA, CONSUMPTION, RHEUMATISM, GOUT, and GENERAL DEBILITY, DISEASES OF THE LUNGS, THROAT, AND CHEST, CONSUMPTION, SCROFULA, RICKETS, and CONSUMPTIVE DISEASES.
It is unexceedingly superior to every other variety.
ALBERT MEDICAL OPINIONS.
SIR ROBERT PEEL, Bart., K.B., Physician in Ordinary to the Queen in Ireland:—"I consider the Dr. Joseph's Light-Brown Cod-Liver Oil to be very superior Oil, and I have very much to be related with its Medicinal and Medicinal effects."
DR. LAYCOCK, Physician to H.R.H. the Duke of Saxe-Coburg Gotha:—"I have invariably prescribed Dr. Joseph's Light-Brown Cod-Liver Oil, and I have every reason to be satisfied with its Medicinal and Medicinal effects."
DR. LAYCOCK, Physician to H.R.H. the Duke of Saxe-Coburg Gotha:—"I have invariably prescribed Dr. Joseph's Light-Brown Cod-Liver Oil, and I have every reason to be satisfied with its Medicinal and Medicinal effects."
Sold in Bottles, Pints, 2s. 6d.; Quarts, 4s. 6d.; Pints, 7s.; Imperial Gallons, 30s.; and Half-Gallons, 18s. Carriage Free.
Sole Proprietors:
ANSAR, HARFORD, and CO., Pharmacists, London, W.D.
CAUTION.—Beware of Pungent Substitutes.

STOCKING of the SHOULDERS has been effectually cured the last twelve years by PINTON'S PATENT SHOULDER STRAPS, which are recommended by medical men, and are sent post-free, on receipt of a postage-stamp by Alfred Pinton, 3, Great Marlborough-street, W.

CORNS.—YOUNG'S IMPROVED LACERATED WHITE SELFADHESIVE BUNION PLASTERS (Patent). Instantly relieve and cure Corns, Bunions, &c. Thousand testimonials. Ask for Young's and take no Imitation. Sold by Chemists, and by the Inventor, Thos. Young, 7, Duke-street, Lincoln's-inn-fields, London, W.C.

WHEN YOU ASK FOR
GLENFIELD PATENT STARCH
DO THAT YOU GET IT,
as inferior Starches are sometimes substituted.

HOUSEHOLD LINEN DEPARTMENT.—JOHN HARVEY, 308, and 310, of 4, Leicester-sq., established upwards of fifty years, will send patterns and samples free, for comparison, of their each DOILIES, DAMASK TABLECLOTHS, with Napkins suitable to match, Sheets and Sheeting, for the Linen Drapery, Hosiery, Lace, Ladies' Outfitting, Gloves, Ribbons, Parcels, Cotton shirting from 1 yard upwards, Bedsteads, Bedding, Blankets, Quilts, Counterpanes, Table Covers, Towels, Napkins, Cutlery, Glass, Plate, Lamps, Oil, Brushes, Brooms, Baskets, Perfumery, Toys, Stationery, Ironmongery, Furniture, Carpets, Rugs, Linoleum, Oil-cloth, Kitchen-range, Gas-fittings, Clocks, Lamps, Chandeliers, Pianofortes, Harmoniums, Organs, Guitars, Violins, Flutes, Flageolets, Cornets, Drums, Fifes, Bugles, Bagpipes, Tambourines, Cymbals, Triangles, Castanets, Bells, Chimes, Tuning-forks, Metronomes, Music-stands, Music-boxes, Dulcimers, Harps, Zithers, Guitars, Violins, Violoncellos, Tenors, Basses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DIVIDING SPACE

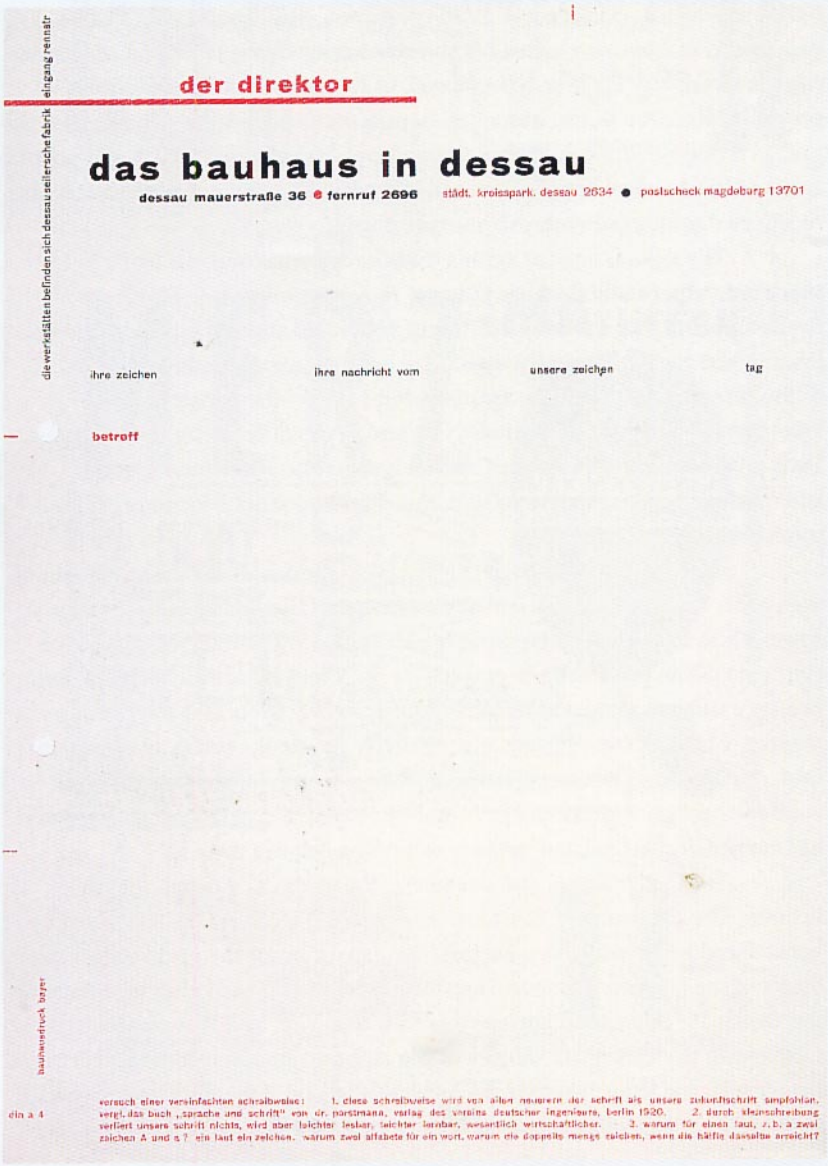
In the nineteenth century, the multi-columned, multimedia pages of newspapers and magazines challenged the supremacy of the book and its insular edge, making way for new typogologies of the grid. By questioning the protective function of the frame, modern artists and designers unleashed the grid as a flexible, critical, and systematic tool. Avant-garde artists and poets attacked the barriers between art and everyday life, creating new objects and practices that merged with urban experience.

The assault against print's traditional syntax was led by F. T. Marinetti, who established the Futurist movement in 1909. Marinetti devised poems that combined different styles and sizes of type and allowed lines of text to span multiple rows. Marinetti's ingenius manipulations of the printing process work against—but inside—the constraints of letterpress, exposing the technological grid even while trying to overturn it. Dada artists and poets performed similar typographic experiments, using letterpress printing as well as collage, montage, and various forms of photomechanical reproduction.

Constructivism, which originated in the Soviet Union at the end of the 1910s, built on Futurist and Dada typography, bringing a more rational approach to the attack on typographic tradition. El Lissitzky employed the elements of the print shop to emphasize the mechanics of letterpress, using printer's rules to make the technological matrix actively and physically present. Constructivism used rules to divide space, throwing its symmetry into a new kind of balance. The page was no longer a fixed, hierarchical window through which content might be viewed, but an expanse that could be mapped and articulated, a space extending beyond the edge.

For Dutch artists and designers, the grid was a gateway to the infinite. The paintings of Piet Mondrian, their abstract surfaces crossed by vertical and horizontal lines, suggest the expansion of the grid beyond the limits of the canvas. Theo van Doesburg, Piet Zwart, and other members of the Dutch De Stijl group applied this idea to design and typography. Converting the curves and angles of the alphabet into perpindicular systems, they forced the letter through the mesh of the grid. Like the Constructivists, they used vertical and horizontal bars to structure the surface of the page.

Typography is mostly an act of dividing a limited surface. Willi Baumeister, 1923



DAS BAUHAUS IN DESSAU
Letterhead, 1924
Designer: Herbert Bayer
Collection of Elaine Lustig Cohen

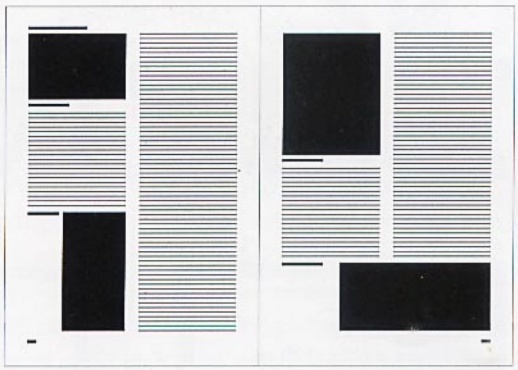
Herbert Bayer's letterheads for the Bauhaus are manifestos for a new typographic order. Rather than provide a decorative frame or a centered title, Bayer treated the entire page as a surface to be divided. Points, short hatches, and lines of type indicate axes for folding the sheet and positioning text. This letterhead also promotes Bayer's idea that all letters should be lowercase, a point expounded in small print across the bottom.

The new typography not only contests the classical "framework" but also the whole principle of symmetry. Paul Renner, 1931

Jan Tschichold's book *The New Typography*, published in Germany in 1928, took ideas from Futurism, Constructivism, and De Stijl and conveyed them as practical advice for commercial printers and designers. Functionally zoned letterheads using standard paper sizes were central to Tschichold's practical application of modernism. Whereas Futurism and Dada had aggressively attacked convention, Tschichold advocated design as a means of discipline and order, and he began to theorize the grid as a modular system based on standard measures.

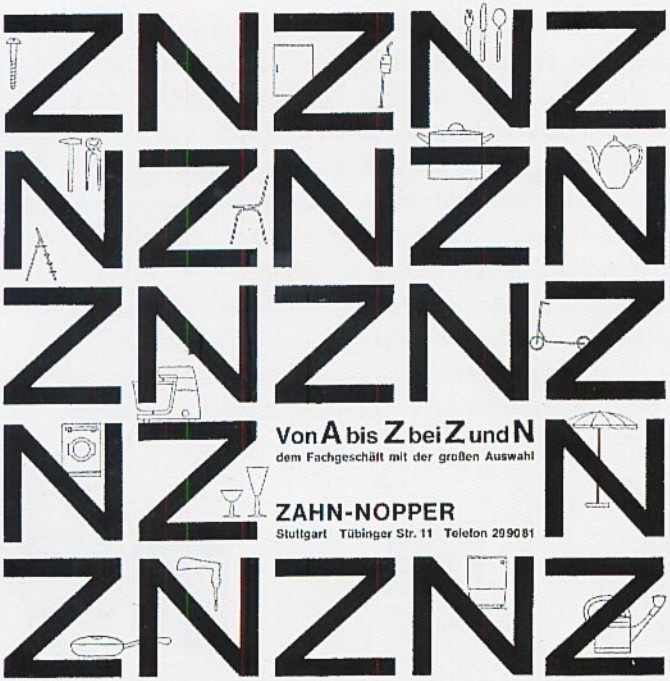
By describing the expansion of space in all directions, the modern grid slipped past the classical frame of the page. Similarly, modern architecture had displaced the centered facades of classical building with broken planes, modular elements, and continuous ribbons of windows.

THE NEW TYPOGRAPHY
Diagram, 1928
(redrawn)
Designer and author:
Jan Tschichold



Tschichold's diagram of good and bad magazine design advocates staggering images in relation to content instead of forcing text to wrap around blocks moored at the center of the page. Explaining this experiment, Tschichold wrote that his redesigned pages would be even more effective if the photographic halftones (called "blocks") were produced in fixed rather than arbitrary sizes.

I have intentionally shown blocks of different and "accidental" widths, since this is what usually has to be contended with (although in the future, with standard block-sizes, it will happen less often).
Jan Tschichold, 1928



ZAHN-NOPPER
Store identity, 1961–63
Designer: Jochen Stankowski
This identity system demonstrates a programmatic approach to design, using a limited set of elements to construct diverse yet genetically linked solutions. The system is not grounded is governed by flexible rules for construction rather than a fixed logotype.

GRID AS PROGRAM

Classics of Swiss design theory include Josef Müller-Brockmann, *Grid Systems in Graphic Design* (Switzerland: Ram Publications, 1996; first published in 1961) and *The Graphic Artist and his Design Problems* (Switzerland: Arthur Niggli Ltd., 1961); and Karl Gerstner, *Designing Programmes* (Switzerland: Arthur Niggli, 1964). See also Emil Ruder, *Typography* (New York: Hastings House, 1981, first published in 1967).

During the post–World War II period, graphic designers in Switzerland honed ideas from the New Typography into a total design methodology. It was at this time that the term "grid" (*raster*) became commonly applied to page layout. Max Bill, Karl Gerstner, Josef Müller-Brockmann, Emil Ruder, and others were practitioners and theorists of a new rationalism that aimed to catalyze an honest and democratic society. Rejecting the artistic clichés of self expression and raw intuition, they aspired to what Ruder called "a cool and fascinating beauty."

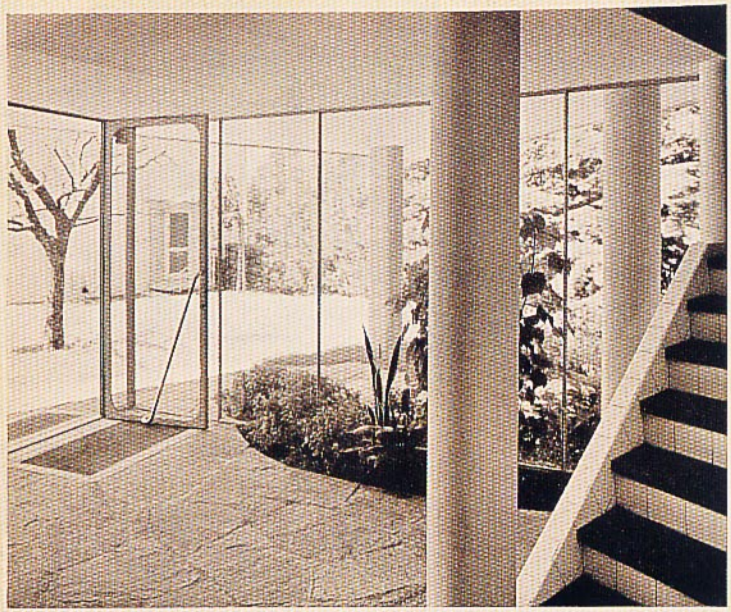
Karl Gerstner's book *Designing Programmes* (1964) is a manifesto for systems-oriented design. Gerstner defined a design "programme" as a set of rules for constructing a range of visual solutions. Connecting his methodology with the new field of computer programming, Gerstner presented examples of computer-generated patterns that were made by mathematically describing visual elements and combining them according to simple rules.

Expanding on the pioneering ideas of Bayer, Tschichold, Renner, and other designers of the avant garde, the Swiss rationalists rejected the centuries-old model of the page-as-frame in favor of a continuous architectural space. Whereas a traditional book would have placed captions, commentary, and folios within a protective margin, the rationalist grid cut the page into multiple columns, each bearing equal weight within the whole, suggesting an indefinite progression outward. Pictures were cropped to fit the modules of the grid, yielding shapes of unusual proportion. Constructing ever more elaborate grids, the Swiss designers used the confines of a repeated structure to generate variation and surprise. Such grids could be activated in numerous ways within a single publication, always referring back to the root structure.

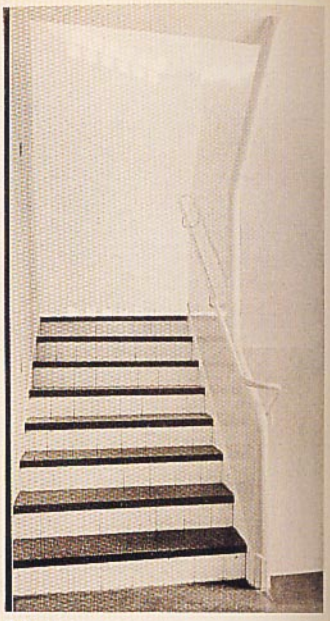
This approach, which quickly became known as "Swiss design," found adherents (and detractors) around the world. Many American designers dismissed Swiss rationalism as irrelevant to a society driven by pop culture and hungry for rapidly transforming styles. Programmatic thinking is now being revived, however, as designers today confront large-scale information projects. The need is greater than ever for flexible "programs" accommodating dynamic bodies of content.

The typographic grid is a proportional regulator for composition, tables, pictures, etc.... The difficulty is: to find the balance, the maximum of conformity to a rule with the maximum of freedom. Or: the maximum of constants with the greatest possible variability.

Karl Gerstner, 1961



14. Eingangshalle



15. Treppe

2 Mehrfamilienhäuser im Doldertal Zürich

Räumliche Organisation

Situation: Die beiden Mehrfamilienhäuser liegen im Villenviertel, auf halber Höhe des westwärts abfallenden „Zürichberg" [4]. Längs dem Grundstück verläuft auf der Nordwestseite eine öffentliche Parkanlage mit einem dichten Baumbestand. Die Zufahrtsstrasse genannt „Doldertal" hat ein Gefälle von 10 %, und ist nicht durchgehend. Die Schrägstellung der Blöcke zur Baulinie ergibt eine verbesserte Südlage für die Wohnräume, eine Abdrehung der Schlafräume von der Strasse und eine lockere Gesamtanlage, ohne gegenüberliegende Schmalseiten. [5] (Siehe auch baugesetzliche Sonderbelten.)

Raumprogramm: Es ist versucht worden, die Vorzüge des Einfamilienhauses soweit als möglich auf die Etagenwohnung zu übertragen (freies, schallsicheres Wohnen, Einbeziehung der Landschaft, grosse Wohnterrassen, weitgehende innere Ausstattung). Im Untergeschoss: Gedeckter Vorplatz mit zwei Garagen, Eingangshalle mit Treppenaufgang, Abstellräume, Vorratskeller, Waschküche und Trockenraum, die beiden letztern nur im untern Haus. Unter der Eingangshalle mit besonderm Eingang [9] (7) liegen Heizung und Kohlenraum. Im Parterre: eine Vierzimmerwohnung mit Mädchenzimmer und ein Einzimmer-Appartment mit direktem Eingang vom Garten. Im Obergeschoss: eine 5/6-Zimmerwohnung mit Mädchenzimmer. Zu dieser Wohnung gehört noch ein auf Höhe Dachgeschoss liegendes Sonnenbad [12] (16), durch eine Eisentreppe von der Terrasse erreichbar. In beiden Wohnungen liegen Treppe und Küche ausserhalb der eigentlichen Wohnfläche (Schallisolation); dennoch hat die Küche eine betriebstechnisch zentrale Lage (Verbindung mit der Terrasse, je eine Durchreiche nach Essplatz und Treppenhaus). Im Dachgeschoss ein grosses und ein kleines Atelier, Abstellräume im Treppenbau.

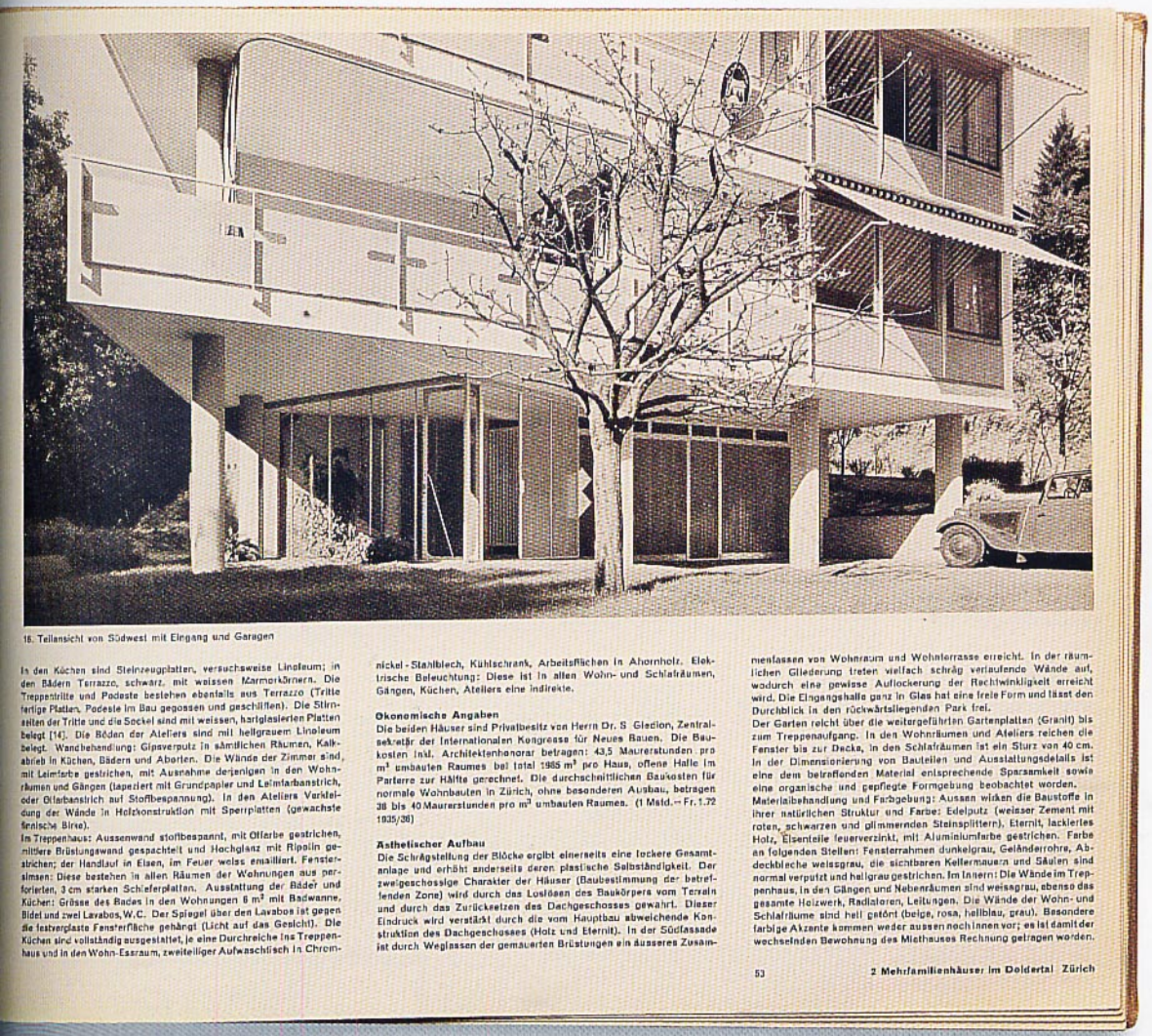
Technische Durchbildung

(vgl. Technische Details)

Konstruktionsprinzip: Eisenskelett, Eisenbeton-Zwischendecken, Fassadenausmauerung mit gebrannten Hohlsteinen, hintermauert mit Gipsdielen. Die Fassaden sind konstruktiv von den Zwischendecken getrennt. Das zurückgesetzte Dachgeschoss besteht aus Holz mit einer äussern Eternitverkleidung. Zur Fertigstellung des Äussern sind ausschließlich Materialien mit unterhaltsloser Oberfläche verwendet worden: Edelputz (weisser Zement, Natursteinpartikeln, ohne Farbbeigabe); Eternit für Rolladenkasten, Brüstungen, Sonnen-Storen-Verdach und Dachgeschoßaufbau; fachierles Holz für Rolladen und Garagentore; Kupfer für sämtliche Spenglerarbeiten; feuerverzinktes Eisen für Fensterbleche, Geländer. Gestrichen sind lediglich die Fenster und gewisse Metallteile aus architektonischen Gründen.

Fensterflächen: Horizontal-Schiebefenster in Föhrenholz in den Wohnungen. Grösse des Normalfensters 310 × 120 cm, zusammengebaut mit dem Rolladenkasten; fester Teil einwärts klappbar zum Reinigen. Die Südfenster des Wohnraumes sind mit der Brüstung zusammengebaut (vgl. [21], [22], [23]). Die Küchenfenster sind doppelt, die übrigen Fenster am Bau sind einfach verglast. Die Ateliers haben durchgehende 45 cm hohe Oberlichter unter der Decke mit Lüftungsklappen, sowie gewisse fest verglaste Fenster mit normaler Brüstung. Verglasung: Wohnungsfenster Spiegelglas 6/7 mm, Atelier-Oberlichter Rohglas, Treppenhausfenster Drahtglas. Sonnenschutz: für die Wohnzimmerfenster vor die Fassade gehängte Sonnenstoren [21] (14), für die Schlafzimmer Roll-Jalousien. Heizung: Jedes Haus hat seine eigene Warmwasserheizung für Kleinkaliberöfen, die gleichzeitig für die Warmwasserbereitung benützt wird. Pro Haus ein Warmwasserboiler mit 1000 Liter Inhalt.

Wohnungsausstattung: Die beiden Häuser sind für anspruchsvolle Mieter, jedoch ohne Luxus ausgestattet. Die Zimmer sind dementsprechend geräumig dimensioniert (Wohnraum 35,00 m², Terrasse 20,00 m²). Die Skeletkonstruktion erlaubt jederzeit eine den Wünschen der Mieter entsprechende Variabilität des Grundrisses. Im Wohnraum befindet sich ein offener Kamin und ein breites Fensterbrett für Blumen. Eingebaute Schränke im Korridor, in den Zimmern, kleiner Abstellraum. Fussböden: In den Wohnungen Holzmosaik (Esche im Wohnraum, Eiche in den übrigen Räumen und im Korridor).



16. Teilansicht von Südwest mit Eingang und Garagen

In den Küchen sind Steinzeugplatten, versuchsweise Linoleum; in den Bädern Terrazzo, schwarz, mit weissen Marmorkörnern. Die Treppentritte und Podeste bestehen ebenfalls aus Terrazzo (Tritte fertige Platten, Podeste im Bau gegossen und geschliffen). Die Stirnseiten der Tritte und die Sockel sind mit weissen, hartglasierten Platten belegt [14]. Die Böden der Ateliers sind mit hellgrauem Linoleum belegt. Wandbehandlung: Gipsverputz in sämtlichen Räumen, Kalkabrieb in Küchen, Bädern und Aborten. Die Wände der Zimmer sind, mit Leimfarbe gestrichen, mit Ausnahme derjenigen in den Wohnräumen und Gängen (tapeziert mit Grundpapier und Leimfarbanstrich, oder Ölfarbanstrich auf Stoffbespannung). In den Ateliers Verkleidung der Wände in Holzkonstruktion mit Sperrplatten (gewachste fenische Birke).
Im Treppenhaus: Aussenwand stoffbespannt, mit Ölfarbe gestrichen, mittlere Brüstungswand gespachtelt und Hochglanz mit Ripolin gestrichen; der Handlauf in Eisen, im Feuer weiss emailliert. Fensterbänke: Diese bestehen in allen Räumen der Wohnungen aus perforierten, 3 cm starken Schieferplatten. Ausstattung der Bäder und Küchen: Grösse des Bades in den Wohnungen 6 m² mit Badwanne, Bidet und zwei Lavabos, W.C. Der Spiegel über den Lavabos ist gegen die festverglaste Fensterfläche gehängt (Licht auf das Gesicht). Die Küchen sind vollständig ausgestattet, je eine Durchreiche ins Treppenhaus und in den Wohn-Essraum, zweiteiliger Aufwaschtisch in Chromnickel-Stahlblech, Kühlschrank, Arbeitsflächen in Ahornholz. Elektrische Beleuchtung: Diese ist in allen Wohn- und Schlafräumen, Gängen, Küchen, Ateliers eine indirekte.

Ökonomische Angaben
Die beiden Häuser sind Privatbesitz von Herrn Dr. S. Giedion, Zentralsekretär der Internationalen Kongresse für Neues Bauen. Die Baukosten inkl. Architektenhonorar betragen: 43,5 Maurerstunden pro m³ umbauten Raumes bei total 1985 m³ pro Haus, offene Halle im Parterre zur Hälfte gerechnet. Die durchschnittlichen Baukosten für normale Wohnbauten in Zürich, ohne besonderen Ausbau, betragen 38 bis 40 Maurerstunden pro m³ umbauten Raumes. (1 Std.=Fr. 1.72 1935/36)

Ästhetischer Aufbau
Die Schrägstellung der Blöcke ergibt einerseits eine lockere Gesamtanlage und erhöht anderseits deren plastische Selbständigkeit. Der zweigeschossige Charakter der Häuser (Baubestimmung der betreffenden Zone) wird durch das Loslösen des Baukörpers vom Terrain und durch das Zurückweichen des Dachgeschosses gewahrt. Dieser Eindruck wird verstärkt durch die vom Hauptbau abweichende Konstruktion des Dachgeschosses (Holz und Eternit). In der Südfassade ist durch Weglassen der gemauerten Brüstungen ein äusseres Zusammenlassen von Wohnraum und Wohnterrasse erreicht. In der räumlichen Gliederung treten vielfach schräg verlaufende Wände auf, wodurch eine gewisse Auflockerung der Rechtwinkligkeit erreicht wird. Die Eingangshalle ganz in Glas hat eine freie Form und lässt den Durchblick in den rückwärtsliegenden Park frei.
Der Garten reicht über die weitergeführten Gartenplatten (Granit) bis zum Treppenaufgang. In den Wohnräumen und Ateliers reichen die Fenster bis zur Decke, in den Schlafräumen ist ein Sturz von 40 cm. In der Dimensionierung von Bauteilen und Ausstattungsdetails ist eine dem betreffenden Material entsprechende Sparsamkeit sowie eine organische und gepflegte Formgebung beobachtet worden.
Materialbehandlung und Farbgebung: Aussen wirken die Baustoffe in ihrer natürlichen Struktur und Farbe: Edelputz (weisser Zement mit roten, schwarzen und glimmernden Steinsplittern), Eternit, lackiertes Holz, Eisenteile feuerverzinkt, mit Aluminiumfarbe gestrichen. Farbe an folgenden Stellen: Fensterrahmen dunkelgrau, Geländerrohre, Abdeckbleche weissgrau, die sichtbaren Kellermauern und Säulen sind normal verputzt und hellgrau gestrichen. Im Innern: Die Wände im Treppenhaus, in den Gängen und Nebenräumen sind weissgrau, ebenso das gesamte Holzwerk, Radiatoren, Leitungen. Die Wände der Wohn- und Schlafräume sind hell getönt (beige, rosa, hellblau, grau). Besondere farbige Akzente kommen weder aussen noch innen vor; es ist damit der wechselnden Bewohnung des Miethauses Rechnung getragen worden.

53 2 Mehrfamilienhäuser im Doldertal Zürich

DIE NEUE ARCHITEKTUR/
THE NEW ARCHITECTURE
Book, 1940
Designer: Max Bill
Author: Max Roth
Photograph: Dan Meyers

Designed by Max Bill in 1940, this book is considered the first use of a systematic, modular grid. Each image is sized to fit the column structure—as Jan Tschichold had predicted in 1928—filling one, two, or three zones. Acknowledging the originality of its layout, the author credits Bill as "the creator of the typographical structure of the book."

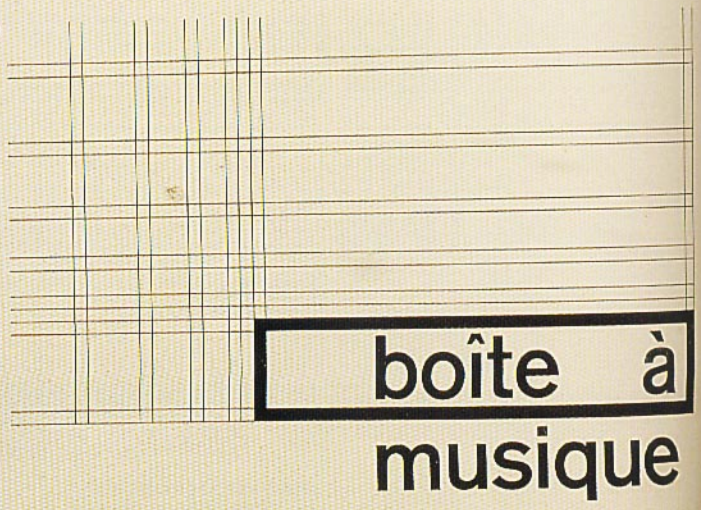
Der New-York-Times-Prospekt zeigt die Lösung einer komplexen Aufgabe; zeigt, wie eine Idee, ein Text und die typographische Darstellung über mehrere Phasen hinweg integriert werden. Darüber hinaus kann sich die Aufgabe stellen, Prospekte wie diesen wiederum mit andern Werbemitteln und Drucksachen zu integrieren. Denn heute brauchen Firmen mehr und mehr nicht bloss hier einen Prospekt, da ein Plakat, dort Inserate usw. Heute braucht eine Firma etwas anderes: Eine Physiognomie, ein optisches Gesicht.

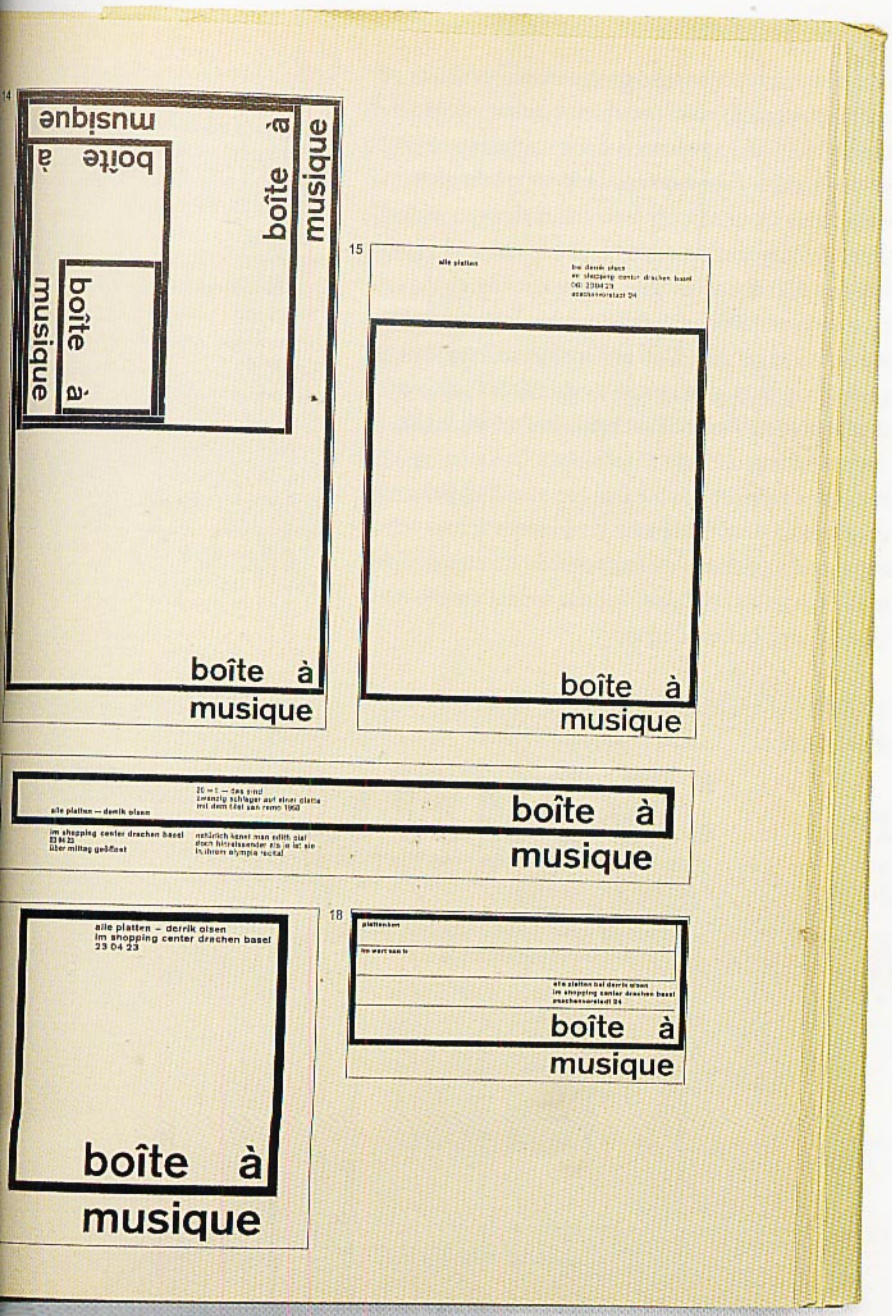
Die Beispiele dieser Seiten geben die Physiognomie der boîte à musique, eines Grammophongeschäfts in Basel, wieder. Die boîte à musique hat ein Signet und einen firmeneigenen Stil – und doch wieder nicht, wenn man unter dem einen ein starres, nachträglich überall dazugesetztes Zeichen und unter dem andern ein bloss ästhetisches Prinzip versteht. Vielmehr: Die einmal definitiv festgelegten, aber jeweils den verschiedenen Funktionen und Proportionen angepassten Elemente selber bilden das Signum und den Stil in einem.

Abbildung 13 zeigt die Struktur. Fixiert sind die Elemente Schrift und Rahmen; ferner die Verbindung von beiden und das Prinzip der Variabilität: der Rahmen kann, ausgehend von der Ecke unten rechts, nach oben sowie nach links beliebig um ganze Einheiten vergrössert werden. Einen in sich proportional hervorragenden Fall gibt es nicht. Es gibt nur wertgleiche Varianten; und hervorragend ist die Variante dann, wenn sie der jeweiligen Aufgabe am besten angemessen ist.

Abbildung 14 zeigt die Neujahrskarte mit gleichzeitig verschieden proportionierten Varianten; 15 den Briefbogen, wo das Signum dem (gegebenen) Din A4 Format angepasst ist; 16 und 17 Inserate, wieder entsprechend dem zur Verfügung stehenden Insertionsraum bemessen; 18 ein Geschenkbon.

13





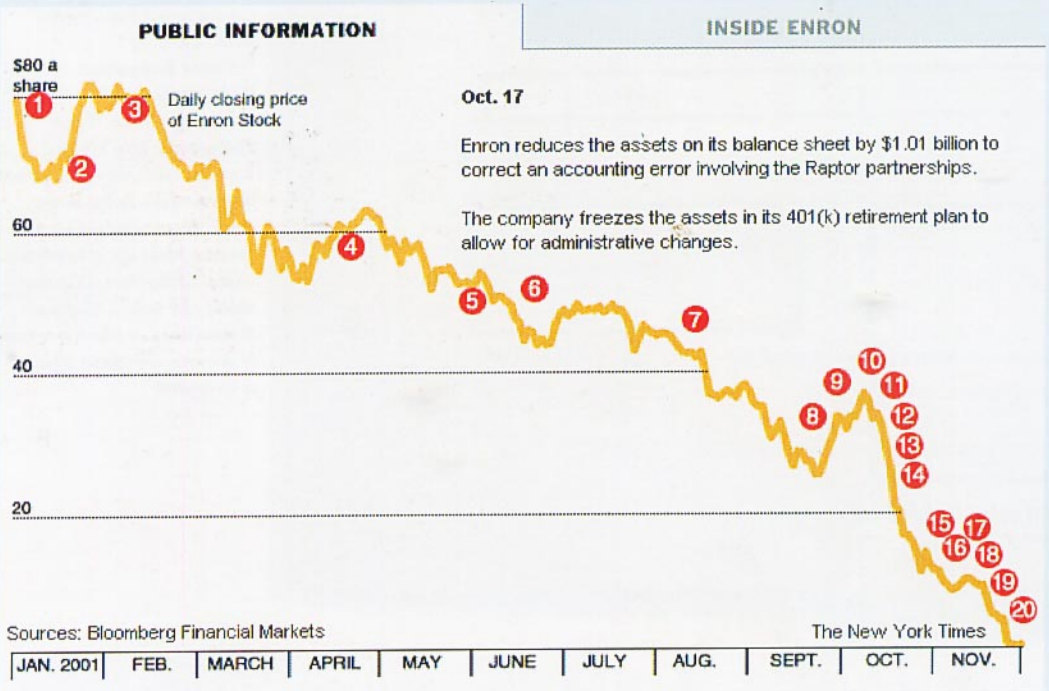
PROGRAMME ENTWERFEN (DESIGNING PROGRAMS)
Book, 1964
Designer and author: Karl Gerstner
Publisher: Arthur Niggli
Photograph: Dan Meyers
Karl Gerstner's book Designing Programs *is a design theory classic whose relevance has been renewed in the age of networked media. Shown here is Gerstner's identity for Boîte à Musique (Music Box), in which a system of elements changes in response to its context.*

GRID AS TABLE

Tables and graphs are a variant of the typographic grid. A table consists of vertical columns and horizontal rows, each cell occupied by data. A graph is a line mapped along the *x* and *y* axes of a grid, each dimension representing a variable (such as time and stock value, shown below). As explained by Edward Tufte, the leading critic and theorist of information design, tables and graphs allow relationships among numbers to be perceived and rapidly compared by the eye. In tables and graphs, the grid is a cognitive tool.

Tables are a central aspect of Web design.The table feature was incorporated into HTML code in 1995 so that Web authors could present tabular data. Graphic designers, eager to give shape to the Web's wide and flacid text bodies, quickly devised unauthorized uses for the HTML table, transforming this tool for representing data into nothing more nor less than a typographic grid. Designers have used the table feature to control the placement of images and captions and to build margins, gutters, and multicolumn screens. Designers also use tables to combine multiple styles of alignment—such as flush left and flush right—within a document, and to construct elegantly numbered and bulleted lists.

COLLAPSE OF ENRON (BELOW)
Interactive information graphic, 2002
NYTimes.com; courtesy of The New York Times
This on-line data graphic links a timeline of events leading to the financial collapse of the Enron Corporation with a graph of the company's stock price. As the user's cursor passes over each red circled number, text appears describing an event that occurred at that time. For example, in October the company's CEO froze his employees' 401(k) retirement funds as the company's stock was plummeting.



On the aesthetics and ethics of information design, see Edward Tufte, *Envisioning Information* (Cheshire, Conn.: Graphics Press, 1990).

By creating cells that span multiple columns and rows, designers build layout structures that bear little relation to the logically ordered fields of a data chart. A master table typically establishes areas for navigation, content, and site identity, and each region contains a smaller table—or tables—inside itself. Grids propagate inside of grids.

On designing accessible Web sites, see Patrick Lynch and Sarah Horton, *Web Style Guide: Basic Design Principles for Creating Web Sites* (New Haven: Yale University Press, 2001). See also the site www.webstyleguide.com.

HTML purists reject such workarounds as spurious, even unethical, design tactics. Visually driven, illogical layout tables can cause problems for sight-impaired users, who implement various devices to translate digital pages into sound, cell by cell, row by row. Assistive screen readers "linearize" digital text into a stream of spoken words. Accessibility experts encourage Web designers to "think in linear terms" wherever possible, and to make sure their tables make sense when read in a continuous sequence. Accessible Web sites also consider the needs of users working with older software or text-only browsers. Linear thinking helps not only non-sighted audiences but also the users of cell phones, hand-held digital appliances, and other devices where space is tight and text is dominant.

MICA.EDU
Web site, 2004
Designers: Carton Donofrio Partners
Publisher: Maryland Institute College of Art
HTML tables, with their borders gently expressed, are an element of this neatly gridded Web page.

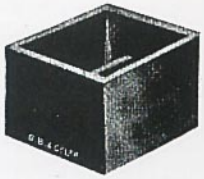
BEYOND HTML

HTML, the technology that allowed the Internet to become a global mass medium, is the virtual counterpart to letterpress, which mechanized the production of the book and cleared the ground for a world culture of print. Like letterpress, HTML is a text-hungry medium that can be coaxed, with some resistance, to display images. It is fundamentally driven by text, from its open, readable source code to the type of content it is designed to display.

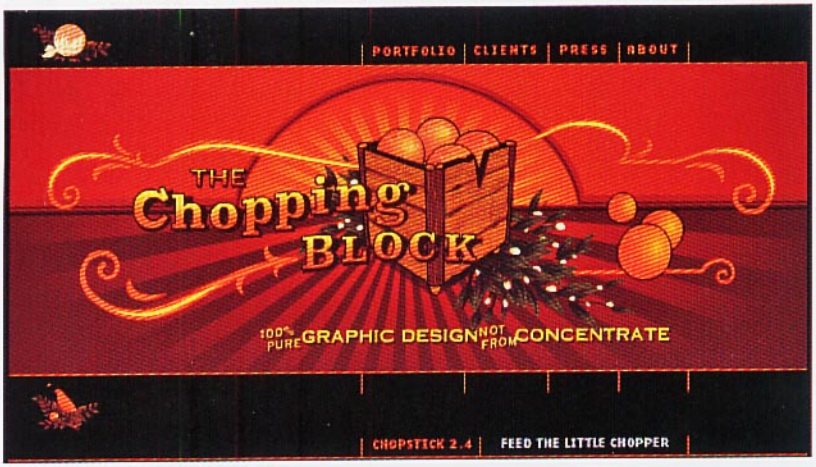
HTML coexists with other languages on the Web, just as alternative technologies appeared alongside letterpress. Lithography, invented for the manufacture of images in the eighteenth century, quickly became an advertising medium that incorporated words as well as pictures, just as letterpress made space in its mechanical grid for woodcuts, engravings, and photographic halftone blocks. In the twentieth century, lithography replaced letterpress as the world's dominant printing method; used with digital or photographic typesetting, it conveys text and pictures with equal comfort.

Lithography is not governed by grids as relentlessly as letterpress; neither is Macromedia Flash, the animation software that became a common Web-design tool. Flash was originally designed for the creation of vector-based cartoons. Although its primary purpose was pictorial, it is now used to construct the interface and content, both graphic and textual, of entire Web sites.

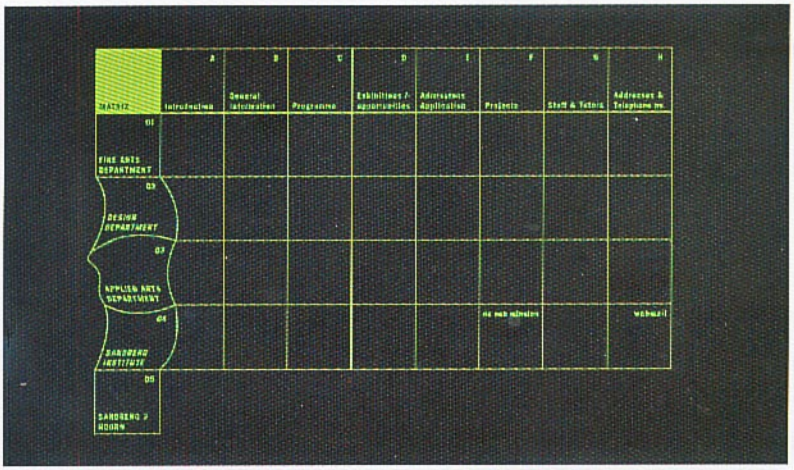
Although Flash scripting manipulates objects in a field of x and y coordinates, the sites created with this technology often appear less tightly controlled by grids than the tabulated pages of HTML. The Flash sites that became, in the late 1990s, icons of a new Web aesthetic are more cinematic than typographic, and often feature a painterly mix of word and image.

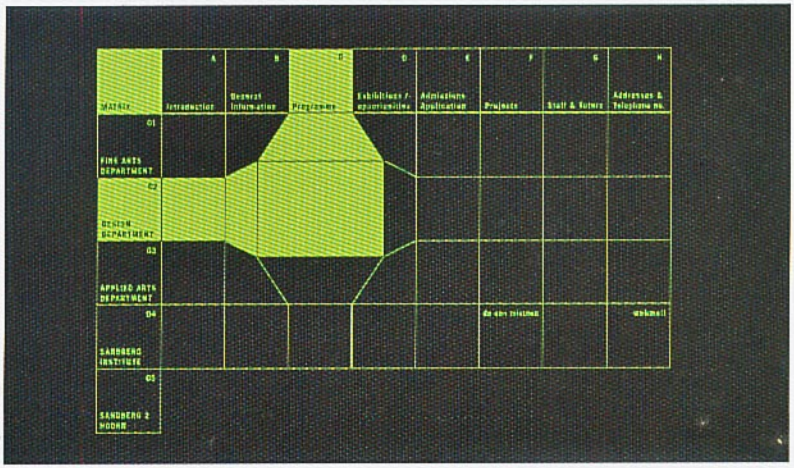


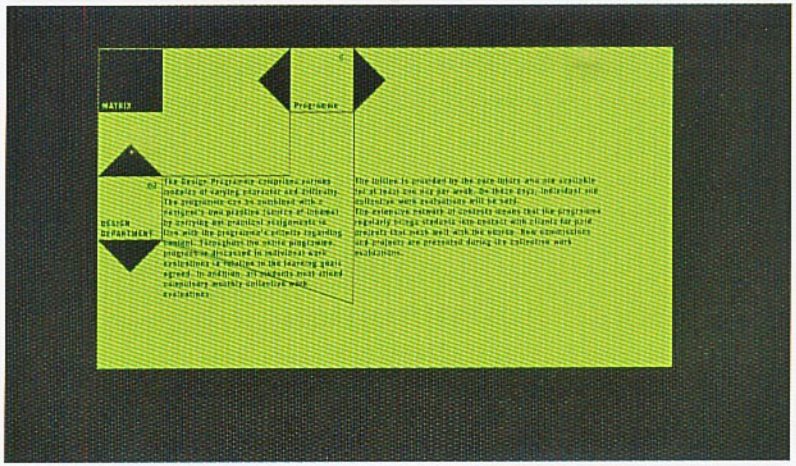
Hand-coding HTML is as slow and deliberate as setting metal type. Empty table cells are used to out areas of open space, but HTML makes these collapse if the cells are truly empty, causing the grid to implode. The transparent images that often fill these spaces are virtual equivalents to the blank spacing material of metal type.



THE CHOPPING BLOCK
Web page (detail)
Designers: Thomas Romer, Jason Hillyer, Charles Michelet, Robert Reed, and Matthew Richmond, The Chopping Block
This Web site reprises the design of early twentieth-century fruit-crate labels, which were produced as lithographic prints that merge text and image. The Web page is animated, loading elements over time.







WWW.SANDBERG.NL
Web site, 2003
Designer: Luna Maurer
Publisher: Sandberg Institute
The grid is a navigation device that warps and changes as the user rolls over it. The vertical axis represents departments in the school, and the horizontal axis represents types of program information. As the user passes over the grid, cells fill with light and appear to lift away from the screen, indicating the availability of information at that intersection.

WILLIAM GIBSON'S 1984 NOVEL *Neuromancer* envisions cyberspace as a vast ethereal grid. Gibson's data cowboy leaves behind the "meat" of his body and drifts off into a "transparent 3D chessboard extending to infinity." The image of this grid is projected on an internal surface of the mind, bound by no screen or window.

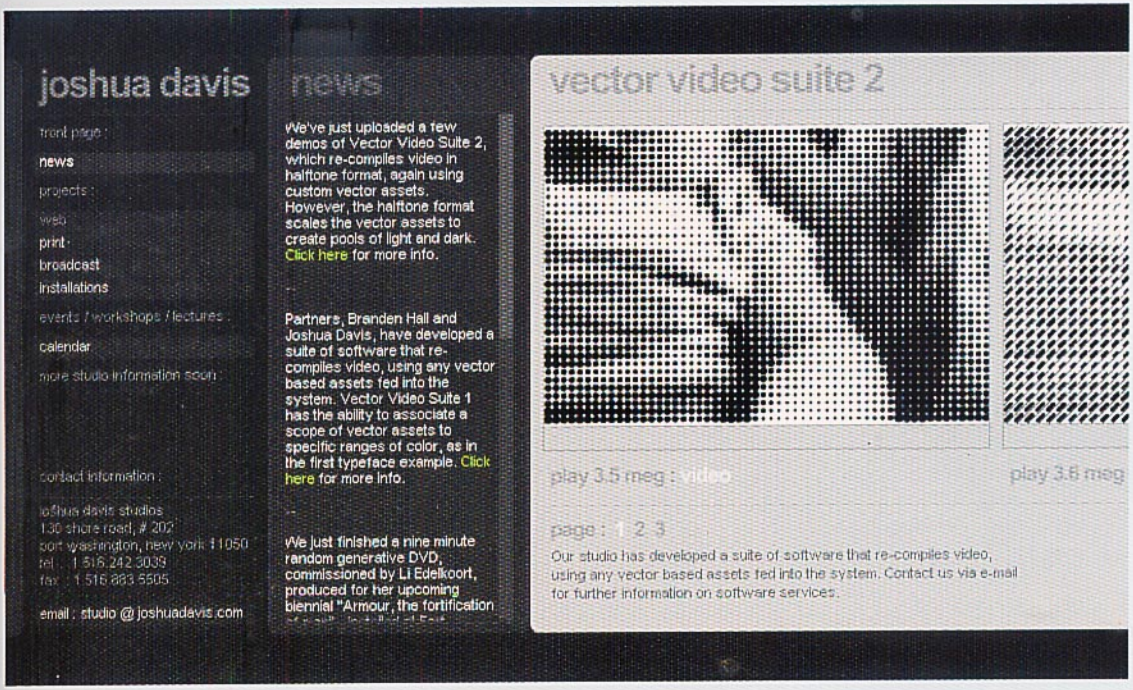
The grid as infinite space—defying edges and dominated by mind rather than body—is a powerful instrument within modernist theory, where it is a form both rational and sublime. In the early twentieth century, avant-garde designers exposed the grid in order to dramatize the mechanical conditions of print. After World War II, Swiss designers built a total design methodology around the grid, infusing it with ideological intention. The grid was their key to a universal language. With the postmodern turn toward historical, vernacular, and popular sources in the 1970s and 1980s, many designers rejected the rationalist grid as a quaint artifact of Switzerland's own orderly society.

The rise of the Internet has rekindled interest in universal design thinking. The Web was invented in the early 1990s (in Switzerland) to let scientists and researchers share documents created with different software applications. Its inventor, Tim Berners-Lee, never guessed it would become a design-driven medium connecting vast numbers of differently abled and divergently motivated people around the globe.

Universal design systems can no longer be dismissed as the irrelevant musings of a small, localized design community. A second modernism has emerged, reinvigorating the utopian search for universal forms that marked the birth of design as a discourse and a discipline nearly a century earlier. Against the opacity and singularity of unique visual expressions—grounded in regional preferences and private obsessions—ideas of commonality, transparency, and openness are being reborn as information seeks to shed its physical body.

On the invention of the Web, see Tim Berners-Lee, *Weaving the Web* (New York: HarperCollins, 1999). For a contemporary account of universal design thinking, see William Lidwell, Kritina Holden, and Jill Butler, *Universal Principles of Design* (Gloucester, Mass.: Rockport Publishers, 2003). See also William Gibson, *Neuromancer* (New York: Ace Books, 1984).

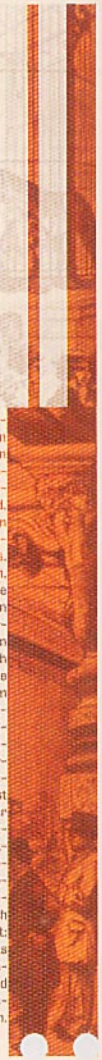
To produce designs that are objectively informative is primarily a socio-cultural task. Josef Müller-Brockmann, 1961



JOSHUADAVIS.COM
Web site, 2004
Designed by Joshua Davis
The anonymous coolness of "old school" Swiss rationalism resurfaced in Web design, as seen in the use of flush left, lowercase Helvetica and consistent grid systems.

Flash guru Joshua Davis, who designs serene screen layouts with scripted animations, is a leader in this return to the rational roots of mid-century graphics, now inflected with the voice of new media.

wild wirkende, dem Lenneschen Ideal folgende, baumreiche Naturgarten weicht englischen Rasenflächen, die sich mit nur noch wenigen Baum- und Strauchgruppen und gepflegten Blumenbeeten abwechseln. Mit dieser Veränderung, so der dritte Direktor des Zoos, Heinrich Bodinus, soll es möglich werden, den belebenden und erwärmenden Strahlen der Sonne Zutritt zu verschaffen. Anders als zuvor finden sich in den Berliner Zeitungen nun immer häufiger positiv gefärbte Erlebnisberichte. Vorläufiger Höhepunkt und nicht zu unterschätzender rite de passage für die breite Anerkennung des Gartens war das DREI-KAISER-TREFFEN im Herbst 1872: Kaiser Wilhelm, Kaiser Alexander II. von Rußland und Kaiser Franz-Joseph von Österreich-Ungarn werden in einem zwanzig Wagen umfassenden Zug über das Zoogelände kutschiert. Obwohl der Zoo zu dieser Zeit noch außerhalb der Stadt gelegen ist, ist dessen neuartige Gestaltung schon ein Zeichen dafür, daß die preußische Hauptstadt um die Anbindung an die Kultur der großen europäischen Metropolen bemüht ist. Die Bevölkerungszahl Berlins steigt mit der industriellen Entwicklung jener Jahre erheblich, und dem Zoo kommt (neben den Stadtparks) zunehmend ein Erholungswert zu, der durch eine Reihe von technischen Neuerungen gesteigert werden kann: eine Dampfmaschine sorgt für Wasserzirkulation und verwandelt die früher im Sommer übelriechenden Gewässer des Gartens in belebte Weiher. Hinzu kommt die Erleichterung von An- und Abreise. Ab 1875 verbindet eine Pferdebahnlinie Berlin mit dem Zoo. Im Jahre 1884 folgt die Installation elektrischer Beleuchtung, die eine Ausdehnung der Öffnungszeiten bis in die Abendstunden zuläßt. Kinderspielhallen und -plätze werden eingerichtet. Wo sonst könnten sie sicher vor dem Getümmel der Weltstadt in frischer Luft ihre Glieder üben und ihre Lungen weiten? heißt es im Programmheft des Jahres 1896. || Der Zoo entwickelt sich deutlich zu einem integralen Bestandteil der städtischen Kultur. Anders als in den Stadtparks — etwa dem Humboldthain — stellt hier der Eintrittspreis sicher, daß die das Vergnügen schmälernden Obdachlosen und Bettler vor den Toren bleiben. Zoofreunde werben um die Gunst von Kolonialoffizieren, die helfen sollen, die Tierbestände zu erhöhen und die in der Folge tatsächlich zunehmend als Donatoren fungieren. Forschungsreisen und Expeditionen in viele Regionen der Erde — häufig unter maßgeblicher Regie der Zoodirektoren — führen zur Entdeckung bislang unbekannter Tierarten. Die intensive Kooperation von Zoo und Naturkundemuseum setzt sich fort, so daß der Bestand des Museums 1894 auf etwa 2 Mio. Tiere, darunter etwa 150 000 Wirbeltiere, angewachsen ist. || Der Berliner Zoo wird in den letzten Jahrzehnten des 19. Jahrhunderts zu einem repräsentativen Treffpunkt und zu einem Raum, in dem sich preußische Mentalität wenn auch nicht aufhebt, so doch relativiert. Fremdartige Tierwelt und eine Architektur des Orient, des Fernen Osten und der Savannen, verbindet sich, in einiger Entfernung vom hektischen und geschäftigen Leben der Stadt, zu einem den Stadtbewohnern bis dahin unbekannten Ambiente. Hier entwickelt sich Natur zum Unterhaltungsgegenstand. Die von Zirkussen, Menagerien und Märkten bekannten sensationellen und theatralischen Aspekte gehen mit dem zoologischen Erkenntnisinteresse eine eigenartige Symbiose ein. Getragen wird diese Entwicklung nicht zuletzt von ökonomischen Zwängen: immer wieder kämpft die Zoogesellschaft um ihre Existenz. || Der Zoo wird zu einem der Plätze der Stadt, wo sich Vorahnungen einer noch in Entwicklung begriffenen Weltstadt am ehesten materialisieren; kein Wunder, daß immer deutlicher auch Künstler und Gelehrte sich von diesem Raum angezogen fühlen. Neben einer Musiktribüne hilft ein erweiterter Restaurationsbetrieb den Aufenthalt in den meist nur unzureichend belüfteten Gebäuden aufzulockern. Ein Zeitgenosse beschreibt diese Bereicherung: Durch das neue Restaurationslokal ist die Zahl der großen Festsäle um ein Meisterwerk der Baukunst vermehrt worden. Wenn hier eine vortreffliche Militärkapelle ein Concert ausführt, dann bildet, in Folge des erhöhten Eintrittspreises, die elegante Welt die Mehrzahl der Besucher. Draußen dehnt sich eine lange Reihe Equipagen bis in die Winkel des Thiergartens; drinnen sind alle Plätze im weiten Umkreise des muschelförmig gebauten Orchesters besetzt; beim Klange der Instrumente, beim Geplätscher der Fontänen sitzt man, sich erfrischend, rauchend, plaudernd und scherzend unter den schattigen Bäumen und blickt in das abwechselnde, stets rege Thierleben hinaus, wie es sich in den benachbarten Grotten, auf Aesten und Teichen kund giebt. || Die Auswahl der Tiere und der Situationen, in denen sich ihre Präsentation bewegte, erfolgt sorgfältig und bedacht, die Kuratoren entscheiden sich für besonders exotisch wirkende, kuriose, lächerliche, niedliche Tiere. Dabei gilt es stets, die Konfrontation mit potentiell Abscheu oder starkes Befremden erregendem tierischem Verhalten zu verhindern. || Die zunehmende Popularität der Zoos korrelliert mit dem Verschwinden von Tieren aus dem Alltagsleben des städtischen Menschen. Das Tier ist entweder Haustier, also Mitbewohner der Wohnung, oder drastisch auf seine Rohstoffunktion reduziert und fristet in fabrikartigen Hallen abseits der Städte sein ökonomisch optimiertes Dasein. Mit den zoologischen Gärten beginnt ein Verdrängungsmechanismus, der sich später auch auf Naturparks und Reservate erstreckt: die Gefangenschaft erscheint angesichts der systematischen Zerstörung der Lebensräume als ein Schutz der Natur und dient dazu, das unterschwellig vorhandene schlechte Gewissen zu beruhigen.



J. R. Springer: Berlin: Die deutsche Kaiserstadt. Leipzig: Berlin, 1877.
Die Weltausstellungen, die Gründerzeit und die Entstehung der ersten monumentalisierten Gärten. Kaum ein Ereignis der Gründerzeit hat eine stärkere Entwicklung gewonnen als die Weltausstellungen. Sowohl Weltausstellungen, als auch nationale Ausstellungen, die zum Teil Weltausstellungen ähnelten, waren Ausdruck des Wettbewerbs der Nationen, die immer wieder ihre Erzeugnisse, die immerhin ein Produkt der gesamten technischen Kräfte auf der Erde darstellten, in die traditionelle Ausstellung, um einem Grundgedanken folgend, die Fortschritte der Menschheit zu demonstrieren. Nach einer Idee von Prince Albert, Alexander Pope und Henry Cole, wurde 1851 in London der Crystal Palace für die Ausstellung errichtet. Vgl. Alan Wallach: The Origins of Artificial Nature: The American Landscape from Downing to the Fairchild Tropical Garden. In: Ders.: Exploring Urban History. Washington/London 1997, Seite 233 ff.

architektur

Franz Hesse erinnert sic in seinen Beobachtungen berlinischen Le bens an die merkwürdigen Behausunge der Tiere: Liebt das Zebra sein afrikani sches Gehöft, der Büffel sein Borkenpa lais?[1] Die Steine von Bärenzwinger, Vogel haus und Löwenheim deutet Hessel al Baukastensteine, der Zoo wird in seiner In terpretation zur natürlichen Fortsetzun einer Kinderstube und einem Ort, wo di vorzeitlichen Tierkulte Gelegenheit haber wiederaufzuleben. F. Lichterfeld bezieh sich in einem Artikel der ILLUSTRIERTEN ZEI TUNG von 1873 auf die anfänglich vorhanden Verwunderung der Stadtbewohner ob de neuen, ungewohnten Bauwerke: »Was solle diese Thürme mit der flammenden Sonn und den phantastischen Drachen- und Ele fantenbildern in einer christlichen Stad wie Berlin?« Diese Frage wurde früher häu fig aufgeworfen, zumal von Landleuter welche ihr Weg nach der Stadt an der fremden Heidentempel vorüberführte. Jetzt weiß jedermann in und um Berlin, daß der fremde Heidentempel das neue Elefantenhaus ist. [...] Nicht diesen, sondern dem Publikum zulieb wurde der Neubau so reich ausgestattet, denn selbst dem Elefanten ist eine Portion Moorrüben oder ein Bund Heu lieber als der ganze architektonische und musivische Schmuck seines neuen Hauses, und nun gar erst dem Rhinoceros! || Die stilistische Gestaltung der Bauten steht offensichtlich auch in Zusammenhang mit der Einbindung der zoologischen Gärten in kolonialistische Zusammenhänge. Die Repräsentation fremdkultureller Elemente erlaubt Rückschlüsse auf die Konturen eines rudimentär entwickelten Kosmopolitismus. Das Einbringen von Elementen aus anderen Kulturzusammenhängen markiert den Wandel vom systematischen zum geographisch orientierten Zoo. Wichtigen Einfluß auf die Idee, Tiere in einem baulich-stilistischen Rahmen zu zeigen, der gewisse Zusammenhänge zur Ethnographie der Heimatlandschaften aufweist, hatte der Zoologe Philipp Leopold Martin. In seinem 1878 in Leipzig erschienenen Kompendium DIE PRAXIS DER NATURGESCHICHTE — er maßte sich an, es als vollständiges Lehrbuch über das Sammeln lebender und toter Naturkörper zu bezeichnen — rationalisiert Martin dieses Vorgehen als ethnographisch-architektonische Belehrung: Was ist aber nun wohl natürlicher und zugleich lehrreicher, als die Natur in unseren Gärten nach Welttheilen, Zonen und lokalen Verhältnissen aufzustellen? [...] Der Wisent verlangt Wald und der Buffalo die Prairie; und wenn wir dieses thun und in die Prairie noch einen Wigwam als Stall hinsetzen, so belehren wir damit zugleich das Publikum, denn es erhält Bilder, die es niemals vergißt.[2] Die fremdkulturelle Architektur der Stilbauten — auch wichtiger Bestandteil der großen Weltausstellungen in dieser Phase — wird jeglicher zeitlicher Entwicklung enthoben. Zoodirektor Ludwig Heck schreibt rückblickend im Jahre 1929: Man denke nur, wenn wir

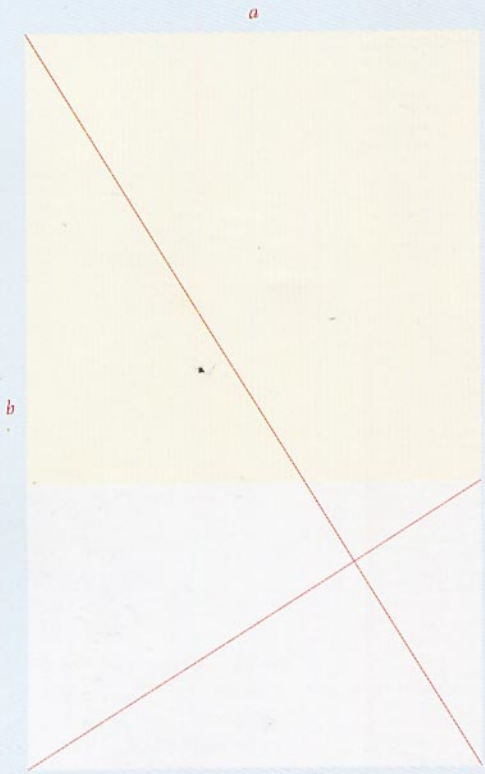
1 Franz Hessel Spaziergang in Berlin Berlin 1929, Seite 142
2 Marie-Claire Lynch und Ursula Kils: Der Berliner Zoo im Spiegel seiner Bauten von 1869. Eine Ausgewählte Liste der denkmalpflegerischen Dokumentation. Berlin 1980 Auszüge aus dem Kompendium DIE PRAXIS DER NATURGESCHICHTE von Philipp Leopold Martin. Ausführungen über die Architektur stützen sich partiell auf diesen Band

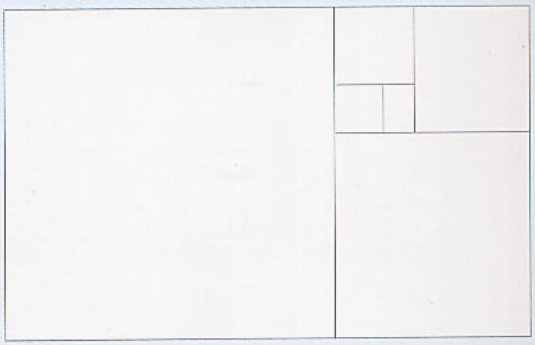
FORM + ZWECK 27

· Journal

Designers: Cyan, Berlin

In the pages of this experimental journal, compact columns of justified text are pushed to the outer margins. By marking paragraphs with symbols rather than indents and line breaks, the designers have maximized the density of the text field. Running heads, page numbers, and images are narrow channels cut into a solid wall of text. Footnotes are also treated as justified blocks, turned 90 degrees against the grain of the page.





The golden section, which appears in nature as well as in art and design, has many surprising properties. For example, when you remove a square from a golden rectangle, the remainder is another golden rectangle, a process that can be infinitely repeated to create a spiral.

No book about typography would be complete without a discussion of the *golden section*, a ratio (relationship between two numbers) that has been used in Western art and architecture for more than two thousand years. The formula for the golden section is

$$a : b = b : (a+b).$$

This means that the smaller of two elements (such as the side of a rectangle) relates to the larger element in the same way that that the larger element relates to the two parts combined. In other words, side *a* is to side *b* as side *b* is to the sum of both sides. Expressed numerically, the golden section is

$$1 : 1.618$$

Some graphic designers are fascinated with the golden section and use it to create various grids and page formats—indeed, entire books have been written on the subject. Other designers believe that the golden section is no more valid as a basis for deriving sizes and proportions than other methods, such as beginning from standard industrial paper sizes, or dividing surfaces into halves or squares, or simply picking whole-number page formats and making logical divisions within them.

A grid can be simple or complex, specific or generic, tightly defined or loosely interpreted. Typographic grids are all about control. They establish a system for arranging content within the space of page, screen, or built environment. Designed in response to the internal pressures of content (text, image, data) and the outer edge or frame (page, screen, window), an effective grid is not a rigid formula but a flexible and resilient structure, a skeleton that moves in concert with the muscular mass of content. Grids belong to the technological framework of typography, from the concrete modularity of letterpress to the ubiquitous rulers, guides, and coordinate systems of graphics applications. Although software generates illusions of smooth curves and continuous tones, every digital image or mark is constructed—ultimately—from a grid of neatly bounded blocks. The ubiquitous language of the GUI (graphical user interface) creates a gridded space in which windows overlay windows. In addition to their place in the background of design production, grids have become explicit theoretical tools. Avant-garde designers in the 1910s and 1920s exposed the mechanical grid of letterpress, bringing it to the polemical surface of the page. In Switzerland after World War II, graphic designers built a total design methodology around the typographic grid, hoping to build from it a new and rational social order. The grid has evolved across centuries of typographic evolution. For graphic designers, grids are carefully honed intellectual devices, infused with ideology and ambition, and they are the inescapable mesh that filters, at some level of resolution, nearly every system of writing and reproduction. A grid can be simple or complex, specific or generic, tightly defined or loosely interpreted. Typographic grids are all about control. They establish a system for arranging content within the space of page, screen, or built environment. Designed in response to the internal pressures of content (text, image, data) and the outer edge or frame (page, screen, window), an effective grid is not a rigid formula but a flexible and resilient structure, a skeleton that moves in concert with the muscular mass of content. Grids belong to the technological framework of typography, from the concrete modularity of letterpress to the ubiquitous rulers, guides, and coordinate systems of graphics applications. Although software generates illusions of smooth curves and continuous tones, every digital image or mark is constructed—ultimately—from a grid of neatly bounded blocks. The ubiquitous language of the GUI (graphical user interface) creates a gridded space in which windows overlay

Golden rectangle of text on 8.5 x 11-inch page (U.S. standard)

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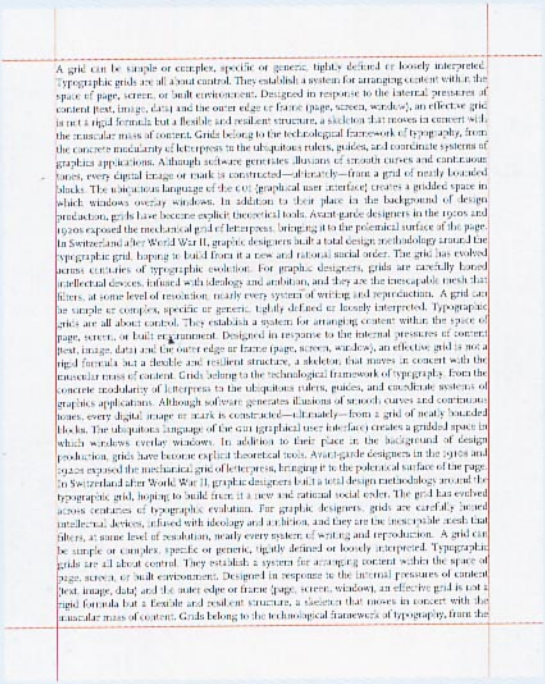
Golden rectangle of text on A4 page (European standard, 210 x 297 mm)

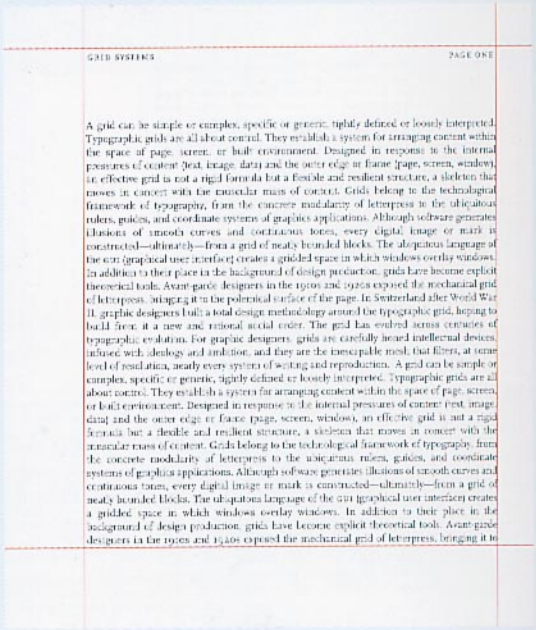
Commercial printers generally prefer to work with pages trimmed to even measures rather than with obscure fractions. However, you can float golden rectangles within a page of any trim size.

For a more detailed account of design and the golden section, see Kimberly Elam, *Geometry of Design* (New York: Princeton Architectural Press, 2001). For an emphasis on applying the golden section to typography, see John Kane, *A Type Primer* (London: Laurence King, 2002).

It may well be absurd to base a Web site on the golden section, but here, nonetheless, is a design for one. This wire frame diagram describes a Web page that is 500 x 809 pixels. The "golden screen" is then divided with squares and golden rectangles.



This standard, 8.5 x 11-inch page has even margins all the way around. It is a highly economical, but not very interesting, design.

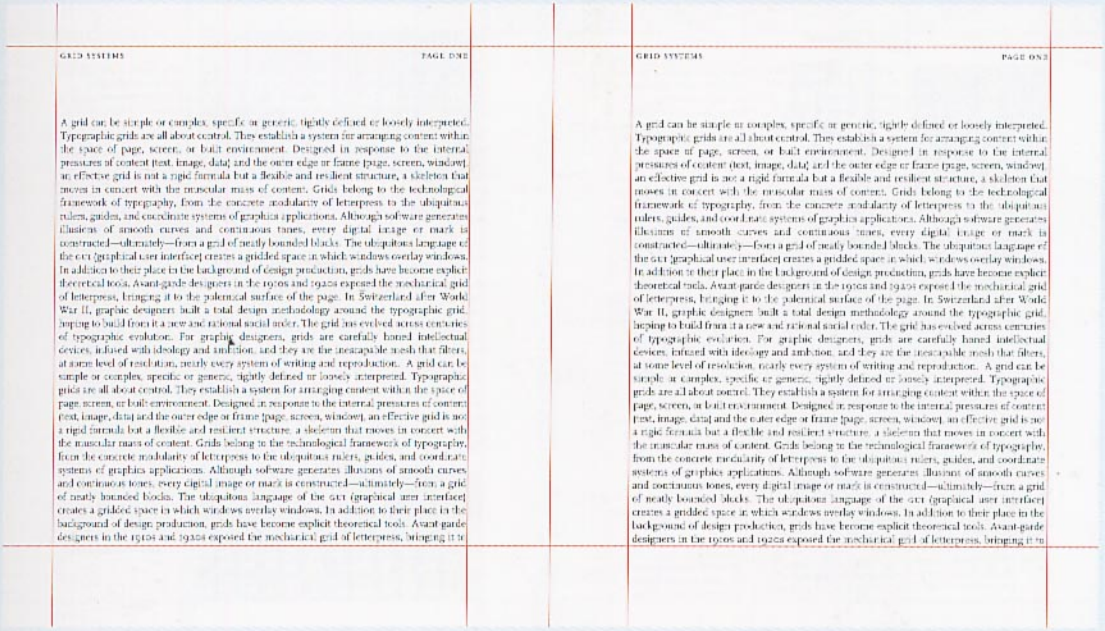


This page is an inch shorter than a standard US office sheet. The text block is a square, leaving margins of varying size.

Every time you open a new document in Quark XPress or Adobe InDesign, you are prompted to create a grid. (Microsoft Word, on the other hand, doesn't ask; it just makes a grid for you.) The simplest grid consists of a single column of text surounded by margins.

By asking for page dimensions and margin widths from the outset, layout programs encourage you to design your page from the *outside in*. (The text column is the space left over when the margins have been subtracted.)

Alternatively, you can design your page from the inside out, by setting your margins to zero and then positioning guidelines and text boxes on a blank page. This allows you to experiment with the margins and columns rather than making a commitment as soon as you open a new document. You can add guidelines to a master page after they meet your satisfaction.



In this symmetrical double-page spread, the inside margins are wider than the outside margins, creating more open space at the spine of the book.

Books and magazines should be designed as *spreads* (facing pages). The two-page spread, rather than the individual page, is the main unit of design. Left and right margins become inside and outside margins. Page layout programs assume that the inside margins are the same on both the left- and right-hand pages, yielding a symmetrical, mirror-image spread. You are free, however, to set your own margins and create an asymmetrical spread.

In this asymmetrical layout, the left margin is always wider than the right margin, whether it appears along the inside or outside edge of the page.

There are numerous ways to use a basic column grid. Here, one column has been reserved for images and captions, and the others for text.

In this variation, images and text share column space.

While single-column grids work well for simple documents, multi-column grids provide flexible formats for publications that have a complex hierarchy or that integrate text and illustrations. The more columns you create, the more flexible your grid becomes. You can use the grid to articulate the hierarchy of the publication by creating zones for different kinds of content. A text or image can occupy a single column or it can span several. Not all the space has to be filled.

Elements of varying width are staggered within the structure of the grid.

A horizontal band divides a text zone from an image zone. Elements gravitate towards this line, which provides an internal structure for the page.

In addition to creating vertical zones with the columns of the grid, you can also divide the page horizontally. For example, an area across the top can be reserved for images and captions, and body text can "hang" from a common line. In architecture, a horizontal reference point like this is called a *datum*.

Columns of text hang from a datum, falling downward with an uneven rag across the bottom.

Ifang Leisalpa
(Schloss),
2090 Meter

und verdichtet, wie dies im Betonbau üblich ist. Da der Beton bei diesem Vorgang die Vor- und Rücksprünge der Rückseite der Steinplattenwand umfliesst, entstand eine vorzügliche Verzahnung und Verbindung der beiden Materialien Kunststein (Beton) und Naturstein.

Allerdings konnten die Wände nicht in ihrer ganzen Höhe auf einmal hintergossen werden. Das musste in Höhenetappen von 50 cm erfolgen. Erst wenn der Beton einer Lage eine bestimmte Festigkeit erreicht und sich mit dem Mauerwerk verbunden hatte, konnte die nächste Lage von 50 cm darüber betoniert werden. Eine höhere Schüttmasse von flüssigem Beton hätte die freistehenden Steinplattenwände seitlich weggedrückt.

Insgesamt wurden für die Wände der Therme 450 m³ oder 1300 Tonnen Valser Quarzitplatten zu 3100 m² Wandfläche in 20 Schichten pro m² verarbeitet. Die Länge aller verwendeten Plattenstreifen zusammen ergibt ein Total von 62.000 Laufmetern, was der Strecke von Vals nach Haldenstein entspricht.

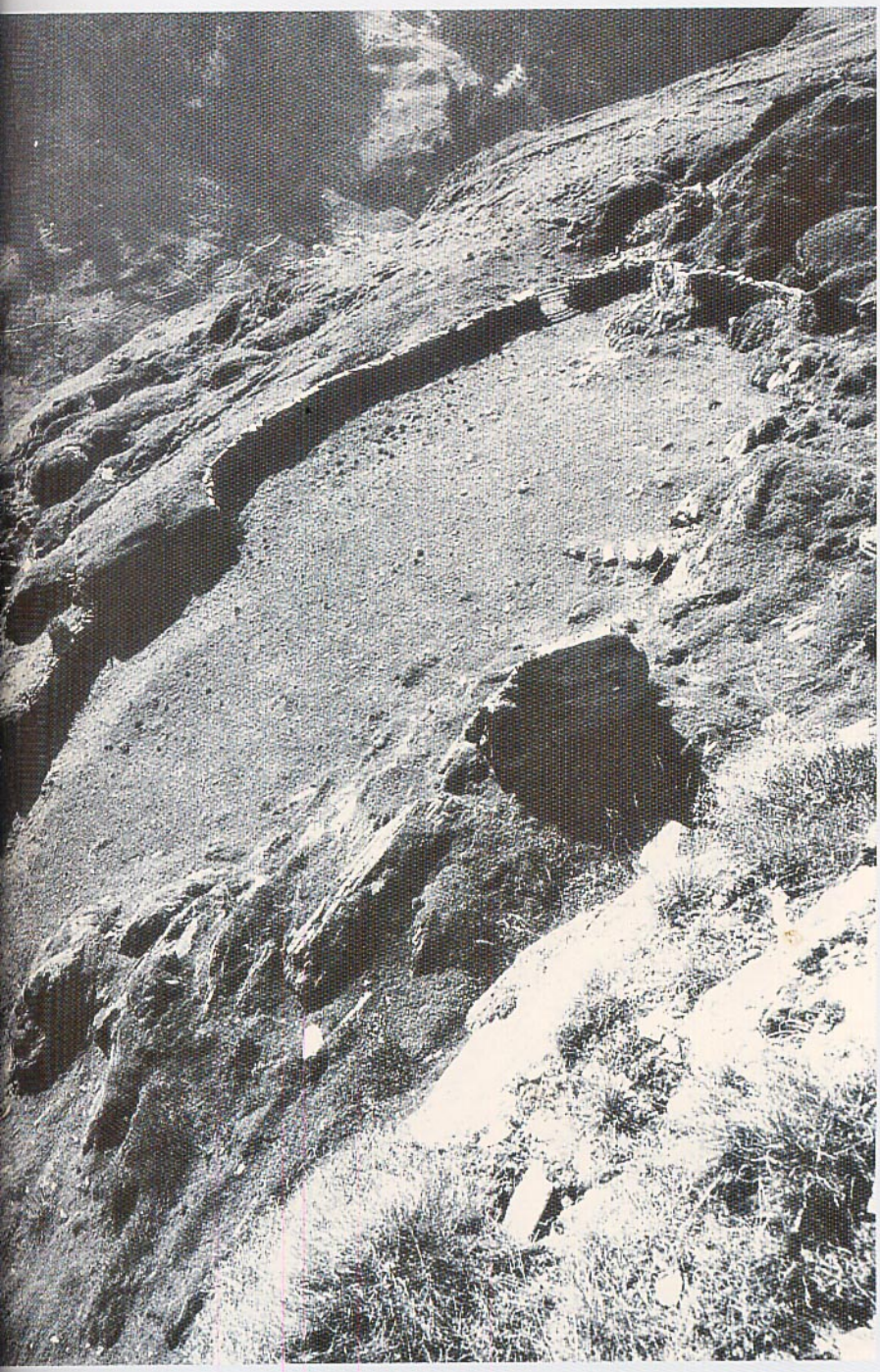
Peter Zumthor

Valser Quarzit
Druckfestigkeit:
etwa 217 N/mm²
Rohdichte:
2.698 kg/m³
Wasseraufnahmekoeffizient:
Masse –% 0,25
Gefräste Steinplatten: Stärken 6, 3, 4, 7 und 3,1cm
Toleranz: 1 mm
Breiten: 12–30 cm
Längen: bis 3,20 m
über 60.000 lfm
Fugenbreite:
etwa 2 mm

Boden
Breiten der Bahnen: 8–110 cm
Längen: bis 3,20 m, je Platte zum Teil über 3 m² in einer Stärke von 2 cm
Oberflächen:
poliert, gefräst, gestockt, geschliffen in allen Möglichkeiten und einer Fugenbreite von 1 mm

Fugen und Mörtelmasse
EMACO R 304
BARRA 80 Firma MBT | Eckverbindungen, Schwellen, Sturzplatten, Treppenuntersichte und Tritte, Sitze als einzelne Werkstücke gefertigt | minimale Toleranzen (weit unter SIA-Norm) beim Schneiden und Vermauern der Steine, wie zum Beispiel auf 6 m Höhe weniger als 5 mm Toleranz

Grotten
Trinkstein:
polierte Quader aufeinandergeschichte Grösse etwa 0,5–1 m³
Quellgrotte:
gebrochener Stein im Innern
Schwitzstein:
eingefärbter und polierter Beton
Steininsel:
grossformatige gespaltene Platten bis zu 3 m² je Platte



STEIN UND VASSER,
WINTER 2003|04
Booklet, 2003
Designer: Clemens Schedler,
Büro für konkrete Gestaltung
Publisher: Hotel Therme,
Switzerland
This publication for a spa in Switzerland uses a five-column grid. The main text fills a four-column block, and the smaller texts occupy single columns.

220 × 156 mm
8⅝ × 6⅛ inches
240 pp
c.80 b&w illus.

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Kenneth Chalmers

- Sets Béla Bartók (1881–1945) and his work in the context of his homeland Hungary and his native city Budapest, where he lived for most of his adult life
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- Brings out the singular nature of his genius and the originality of his contribution to music

Kenneth Chalmers is an author, translator and composer who has written on Bartók, Berg, Stravinsky, Verdi and Weill, and collaborated on Decca's 20-volume Mozart Almanac

220 × 156 mm
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The Beatles

Allan Kozinn

- **Follows the extraordinary development of the four self-taught musicians from Liverpool from their beginnings until the break-up in 1970**
- **Examines why the innovative music of the Beatles – created, at least initially, as ephemera – has remained so durable**
- **Considers not only the commercially released disks but also studio outtakes, demos, unreleased recordings and broadcast performances**
- **Sets the group's evolution against the backdrop of the popular culture explosion of the 1960s**

Allan Kozinn has written musical criticism for the *New York Times* since 1977 and won ASCAP awards for his work, including the book *Mischa Elman and the Romantic Style*

'A well-rounded, readable account. Makes a convincing case for putting the Beatles on the shelf between Bartók and Boulez.' *(The Sunday Times)*

PHAIDON: FALL 2003
Catalogue, 2003
Designer: Hans Dieter Reichert
Publisher: Phaidon
Photograph: Dan Meyers
This catalogue for a book publisher provides a rational and elegant structure for displaying hundreds of different books, each one presented as a physical object annotated with documentary data. The margins act as a navigational interface for the catalogue. Divisions occur both horizontally and vertically.

Play serves learning though experimentation without risk. Learning occurs through quick, imprecise actions, conducted within understood rules of a game, and free from threat or consummation. Play does not use up so much as build.

military-industrial world of computing, one important way to do so is to play.

Play takes many forms. For example, it can be individual or social. According to one classic taxonomy, individual play includes pursuit of sensations, exercise of motor apparatus and experimentation with higher mental powers. This mental play includes exercise of attention, emotion and will. Attention play includes tests of memory, imagination, focus and reason. On the other hand, social play includes fighting and rivalry, loving and courtship, imitation and status seeking. Imitative play includes movements, drama, behavioural constructions and emulation of inner states.[2]

Crafts and craft learning embrace quite a range of these playful forms. Arguably, no productive process combines so many so well. Sensation, skilled motion, attention, involvement, will — all must be balanced, and this is the basis for craft as recreation. Craft learning is a form of imitative social learning. Movements are physical skills taught directly, whether by demonstration or coaching. Drama is a lesser component here, although it may be understood in the willful suspension of disbelief that allows participation in an abstract medium. Constructions are the artifacts. They are the plastic play, the visual examples, the operational learning. Finally the inner state is the patience, reflectivity and intent that distinguish the master.

Play serves learning though experimentation without risk. Play often lacks any immediately obvious aim other than the pursuit of stimulation, but functions almost instinctively to serve the process of development. Learning occurs through quick, imprecise actions, conducted within understood rules of a game, and free from threat or consummation. Play does not use up so much as build. One thing it builds is common sense. Play's endlessly variable series of awkward, exaggerated motions seeks out the approximate arena for later development of true competence.

There is much to be said for play in a medium. If a medium is defined by its affordances and constraints, then learning consists of exploring these properties. Experimentation is especially useful for becoming familiar with constraints: we learn from our mistakes. We must accept that beginning work in a new medium will be full of setbacks. There will also be fortuitous discoveries, however particularly of affordances. Design is not only invention, but also sensitivity to a medium. Craft cannot be merely in service of technique, or of inappropriately conceived ends. The craftsman must begin to feel something about the artifacts, and only certain moves will feel right.

Of course when it comes to computation, we all must learn. In a sense, we're all children— the medium is *that* new. And of course, the most fluent experts here are often quite young. As all of us learn about this promising new domain, a chain of developments should be clear: play shapes learning; learning shapes the mind; mental structures shape software; and software data structures afford work and play.

Structure and Improvisation

The master at play improvises. Consider the jazz pianist. In *Ways of the Hand — The Organization of Improvised Conduct* (1978), the musician David Sudnow gives us a rare description of otherwise tacit knowledge in action. Improvising on a piece takes much more talent than simply playing from a notation or learning by rote, Sudnow explains. Moreover, improvising begins with a sense of structure, from which it builds a cognitive map. For example, the 'way in' to an arpeggio is mentally mapped. The structure of the keyboard presents a physical map of a chord, which may be modified in countless ways by physical moves. One could play the adjacent keys, for example, or one could translate by any arbitrary interval. One could transpose or invert. One could change the order in which the notes were played, or the

2 Karl Groos, *The Play of Man*. New York: Appleton and Co., 1901

> the same pitches as the first, the doubled back and went fast again, but over different pitches... There were innumerable variations possible; looking at 'structure' in this way and corresponding to various continuity practices, ways of the hand were cultivated that were suited to the performance of such manoeuvres... Transposition of such a figure to a new segment and correct repetition with respect to pitch, without slowing it down or slowing down parts of it, involved coping with the topography of the terrain by the hand as a negotiative organ with various potentials and limitations.[3]

tempo, or the attack and decay. Of course one could substitute dominant, major and minor chords.

Sudnow argues that because these variations are sequences of physical positions, they are learned as active skills no longer necessary to be understood at a mental level. Each becomes a handful. That the hand gets a hold of a variation on a chord is indicated by observed tendencies to start into particular sequences with certain fingers on certain keys. The manoeuvre is known by the hand, and the mind only maps the way in. The ability to modify the run note by note — which would require conscious attention — only comes later. Even without attentive intellectual guidance, however, the natural tendency of the hand is not to repeat itself, even in a series of figural repetitions. Thus once a sufficient repertoire of runs is learned, this tendency inherently ensures a richness to the sound. The hand searches its territory for sequences, which process replaces a faithfulness to the score, and that makes jazz. For example:

> The new run could be in various other ways, only 'essentially related' to the preceding run. Say the first started slow and went up fast, then doubled back and went fast again, while the second started slowly and came back down through

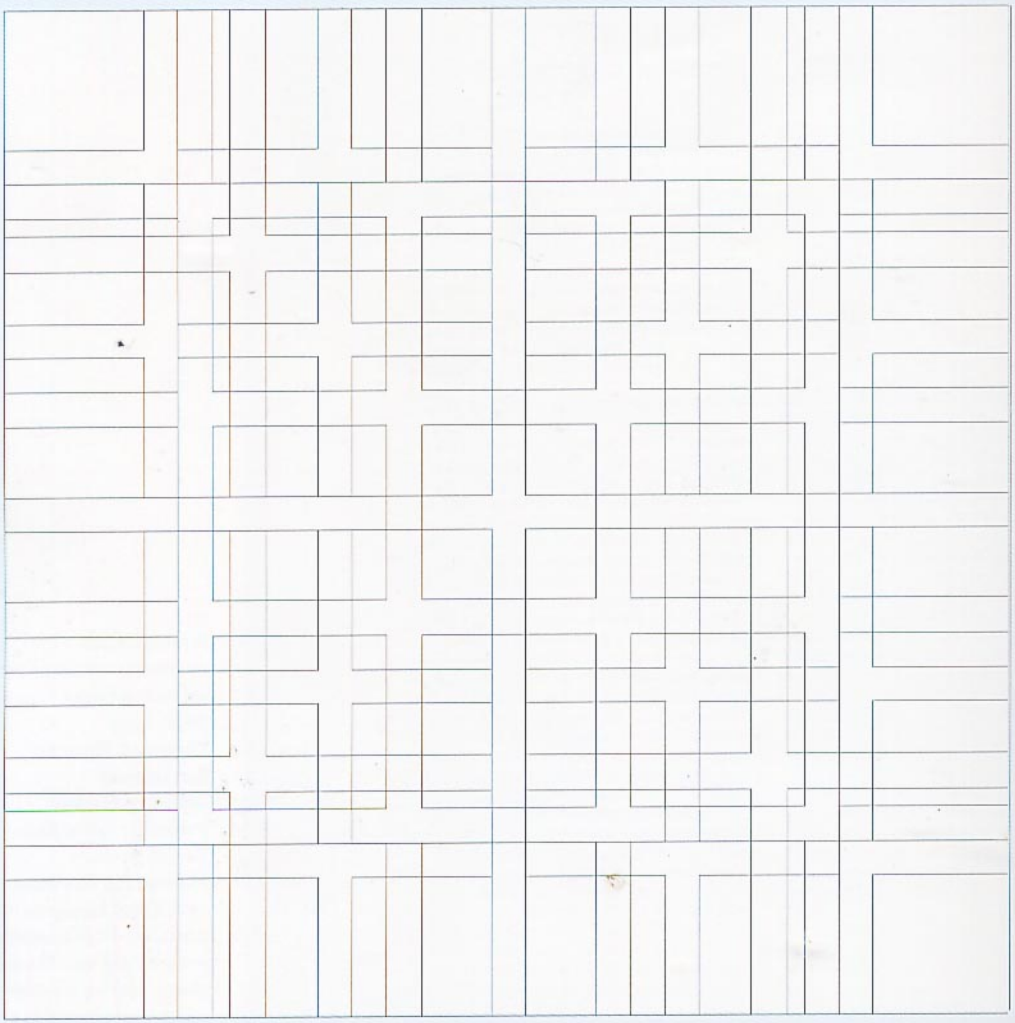
Although jazz is the obvious case, it is hardly alone. Improvisation plays a role in many contemporary practices, and in many traditional crafts. Few of these worlds employ such a singular instrument as the piano; few are able to turn so much over to the hands, but all involve playful response to a structure. For example, of industrial design, Herbert Read insisted that "Art implies values more various than those determined by practical necessity."[4] As a modernist and industrialist, he felt admiration for fundamental structural laws, such as the golden section also admired by his contemporary Le Corbusier. He was convinced, however, that metrical irregularities based on a governing structure, rather than slavish adherence to the laws in their precision, was the basis for pleasurable expression. He cited Ruskin's line that "All beautiful lines are drawn under mathematical laws organically transgressed."[5] He held that this was the case even in the useful (industrial) arts.

Consider the case of processing a digital photograph. The makeup of the raster image file, the various tone scale and filtration operators, provides a very clear structure in which to work but demands no particular order of operation. The complex microstructure of the sampled pixels provides a sub-

The natural tendency of the hand is not to repeat itself, even in a series of figural repetitions. Thus once a sufficient repertoire of runs is learned, this tendency inherently ensures a richness to the sound. The hand searches its territory for sequences, which process replaces a faithfulness to the score, and that makes jazz.

3 David Sudnow, *Ways of the Hand—The Organization of Improvised Conduct*, Cambridge, MA: Harvard University Press, 1978, p 7
4 Herbert Read, *Art and Industry—The Principles of Industrial Design* New York: Horizon Press, 1954 [1934]
5 *Ibid.*

IF/THEN PLAY: DESIGN IMPLICATIONS OF NEW MEDIA
Book, 1999
Designers: Mevis and Van Deursen
Editor: Jan Abrams
Publisher: Netherlands Design Institute
Photograph: Dan Meyers
In this book about new media, a two-column grid contains the main body of text. The pull quotes, running across two columns, are framed in thinly ruled boxes that suggest the overlapping "windows" on a computer screen. The top margin, which resembles the tool bar in a browser, provides an interface to the book.

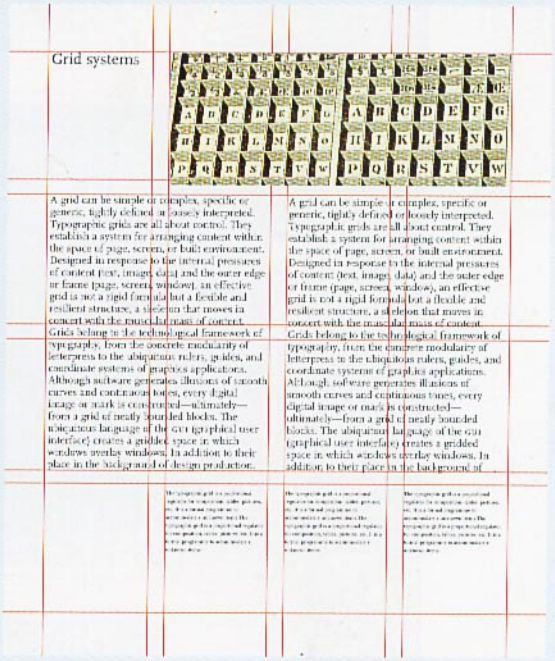


DESIGNING PROGRAMS
Grid diagram, 1963 (redrawn)
Designer: Karl Gerstner
Arthur Niggli, Zurich

This square grid consists of six vertical columns and six horizontal modules, overlayed by grids of one, two, three, and four units.

Vertically, the grid is governed by a 10-point measure, which would determine the spacing of type from baseline to baseline.

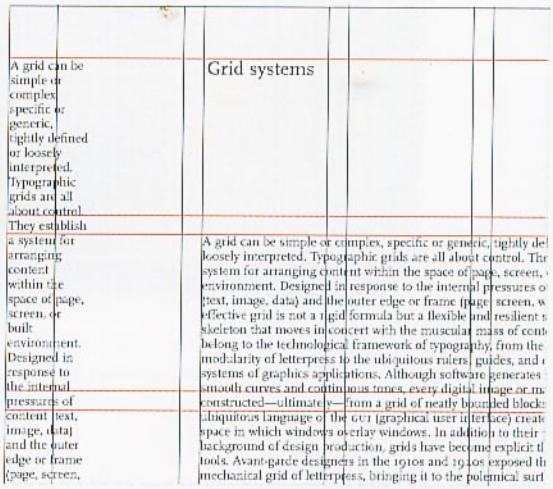
This modular grid has four columns and four rows. An image or a text block can occupy one or more modules.

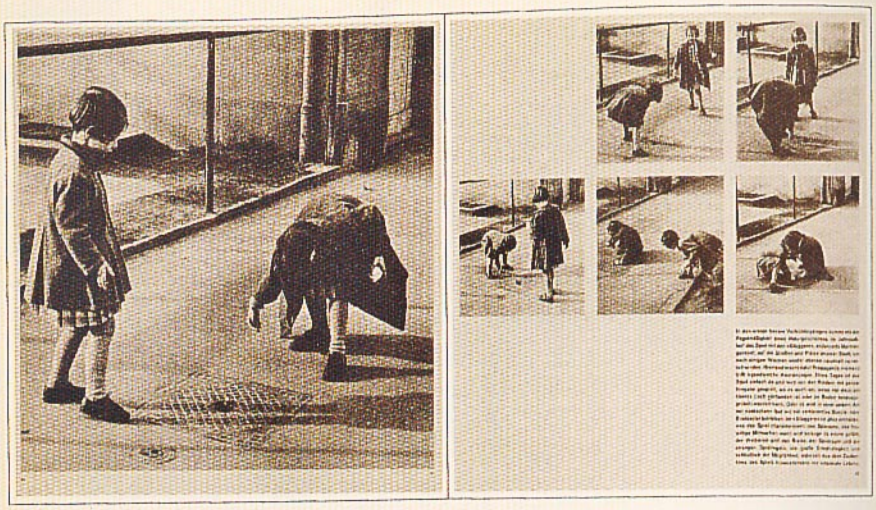


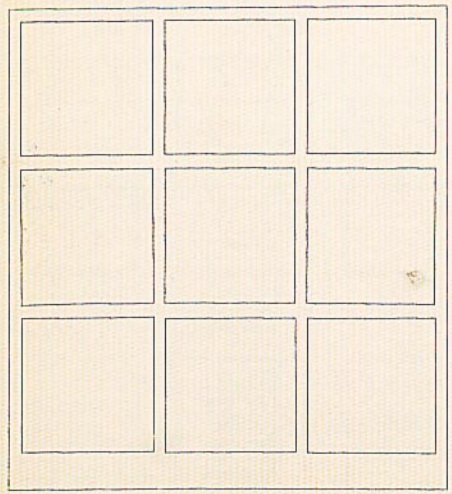
Endless variations are possible.

A modular grid has consistent horizontal divisions from top to bottom, in addition to vertical divisions from left to right. These modules govern the placement and cropping of pictures as well as text. In the 1950s and 1960s, Swiss graphic designers including Karl Gerstner, Emil Ruder, and Josef Müller-Brockmann devised modular grid systems like the one shown here.

Create the horizontal divisions by laying a "type ruler" along the left edge of the page. Using this ruler, position guidelines corresponding to the line spacing (leading) of the type.







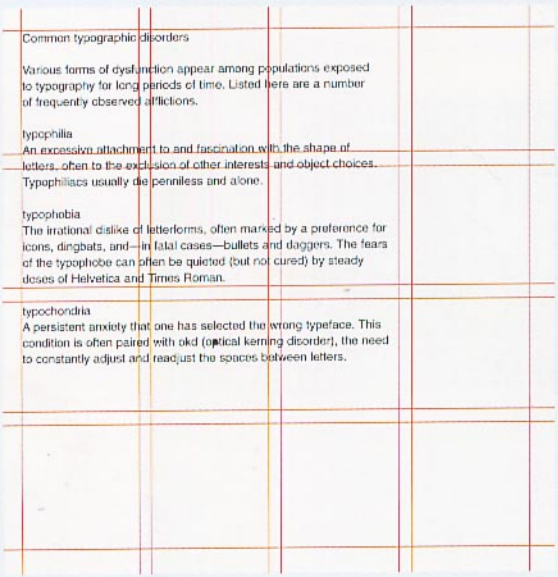
Seiten 226/227/228
Ein Bild- und Textbuch, auf der Grundlage eines Rasters von 9 Quadraten aufgebaut. Der Raster ist hier das Mittel, das die unterschiedlichen Textmengen, unterschiedlichen Bildgrößen und Bildformate zu einer formalen Einheit zusammenfügt. Im Endergebnis soll der Raster nicht auffallen, er soll von der Verschiedenheit der Werte und Bildthemen übertönt werden.

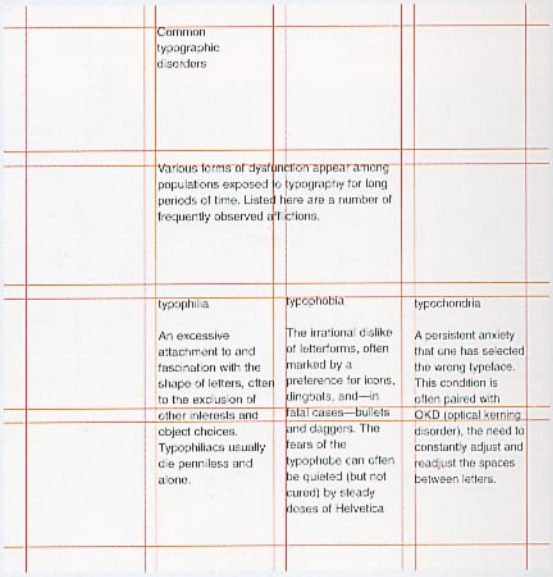
Pages 226/227/228: A book containing pictures and text based on a grid pattern of nine squares. This pattern is the means of establishing a formal unity between the different amounts of text and different sizes and shapes of picture. The pattern should not be conspicuous in the final result but rather be concealed by the diversity of pictorial subjects and typographical values.

Pagges 226/227/228
Un livre illustré construit sur la base d'une trame de 9 carrés. La trame est ici l'élément d'unité reliant entre eux les divers textes et formats d'images. Dans le résultat définitif, la trame ne doit pas être trop frappante, mais seulement perceptible à travers la diversité des valeurs et des sujets d'illustration.

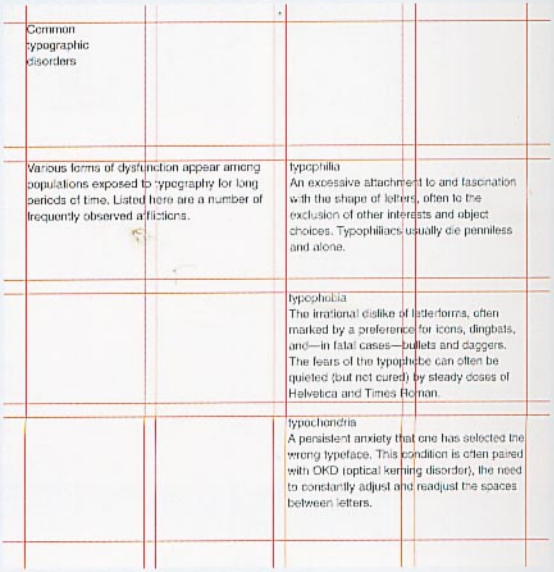
TYPOGRAPHY
Book, 1967
Designer and author:
Emil Ruder
Publisher: Arthur Niggli
Photograph: Dan Meyers

In this classic design text, Emil Ruder demonstrates the use of a modular grid.





Use a modular grid to arrange a text in as many ways as you can. By employing just one size of type, flush left only, you will construct a typographic hierarchy exclusively by means of spatial arrangement. To make the project more complex, begin adding variables such as weight, size, and alignment.



Common typographic disorders		Various forms of dysfunction appear among populations exposed to typography for long periods of time. Listed here are a number of frequently observed afflictions.
	typophilia	An excessive attachment to and fascination with the shape of letters, often to the exclusion of other interests and object choices. Typophiliacs usually die penniless and alone.
	typophobia	The irrational dislike of letterforms, often marked by a preference for icons, dingbats, and—in fatal cases—bullets and daggers. The fears of the typophobe can often be quieted (but not cured) by steady doses of Helvetica and Times Roman.
	typochondria	A persistent anxiety that one has selected the wrong typeface. This condition is often paired with OKD (optical kerning disorder), the need to constantly adjust and readjust the spaces between letters.

Common typographic disorders	typophilia	typophobia	typochondria
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PERIODIC BREAKFAST TABLE
Magazine page (detail)
Designer: Catherine Weese
Photography: John Halpern
Publisher: Patsy Tarr,
2wice Magazine

This chart organizes breakfast cereals by shape and annotates them according to a dozen characteristics, from fiber content to price per pound. Visual displays of data allow readers to quickly compare items. One might observe, for example, that in breakfast cereals, intensity of sugar is usually accompanied by intensity of color.

Train No.	3701	XM 3301	3801	A 67	3 3803	3 3201	A3 51	3 3703	3 3807	3 3203	A3 61	3 3809	A3 47	3 3901	3 3811	3 3903	3 3813	3205	3815	3817	3819	3207	3821	3823	3825	3209	3827	3829	3831
New York, N.Y.	A M 12.10	A M 12.40	A M 1.30	A M 3.52	A M 4.50	A M 6.10	A M 6.25	A M 6.35	A M. 6.50	A M. 7.10	A M 7.30	A M 7.33	A M 7.45	A M 7.50	A M 8.05	A M 8.25	A M 8.40	A M 8.50	A M 9.10	A M 9.40	A M 10.10	A M 10.25	A M 10.40	A M 11.10	A M 11.40	A M 11.50	P M 12.10	P M 12.40	P M 1.10
Newark, N.J. P	12.24	12.55	1.44	4.07	5.04	6.24	6.38	6.49	7.04	7.24	7.45	7.47	7.59	8.04	8.19	8.39	8.54	9.04	9.24	9.54	10.24	10.39	10.54	11.24	11.54	**12.04**	**12.24**	**12.54**	**1.24**
North Elizabeth	....	....	....	....	....	....	....	....	....	7.30	....	....	....	8.10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Elizabeth	12.31	1.03	1.51	....	5.11	6.31	....	6.56	7.11	7.32	....	7.54	....	8.13	8.26	8.46	9.01	9.11	9.31	10.01	10.31	10.46	11.01	11.31	**12.01**	**12.11**	**12.31**	**1.01**	**1.31**
Linden	12.36	..	1.56	....	5.16	6.36	....	7.01	7.15	7.37	....	7.59	....	8.18	8.31	8.51	9.06	....	9.36	10.06	10.36	....	11.06	11.36	**12.06**	..	**12.36**	**1.06**	**1.36**
North Rahway	....	....	....	....	....	....	....	7.03	....	7.39	....	....	....	8.20	8.33	8.54	....	....	....	....	....	....	....	....	....	....	....	....	....
Rahway	12.40	1.11	2.00	....	5.20	6.40	....	7.06	7.20	7.42	....	8.03	....	8.24	8.36	8.57	9.10	9.18	9.40	10.10	10.40	10.53	11.10	11.40	**12.10**	**12.18**	**12.40**	**1.10**	**1.40**
Metro Park (Iselin)	12.44	....	2.04	4.26	5.24	....	6.56	7.10	7.25	....	8.04	8.07	8.15	....	8.40	....	9.14	....	9.44	10.14	10.44	....	11.14	11.44	**12.14**	....	**12.44**	**1.14**	**1.44**
Metuchen	12.48	....	2.08	....	5.28	....	....	7.14	7.29	....	....	8.11	....	....	8.44	....	9.18	....	9.48	10.18	10.48	....	11.18	11.48	**12.18**	....	**12.48**	**1.18**	**1.48**
Edison	12.51	....	2.11	....	....	....	....	7.17	7.32	....	....	8.14	....	....	8.47	....	9.21	....	....	10.21	....	....	11.21	....	**12.21**	....	....	**1.21**	....
New Brunswick	12.55	....	2.15	....	5.35	....	7.05	7.21	7.35	....	....	8.18	8.25	....	8.50	....	9.25	....	9.54	10.25	10.54	....	11.25	11.54	**12.25**	....	**12.54**	**1.25**	**1.54**
Jersey Avenue	1.02	....	2.18	....	....	....	....	7.28	....	....	....	8.21	....	....	....	....	9.28	....	....	10.28	....	....	11.28	....	**12.28**	....	....	**1.28**	....
Princeton Jct. S	....	....	2.31	....	5.50	....	7.19	....	7.50	....	....	8.34	8.41	....	9.05	....	9.41	....	10.09	10.41	11.09	....	11.41	**12.09**	**12.41**	....	**1.09**	**1.41**	**2.09**
Trenton, N.J.	....	....	2.42	4.58	6.03	....	7.28	....	8.01	....	8.31	8.44	8.52	....	9.16	....	9.52	....	10.18	10.52	11.19	....	11.52	**12.19**	**12.52**	....	**1.22**	**1.52**	**2.20**

	am																											
New York, NY	12.10	12.40	1.30	3.52	4.50	6.10	6.25	6.35	6.50	7.10	7.30	7.33	7.45	7.50	8.05	8.25	8.40	8.50	9.10	9.40	10.10	10.25	10.40	11.10	11.40
Newark, NJ[P]	12.24	12.55	1.44	4.07	5.04	6.24	6.38	6.49	7.04	7.24	7.45	7.47	7.59	8.04	8.19	8.39	8.54	9.04	9.24	9.54	10.24	10.39	10.54	11.24	11.54
North Elizabeth										7.30	..	..	..	8.10	..	..	..	..	..	..	..	..	..	..	..
Elizabeth	12.31	1.03	1.51	..	5.11	6.31	..	6.56	7.11	7.32	..	7.54	..	8.13	8.26	8.46	9.01	9.11	9.31	10.01	10.31	10.46	11.01	11.31	12.01
Linden	12.36	..	1.56	..	5.16	6.36	..	7.01	7.15	7.37	..	7.59	..	8.18	8.31	8.51	9.06	..	9.36	10.06	10.36	..	11.06	11.36	12.06
North Rahway								7.03	..	7.39	..	..	..	8.20	8.33	8.54	..	..	..	..	..	..	..	..	..
Rahway	12.40	1.11	2.00	..	5.20	6.40	..	7.06	7.20	7.42	..	8.03	..	8.24	8.36	8.57	9.10	9.18	9.40	10.10	10.40	10.53	11.10	11.40	12.10
Metro Park (Iselin)	12.44		2.04	4.26	5.24		6.56	7.10	7.25		8.04	8.07	8.15		8.40		9.14		9.44	10.14	10.44		11.14	11.44	12.14
Metuchen	12.48		2.08	..	5.28		..	7.14	7.29		..	8.11	..		8.44		9.18		9.48	10.18	10.48		11.18	11.48	12.18
Edison	12.51		2.11	..	..		..	7.17	7.32		..	8.14	..		8.47		9.21		..	10.21	..		11.21		12.21
New Brunswick	12.55		2.15	..	5.35		7.05	7.21	7.35		..	8.18	8.25		8.50		9.25		9.54	10.25	10.54		11.25	11.54	12.25
Jersey Avenue	1.02		2.18	..	..		..	7.28	..		..	8.21	..		..		9.28		..	10.28	..		11.28	..	12.28
Princeton Junction[S]			2.31	..	5.50		7.19		7.50		..	8.34	8.41		9.05		9.41		10.09	10.41	11.09		11.41	12.09	12.41
Trenton, NJ			2.42	4.58	6.03		7.28		8.01		8.31	8.44	8.52		9.16		9.52		10.19	10.52	11.19		11.52	12.19	12.52
TRAIN NUMBER	3701	3301	3801	67	3803	3201	51	3703	3807	3203	61	3809	47	3901	3811	3903	3813	3205	3815	3817	3819	3207	3821	3823	3825
NOTES		XM		➡	3	3	➡3	3	3	3	➡3	3	➡3	3	3	3	3								

NEW JERSEY TRANSIT, NORTHEASTERN CORRIDOR TIMETABLE
Original schedule with redesign by Edward Tufte
From Edward Tufte, *Envisioning Information* (Cheshire, Conn.: Graphics Press, 1990).
The original design (top) is organized with heavy horizontal and vertical divisions. Tufte calls this a "data prison." His redesign uses the alignment of the typographic elements themselves to express the table's underlying structure.

ACCOUNT	ACCOUNT NAME	TOTAL FOR ACCO
101001	Instructional Supplies	$3,65
101002	Office Supplies	$46
102004	Equipment - Non-Capital	$1,28
105009	Travel-Conference Fees	$56
110004	Miscellaneous Entertainment	$8
114006	Postage/Shipping-Local Courier	$21
151108	Temp Staff-Contractual	$7
151181	Honoraria-Critics/Vis Artist	$1,00
	DEPARTMENTAL EXPENDITURES	$7,35

The design of charts and graphs is a rich and subtle area of typographic practice. In a data table, the grid acquires semantic significance. Designers (and software defaults) often over-emphasize the grid, rather than allowing the data to command the page and stake out its own territory.

TYPE CRIME:
DATA PRISON
The rules and boxes used in data tables should illuminate the relationships among data, not trap each entry inside a heavily guarded cell.

118 BEHAVIOUR TO INTOXICATED FRIENDS.

Tabular View.—Experiments on Ants under Chloroform and Intoxicated.

	Friends			Strangers		
	To Nest	To Water	Unremoved	To Nest	To Water	Unremoved
Chloroformed Ants.						
Sept. 10	...	...	4	...	4	...
14	...	4	...	2 and brought out again	2	...
15	1 and brought out again	1	...	...	2	2
29	...	5	...	...	4	...
Oct. 2	...	5	...	1 and brought out again	4	...
6	...	5	...	...	4	...
	1	20	4	3	20	2
Intoxicated Ants.						
Nov. 20	3	2	...	...	5	1
22	2	...	2	...	8	...
In these cases some of the Ants had partly recovered; in the following they were quite insensible.						
Dec. 1	7 none brought out again	2	...	3 all these brought out again	6	...
8	16 none brought out again	5	...	3 all these brought out again	15	...
Jan. 15	...	...	4	...	3	1
17	4 none brought out again	...	...	3 one brought out again	6	...
	27	7	4	2	30	1

INTOXICATED FRIENDS

Data table from Sir John Lubbock, *Ants, Bees, and Wasps* (New York: D. Appleton and Company, 1893). *The author of this experiment studied how ants responded upon meeting either "friends" (members of their own colony) or "strangers." In the first experiment, the friends and strangers were rendered unconscious with chloroform. In the second experiment, the ants were merely intoxicated. The chloroformed ants—whether friends or strangers—were usually taken for dead and pitched into a moat of water surrounding the colony. The intoxicated ants were treated with more discrimination. Many of the drunken friends were taken back to the nest for care and rehabilitation, whereas drunken strangers were generally tossed into the moat. Ants, one might conclude, should not rely on the kindness of strangers.*

CHLOROFORMED ANTS

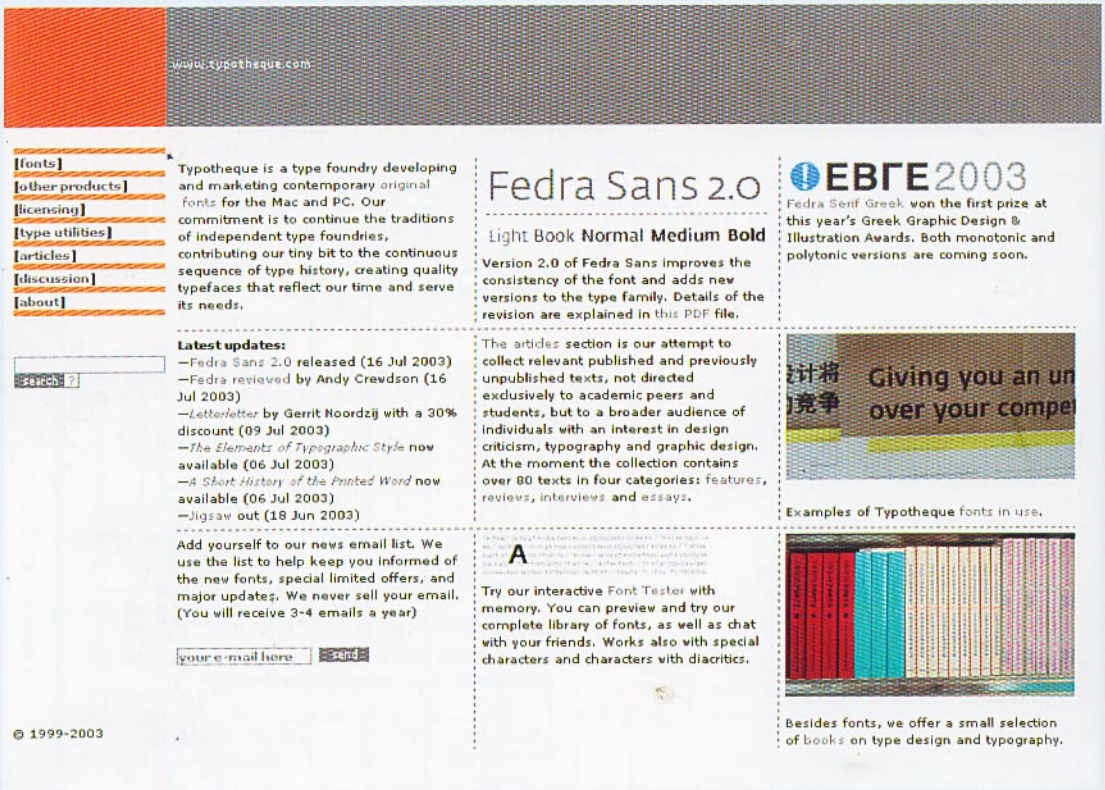
	FRIENDS				STRANGERS			
	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER
SEPT 10	••••						••••	
14			••••				••	••
15			•	•	••		••	
29			•••••				••••	
OCT 02			•••••				••••	•
06			•••••				••••	
TOTAL	04		20	01	02		20	03

INTOXICATED ANTS

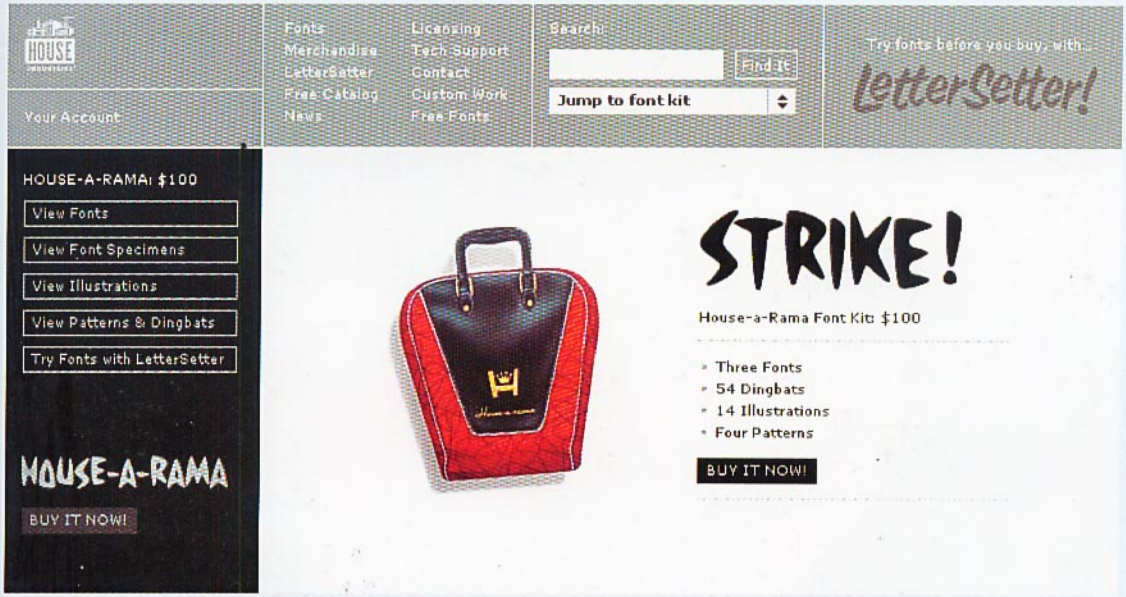
	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER
NOV 20		•••	••		•		•••••	
22	••	••					••••••••	
DEC 01		•••••••	••				••••••	•••
05		••••••••••• •••••	•••••				••••••••••• •••••	•••
JAN 15	••••				•		•••	
17		••••				••	••••••	•
TOTAL	06	32	09		02	02	43	07

Find a chart from an old science book or other source, and redesign it. Shown at left is a nineteenth-century table documenting an experiment about ants. The old design emphasizes vertical divisions at the expense of horizontal ones, and it jumbles together text and numbers within the table cells.

The redesign (above) eliminates many of the ruled lines, replacing them, where needed, with a pale tone that unifies the long horizontal rows of data. The redesigned chart also replaces most of the numerals with dots, a technique that lets the eye visually compare the results without having to read each numeral separately.



TYPOTHEQUE.COM
Web site, 2003
Designer: Peter Bilak
Multi-column grids provide a logical way to organize Web pages. Content occupies the center; the top and left "margins" are reserved for branding and navigation.



HOUSEIND.COM
Web site, 2004
Designes: Andy Cruz, Tal Leming, Ken Barber, Rich Roat, and Bondé Prang
Publisher: House Industries
Like many Web sites, this one places local navigation in the left column and reserves space for branding and global navigation across the top. These components serve as a frame for the content at the center.

AIGA: JAMBALAYA
Poster, 1997
Designer: Stefan Sagmeister
Publisher: American Institute of Graphic Arts
Letters can be made from nearly anything, even chicken feet.