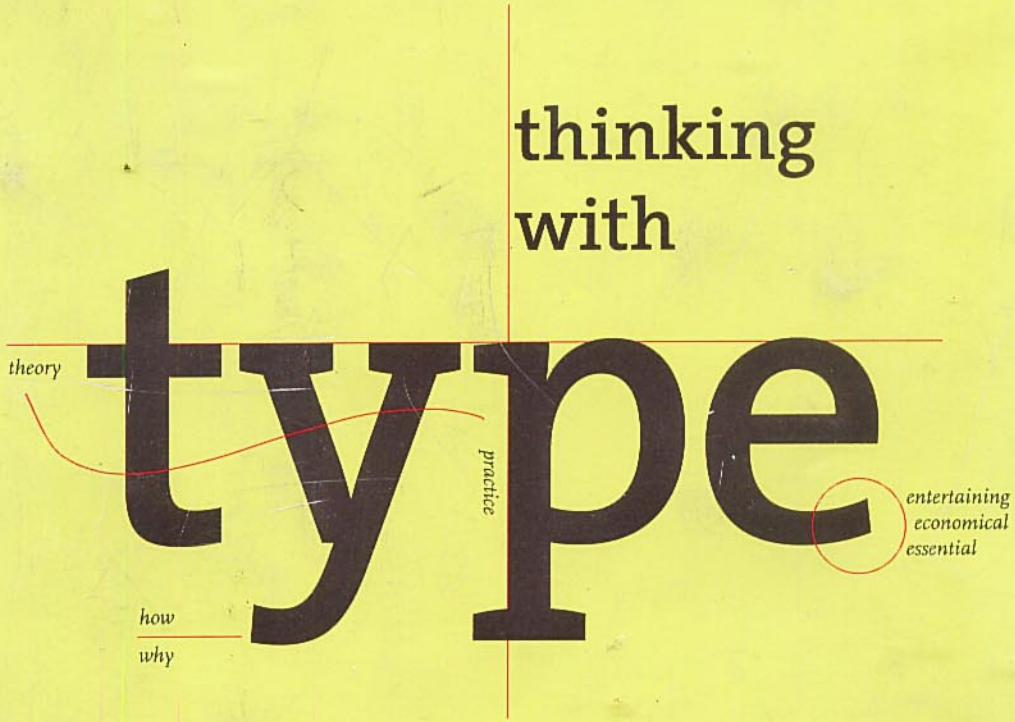
ELLEN LUPTON

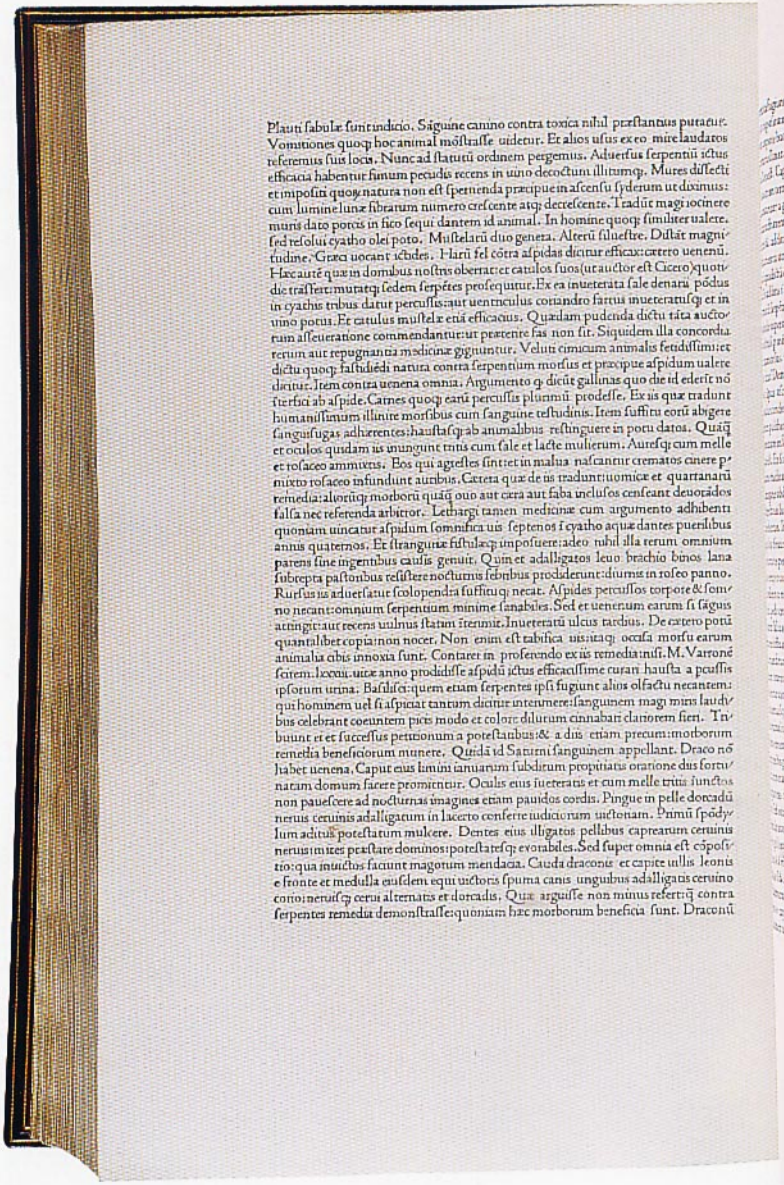
thinking with type



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

A DESIGN HANDBOOK

GRID



Plauti fabulæ ſunt indicio. Sanguine canino contra toxica nihil præſtantius putatur. Vomitiones quoq; hoc animal mõſtraſſe uidetur. Et alios uſus ex eo mire laudatos referemus ſuis locis. Nunc ad ſtatutũ ordinem pergemus. Aduerſus ſerpentiũ ictus efficacia habentur ſimum pecudis recens in uino decoctum illitumq;. Mures diſſecti et impoſiti quoq; natura non eſt ſpernenda præcipue in aſcenſu ſyderum ut diximus: cum lumine lunæ fibratum numero creſcente atq; decreſcente. Traduũt magi iocinere muris dato porcis in fico ſequi dantem id animal. In homine quoq; ſimiliter ualere. ſed reſoluti cyatho olei poto. Muſtelarũ duo genera. Alterũ ſylueſtre. Diſtãt magnitudine. Græci uocant ictides. Harũ fel cõtra aſpidas dicitur efficax: cætero uenenũ. Hæc autẽ quæ in domibus noſtris oberrant: et catulos ſuos (ut auctor eſt Cicero) quotidie traſſert: mutatq; ſedem ſerpẽtes proſequitur. Ex ea inueterata ſale denarii põdus in cyathis tribus datur percuſſis: aut uentriculus coriandro fartus inueteratuſq; et in uino potus. Et catulus muſtelæ etiã efficacius. Quædam pudenda dictu tãta auctorum aſſeueratione commendantur: ut præterire fas non ſit. Siquidem illa concordia rerum aut repugnantia medicinæ gignuntur. Veluti cimicum animalis fetidiſſimi: et dictu quoq; faſtidiẽdi natura contra ſerpentium morſus et præcipue aſpidum ualere dicitur. Item contra uenena omnia. Argumento q; dicũt gallinas quo die id ederit nõ ſterſici ab aſpide. Carnes quoq; earũ percuſſis plurimũ prodeſſe. Ex iis quæ tradunt humaniſſimum illinire morſibus cum ſanguine teſtudinis. Item ſuffitu eorũ abigere ſanguiſugas adhærentes: hauſtaſq; ab animalibus reſtinguere in potu datos. Quãq; et oculos quidam iis inunguint tritis cum ſale et lacte mulierum. Aureſq; cum melle et roſaceo ammixtis. Eos qui agreſtes ſint: et in malua naſcantur crematos cinere p̃ mixto roſaceo infundunt auribus. Cætera quæ de iis tradunt: uomicæ et quartanarũ remedia: alioquiq; morborũ quãq; quo aut cera aut faba incluſos cenſeant deuorãdos falſa nec referenda arbitror. Lethargi tamen medicinæ cum argumento adhibenti quoniam uincatur aſpidum ſomnifica uis ſeptenos cyatho aquæ dantes puerilibus annis quaternos. Et ſtrangiuriæ fibulaq; impoſuere: adeo nihil illa rerum omnium parens ſine ingentibus cauſis genuit. Quin et adalligatos leuo brachio binos lana ſubrepta paſtoribus reſiſtere noctumis ſebribus prodiderunt: diurnis in roſeo panno. Rurſus iis aduerſatur ſcolopendra ſuffitu q; necat. Aſpides percuſſos corpore & ſomno necant: omnium ſerpentium minime ſanabiles. Sed et uenenum earum ſi ſæguis attingit: aut recens uulnus ſtatim iterumit. Inueteratũ ulcus tardius. De cætero potũ quantalibet copia non nocet. Non enim eſt tabifica uis: itaq; occiſa morſu earum animalia cibis innoxia ſunt. Contarer in proferendo ex iis remedia: niſi. M. Varronẽ ſcirem. lxxxiii. uitæ anno prodidiſſe aſpidũ ictus efficaciſſime curari hauſta a percuſſis ipſorum urina. Baſiliſca: quem etiam ſerpentes ipſi fugiunt alios olfactu necantem: qui hominem uel ſi aſpiciat tantum dicitur interimere: ſanguinem magi minis laudibus celebrant coeuntem pice modo et colore dilurum cinnabari clariorem fieri. Tribuunt et et ſucceſſus petitionum a poteſtatibus: & a diis etiam precum: morborum remedia beneficiorum munere. Quidã id Saturni ſanguinem appellant. Draco nõ habet uenena. Caput eius limini ianuarium ſubdirum propitiatis oratione dus fortunatam domum facere promittitur. Oculis eius ſueteratis et cum melle tritis ſunctos non paueſcere ad nocturnas imagines etiam pauidos cordis. Pingue in pelle dorcadũ neruis ceruinis adalligatum in lacerto conferre iudiciorum uictoriam. Primũ ſpõdylium aditus poteſtatum mulcere. Dentes eius alligatos pellibus caprearum ceruinis neruis mites præſtare dominos: poteſtateſq; eorũ ables. Sed ſuper omnia eſt cõpoſitio: qua inuictos faciunt magorum mendacia. Cauda draconis et capite uillis leonis e fronte et medulla eiuſdem equi uictoris ſpuma canis unguibus adalligatis ceruino corio: neruiſq; cerui alternatis et dorcadis. Quæ arguiſſe non minus refert̃ contra ſerpentes remedia demonſtraſſe: quoniam hæc morborum beneficia ſunt. Draconũ

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.

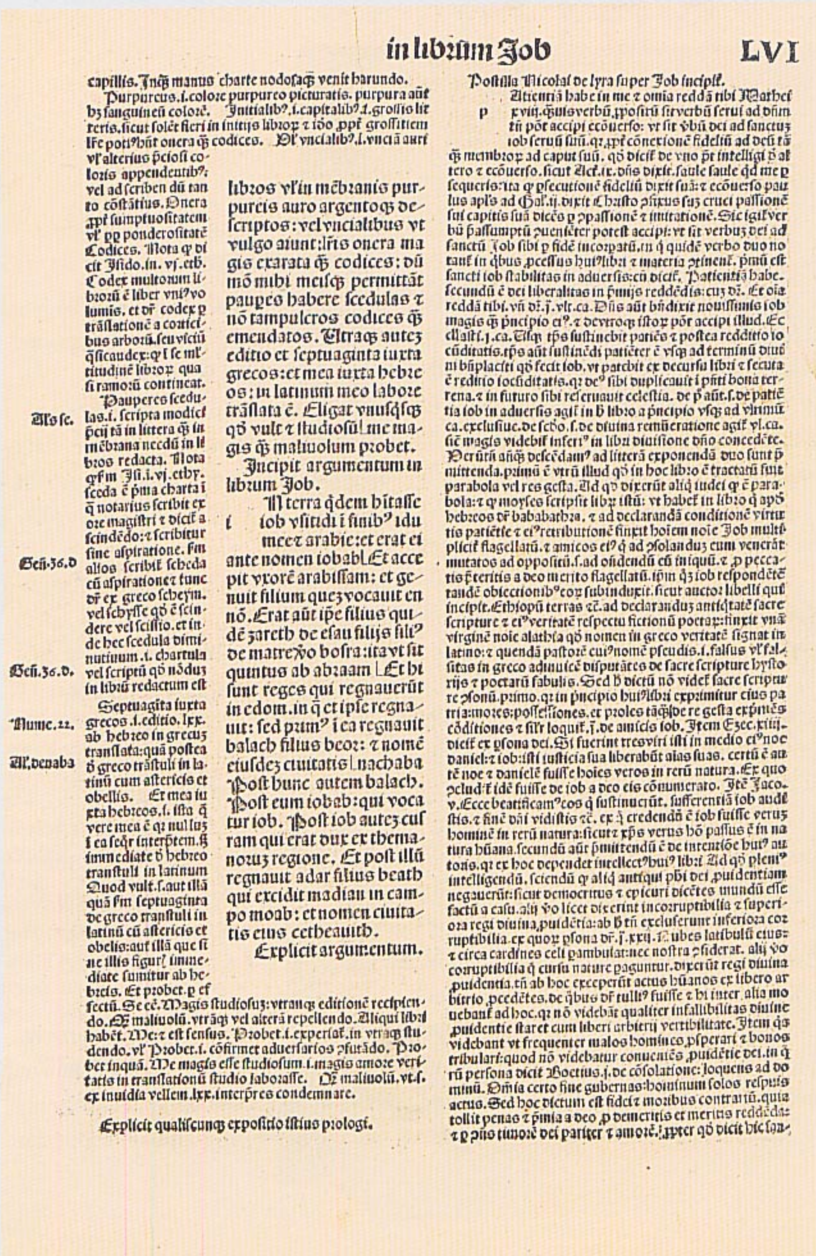
GRID

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

libros vel in mebranis pur-
pureis auro argentoque de-
scriptos: vel vncialibus vt
vulgo aiunt: litteris onera ma
gis exarata quam codices: dum
mo mihi meisque permittant
pauperes habere scedulas et
non tam pulcros codices quam
emendatos. Utraque autem
editio et septuaginta iuxta
grecos: et mea iuxta hebre
os: in latinum meo labore
translata est. Eligat vnusquisque
quod vult et studiosum me ma-
gis quam maliuolum probet.

Incipit argumentum in
librum Job.

In terra quidem habitasse
iob vsitidi i finib' idu
mee et arabie: et erat ei
ante nomen iobab. Et acce
pit vxorem arabissam: et ge-
nuit filium quem vocauit en
non. Erat autem ipse filius qui-
dem zareth de esau filijs fili'
de matre vero bosra: ita vt sit
quintus ab abraam. Et hi
sunt reges qui regnauerunt
in edom. in qua et ipse regna-
uit: sed primus i ea regnauit
balach filius beor: et nomen
eiusdem ciuitatis nachaba.
Post hunc autem balach.
Post eum iobab: qui voca
tur iob. Post iob autem cus
ram qui erat dux ex thema-
norum regione. Et post illum
regnauit adar filius beath
qui excidit madian in cam-
po moab: et nomen ciuita-
tis eius cethemith.

Explicit argumentum.

Explicit qualiscunque expositio istius prologi.

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 where 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

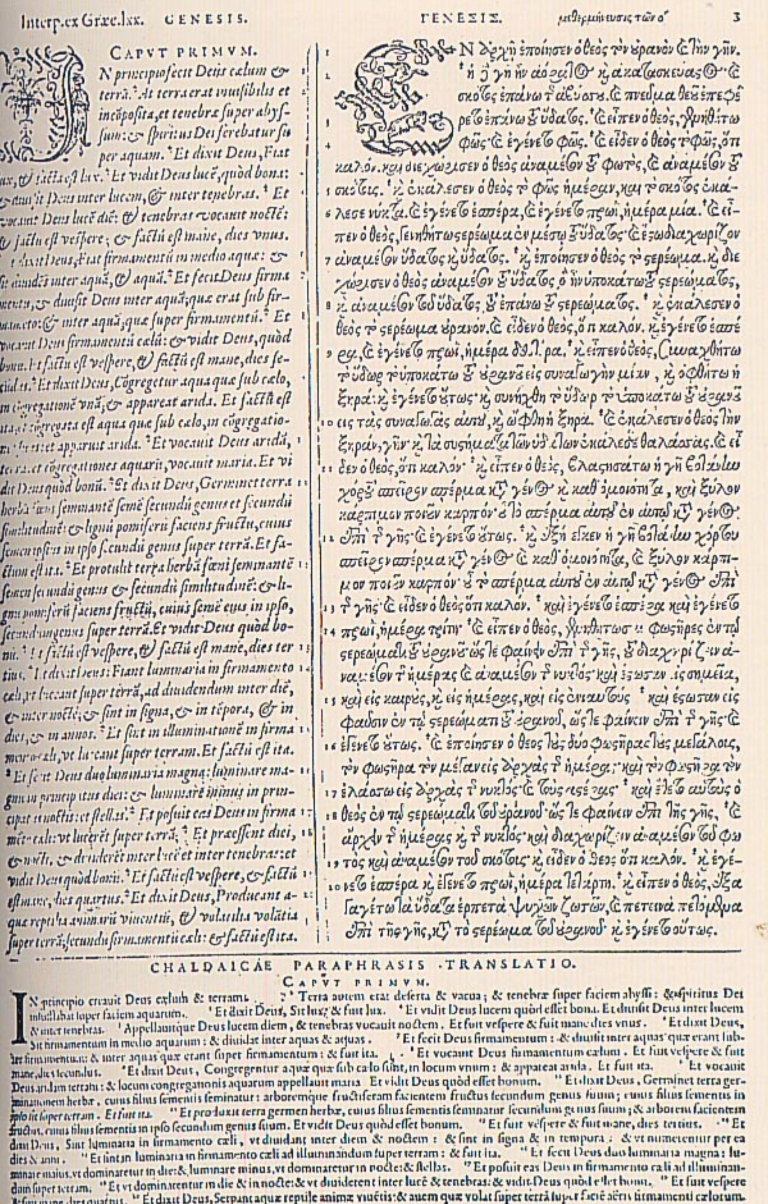
1 בראשית ברא אלהים את השמים ואת
2 הארץ׃ והארץ היתה תהו ובהו וחשך
על פני תהום ורוח אלהים מרחפת על
3 פני המים׃ ויאמר אלהים יהי אור
4 ויהי אור׃ וירא אלהים את האור כי טוב ויבדל
5 אלהים בין האור ובין החשך׃ ויקרא אלהים לאור
יום ולחשך קרא לילה ויהי ערב ויהי בקר יום אחד׃
6 ויאמר אלהים יהי רקיע בתוך המים ויהי מבדיל
7 בין מים למים׃ ויעש אלהים את הרקיע ויבדל בין
המים אשר מתחת לרקיע ובין המים אשר מעל לרקיע
8 ויהי כן׃ ויקרא אלהים לרקיע שמים ויהי ערב
9 ויהי בקר יום שני׃ ויאמר אלהים יקוו המים
מתחת השמים אל מקום אחד ותראה היבשה ויהי
10 כן׃ ויקרא אלהים ליבשה ארץ ולמקוה המים קרא
11 ימים וירא אלהים כי טוב׃ ויאמר אלהים תדשא
הארץ דשא עשב מזריע זרע עץ פרי עשה פרי למינו
12 אשר זרעו בו על הארץ ויהי כן׃ ותוצא הארץ דשא
עשב מזריע זרע למינהו ועץ עשה פרי אשר זרעו בו
13 למינהו וירא אלהים כי טוב׃ ויהי ערב ויהי בקר
14 יום שלישי׃ ויאמר אלהים יהי מארת ברקיע
השמים להבדיל בין היום ובין הלילה והיו לאתת
15 ולמועדים ולימים ושנים׃ והיו למאורת ברקיע
16 השמים להאיר על הארץ ויהי כן׃ ויעש אלהים
את שני המארת הגדלים את המאור הגדל לממשלת
היום ואת המאור הקטן לממשלת הלילה ואת
17 הכוכבים׃ ויתן אתם אלהים ברקיע השמים להאיר
18 על הארץ׃ ולמשל ביום ובלילה ולהבדיל בין האור
19 ובין החשך וירא אלהים כי טוב׃ ויהי ערב ויהי
20 בקר יום רביעי׃ ויאמר אלהים ישרצו המים שרץ
נפש חיה ועוף יעופף על הארץ על פני רקיע השמים׃

CAPVT PRIMVM.

1 IN principio creauit Deus cæ-
lum & terrá. Terra autem
A erat inanis & vacua: & tene-
bræ erant super faciē abyssi:
& spiritus Dei ferebatur su-
3 per aquas. Dixitq́; Deus, Fiat lux. Et facta est
4 lux. Et vidit Deus lucem quòd esset bona: &
5 diuisit lucem à tenebris. Appellauitq́; lucem
diem; & tenebras noctē. Factumq́; est vespere
6 & mane dies vnus. Dixit quoque Deus, Fiat
firmamentū in medio aquarum; & diuidat a-
7 quas ab aquis. Et fecit Deus firmamentum,
diuisitq́; aquas quæ erant sub fimamento, ab
his quæ erant super firmamentū. Et factum est
8 ita. Vocauitq́; Deus firmamentū, cælum: &
factum est vespere, & mane dies secundus.
9 Dixit verò Deus, Congregentur aquæ quæ
sub cęlo sunt, in locum vnum: & appareat ari-
10 da. Et factum est ita. Et vocauit Deus aridā,
terram: congregationesq́; aquarum appellauit
11 maria. Et vidit Deus quòd esset bonum. Et
B ait, Germinet terra herbá virentem & facien-
tem semen; & lignum pomiferū faciens fructū
iuxta genus suum, cuius semen in semetipso sit
12 super terram. Et factū est ita. Et protulit terra
herbam virentē, & facientē semen iuxta genus
suū; lignumq́; faciens fructū; & habens vnum-
quodq; sementem secundū speciem suam. Et
13 vidit Deus quòd esset bonum. Et factum est
14 vespere & mane dies tertius. Dixit autē Deus,
Fiant luminaria in firmamento cæli; & diui-
dant diem ac noctē; & sint in signa & tēpora
15 & dies & annos: Vt luceāt in firmamēto cæli,
16 & illuminent terrá. Et factum est ita. Fecitq́;
Deus duo luminaria magna: luminare maius,
vt præesset diei: & luminare minus, vt pręesset
17 nocti: & stellas. Et posuit eas Deus in firma-
18 mēto cæli, vt lucerēt super terrá: Et pręessent
diei ac nocti; & diuiderent lucem ac tenebras.
19 Et vidit Deus quòd esset bonū. Et factum est
20 vespere, & mane dies quartus. Dixit etiam
Deus, Producant aquæ reptile animæ viuentis,
& volatile super terram sub firmamento cæli.

תרגום אונקלוס

בקדמין ברא יי ית שמיא וית ארעא׃ 2 וארעא הוה צדיא ורקניא וחשוכא על אפי תהומא ורוחא דיי מנשבא על אפי מיא׃ 3 ואמר יי יהא נהורא והוה נהורא׃ 4 וחזא יי ית נהורא ארי טב ואפרש יי בין נהורא ובין חשוכא׃ 5 וקרא יי לנהורא יממא ולחשוכא קרא ליליא והוה רמש והוה צפר יומא חד׃ 6 ואמר יי יהא רקיעא במציעות מיא ויהא מפריש בין מיא למיא׃ 7 ועבד יי ית רקיעא ואפרש בין מיא דמלרע לרקיעא ובין מיא דמלעל לרקיעא והוה כן׃ 8 וקרא יי לרקיעא שמיא והוה רמש והוה צפר יום תנין׃ 9 ואמר יי יתכנשון מיא מתחות שמיא לאתר חד ותתחזי יבשתא והוה כן׃ 10 וקרא יי ליבשתא ארעא ולבית כנישות מיא קרא ימי וחזא יי ארי טב׃ 11 ואמר יי תדאי ארעא דתאה עשבא דבר זרעה מזדרע אילן פרין עבד פרין לזנוהי דבר זרעה ביה על ארעא והוה כן׃ 12 ואפקת ארעא דתאה עשבא דבר זרעה מזדרע לזנוהי ואילן עבד פרין דבר זרעה ביה לזנוהי וחזא יי ארי טב׃ 13 והוה רמש והוה צפר יום תליתאי׃ 14 ואמר יי יהון נהורין ברקיעא דשמיא לאפרשא בין יממא ובין ליליא ויהון לאתין ולזמנין ולמסני בהון יומין ושנין׃ 15 ויהון לנהורין ברקיעא דשמיא לאנהרא על ארעא והוה כן׃ 16 ועבד יי ית תרין נהורין רברבין ית נהורא רבא למשלט ביממא וית נהורא זעירא למשלט בליליא וית כוכביא׃ 17 ויהב יתהון יי ברקיעא דשמיא לאנהרא על ארעא׃ 18 ולמשלט ביממא ובליליא ולאפרשא בין נהורא ובין חשוכא וחזא יי ארי טב׃ 19 והוה רמש והוה צפר יום רביעאי׃ 20 ואמר יי ירחשון מיא רחשא נפשא חיתא ועופא דפרח על ארעא על אפי אויר רקיע שמיא׃



Interp. ex Græc. lxx. GENESIS. ΓΕΝΕΣΙΣ. μεθερμηνευσις τῶν ο'. 3

CAPVT PRIMVM.

In principio fecit Deus cælum & terram. At terra erat inuisibilis et incomposita, et tenebræ super abyssum: & spiritus Dei ferebatur super aquam. Et dixit Deus, Fiat lux, & facta est lux. Et vidit Deus lucem, quòd bona: & diuisit Deus inter lucem, & inter tenebras. Et vocauit Deus lucem diem: & tenebras vocauit noctem: & factum est vespere, & factum est mane, dies vnus. Et dixit Deus, Fiat firmamentum in medio aquæ: & sit diuidens inter aquam, & aquam. Et fecit Deus firmamentum; & diuisit Deus inter aquam, quæ erat sub firmamento: & inter aquam, quæ super firmamentum. Et vocauit Deus firmamentum cælum: & vidit Deus, quòd bonum. Et factum est vespere, & factum est mane, dies secundus. Et dixit Deus, Congregetur aqua quæ sub cælo, in congregationem vnam, & appareat arida. Et factum est ita, & congregata est aqua quæ sub cælo, in congregationes suas, et apparuit arida. Et vocauit Deus aridam, terram: et congregationes aquarum, vocauit maria. Et vidit Deus quòd bonum. Et dixit Deus, Germinet terra herbam fœni seminantem semen secundum genus et secundum similitudinem: & lignum pomiferum faciens fructum, cuius semen ipsius in ipso secundum genus super terram. Et factum est ita. Et protulit terra herbam fœni seminantem semen secundum genus & secundum similitudinem: & lignum pomiferum faciens fructum, cuius semen eius in ipso, secundum genus super terram. Et vidit Deus quòd bonum. Et factum est vespere, & factum est mane, dies tertius. Et dixit Deus: Fiant luminaria in firmamento cæli, ut luceant super terram, ad diuidendum inter diem, & inter noctem: & sint in signa, & in tempora, & in dies, & in annos. Et sint in illuminationem in firmamento cæli, vt luceant super terram. Et factum est ita. Et fecit Deus duo luminaria magna: luminare magnum in principatus diei: & luminare minus in principatus noctis: et stellas. Et posuit eas Deus in firmamento cæli: vt lucerent super terram, Et præessent diei, & nocti, & diuiderent inter lucem et inter tenebras: et vidit Deus quòd bonum. Et factum est vespere, & factum est mane, dies quartus. Et dixit Deus, Producant aquæ reptilia animarum viuentium, & volatilia volantia super terram, secundum firmamentum cæli: & factum est ita.

Ἐν ἀρχῇ ἐποίησεν ὁ θεὸς τὸν οὐρανὸν καὶ τὴν γῆν. ἡ δὲ γῆ ἦν ἀόρατος καὶ ἀκατασκεύαστος, καὶ σκότος ἐπάνω τῆς ἀβύσσου, καὶ πνεῦμα θεοῦ ἐπεφέρετο ἐπάνω τοῦ ὕδατος. καὶ εἶπεν ὁ θεός, γενηθήτω φῶς. καὶ ἐγένετο φῶς. καὶ εἶδεν ὁ θεὸς τὸ φῶς, ὅτι καλόν. καὶ διεχώρισεν ὁ θεὸς ἀναμέσον τοῦ φωτὸς, καὶ ἀναμέσον τοῦ σκότους. καὶ ἐκάλεσεν ὁ θεὸς τὸ φῶς ἡμέραν, καὶ τὸ σκότος ἐκάλεσε νύκτα. καὶ ἐγένετο ἑσπέρα, καὶ ἐγένετο πρωΐ, ἡμέρα μία. καὶ εἶπεν ὁ θεός, γενηθήτω στερέωμα ἐν μέσῳ τοῦ ὕδατος, καὶ ἔστω διαχωρίζον ἀναμέσον ὕδατος καὶ ὕδατος. καὶ ἐποίησεν ὁ θεὸς τὸ στερέωμα. καὶ διεχώρισεν ὁ θεὸς ἀναμέσον τοῦ ὕδατος ὃ ἦν ὑποκάτω τοῦ στερεώματος, καὶ ἀναμέσον τοῦ ὕδατος τοῦ ἐπάνω τοῦ στερεώματος. καὶ ἐκάλεσεν ὁ θεὸς τὸ στερέωμα οὐρανόν. καὶ εἶδεν ὁ θεὸς, ὅτι καλόν. καὶ ἐγένετο ἑσπέρα, καὶ ἐγένετο πρωΐ, ἡμέρα δευτέρα. καὶ εἶπεν ὁ θεός, 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 αὐτοῦ, καὶ ὤφθη ἡ ξηρά. καὶ ἐκάλεσεν ὁ θεὸς τὴν ξηρὰν, γῆν· καὶ τὰ συστήματα τῶν ὑδάτων ἐκάλεσε θαλάσσας. καὶ εἶδεν ὁ θεὸς, ὅτι καλόν. καὶ εἶπεν ὁ θεὸς, βλαστησάτω ἡ γῆ βοτάνην χόρτου σπεῖρον σπέρμα κατὰ γένος καὶ καθ' ὁμοιότητα, καὶ ξύλον κάρπιμον ποιοῦν καρπὸν οὗ τὸ σπέρμα αὐτοῦ ἐν αὐτῷ κατὰ γένος ἐπὶ τῆς γῆς. καὶ ἐγένετο οὕτως. καὶ ἐξήνεγκεν ἡ γῆ βοτάνην χόρτου σπεῖρον σπέρμα κατὰ γένος καὶ καθ' ὁμοιότητα, καὶ ξύλον κάρπιμον ποιοῦν καρπὸν οὗ τὸ σπέρμα αὐτοῦ ἐν αὐτῷ κατὰ γένος ἐπὶ τῆς γῆς. καὶ εἶδεν ὁ θεὸς ὅτι καλόν. καὶ ἐγένετο ἑσπέρα καὶ ἐγένετο πρωΐ, ἡμέρα τρίτη. καὶ εἶπεν ὁ θεὸς, γενηθήτωσαν φωστῆρες ἐν τῷ στερεώματι τοῦ οὐρανοῦ, ὥστε φαίνειν ἐπὶ τῆς γῆς, τοῦ διαχωρίζειν ἀναμέσον τῆς ἡμέρας καὶ ἀναμέσον τῆς νυκτὸς· καὶ ἔστωσαν εἰς σημεῖα, καὶ εἰς καιροὺς, καὶ εἰς ἡμέρας, καὶ εἰς ἐνιαυτούς. καὶ ἔστωσαν εἰς φαῦσιν ἐν τῷ στερεώματι τοῦ οὐρανοῦ, ὥστε φαίνειν ἐπὶ τῆς γῆς. καὶ ἐγένετο οὕτως. 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. καὶ ἔθετο αὐτοὺς ὁ θεὸς ἐν τῷ στερεώματι τοῦ οὐρανοῦ ὥστε φαίνειν ἐπὶ τῆς γῆς, καὶ ἄρχειν τῆς ἡμέρας καὶ τῆς νυκτὸς, καὶ διαχωρίζειν ἀναμέσον τοῦ φωτὸς καὶ ἀναμέσον τοῦ σκότους. καὶ εἶδεν ὁ θεὸς ὅτι καλόν. καὶ ἐγένετο ἑσπέρα καὶ ἐγένετο πρωΐ, ἡμέρα τετάρτη. 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. Terra autem erat deserta & vacua; & tenebræ super faciem abyssi: & spiritus Dei insufflabat super faciem aquarum. Et dixit Deus, Sit lux; & fuit lux. Et vidit Deus lucem quòd esset bona. Et diuisit Deus inter lucem & inter tenebras. Appellauitque Deus lucem diem, & tenebras vocauit noctem. Et fuit vespere & fuit mane dies vnus. Et dixit Deus, Sit firmamentum in medio aquarum: & diuidat inter aquas & aquas. Et fecit Deus firmamentum: & diuisit inter aquas quæ erant sub firmamentum, & inter aquas quæ erant super firmamentum: & fuit ita. Et vocauit Deus firmamentum cælum. Et fuit vespere & fuit mane, dies secundus. Et dixit Deus, Congregentur aquæ quæ sub cælo sunt, in locum vnum: & appareat arida. Et fuit ita. Et vocauit Deus aridam terram: & locum congregationis aquarum appellauit maria. Et vidit Deus quòd esset bonum. Et dixit Deus, Germinet terra germinationem herbæ, cuius filius sementis seminatur: arboremque fructiferam facientem fructus secundum genus suum; cuius filius sementis in ipso sit super terram. Et fuit ita. Et produxit terra germen herbæ, cuius filius sementis seminatur secundum genus suum; & arborem facientem fructus, cuius filius sementis in ipso secundum genus suum. Et vidit Deus quòd esset bonum. Et fuit vespere & fuit mane, dies tertius. Et dixit Deus, Sint luminaria in firmamento cæli, vt diuidant inter diem & noctem: & sint in signa & in tempora: & vt numerentur per ea dies & anni. Et sint in luminaria in firmamento cæli ad illuminandum super terram: & fuit ita. Et fecit Deus duo luminaria magna: luminare maius, vt dominaretur in die: & luminare minus, vt dominaretur in nocte: & stellas. Et posuit eas Deus in firmamento cæli ad illuminandum super terram, Et vt dominarentur in die & in nocte: & vt diuiderent inter lucē & tenebras: & vidit Deus quòd esset bonum. Et fuit vespere & fuit mane, dies quartus. Et dixit Deus, Serpant aquæ reptile animæ viuētis: & auem quæ volat super terrā super faciē aëris firmamenti cælorum.

A 2

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 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 qua- „ torze 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 illec loca adierunt. III. Columna Alexandri Severi.

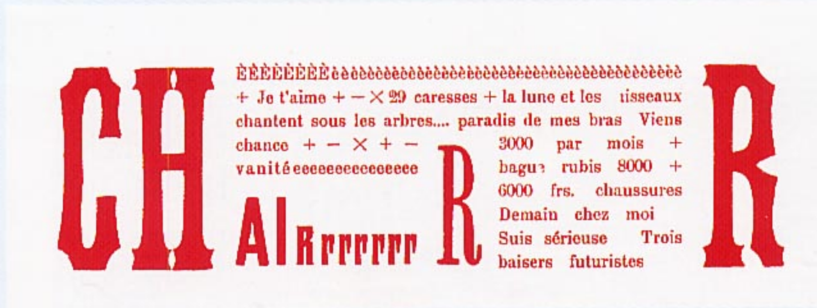
I. CElebertima illa Pompeii columna prope Alexandriam erigitur. Cur Pompeii columna vocetur, ignoratur. Libenter crederem hujusmodi denominationem ex popolari errore manavisse. Ex peregrinantibus omnes enumis magnitudinis esse narrant. Duo recentiores & figuram & mensuras dederunt, at inter illos non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

„ Quantum ad columnam, inquit Cornelius „ Brunius p. 241. ea impolita est quadrato stylobata, „ ne cujus altitudo est septem octove pedum, la- „ cera vero singulis in faciebus sunt quatuordecim „ pedum. Stylobates autem ille quadratæ basi imponitur, altitudine duodecim pedis, ex lapidibus „ plurimis structa basis est, longitudinis circumquaque viginti pedes habens. Columna ex uno „ lapide est, plurimi putant ex marmore grario „ esse, alii vero quasi cementum & compactam „ materiam esse, quæ procedente tempore, fornacem „ lapidis sumserit. Puto ego esse lapidem quantum „ saltem experiri licuit. Quod si ita sit, id autem „ nemo hodie in dubium vocat ; plane marium „ quo pacto tantum lapidem erigere potuerint. „ Nam cum mensuram daxissem, 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 portæ 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.



LES MOTS EN LIBERTÉ FUTURISTES: LETTRE D'UNE JOLIE FEMME À UN MONSIEUR PASSEISTE
Poem, 1912
Author: F. T. Marinetti
In this Futurist poem, Marinetti attacked the conventions of poetry and the restrictions imposed by the mechanical grid of letterpress. The rectilinear pressures of the grid are nonetheless evident in the composed work.

MERZ-MATINÉEN
Poster, 1923
Designer: El Lissitzky
The Russian Constructivist artist and designer traveled extensively in Europe in the 1920s, where he collaborated with other members of the international avant-garde, including the Dadaist Kurt Schwitters. This precisely assembled poster for a Dada event is organized and activated by the rectilinear grid of letterpress.

FORTOLIET
Postcard, 1925
Designer: Piet Zwart
Collection of Elaine Lustig Cohen
The Dutch graphic designer Piet Zwart was influenced by the De Stijl movement as well as Constructivism. In the visual identity he created for Fortoliet, a flooring company, Zwart built monumental letters out of typographic rules.

DIVIDING SPACE

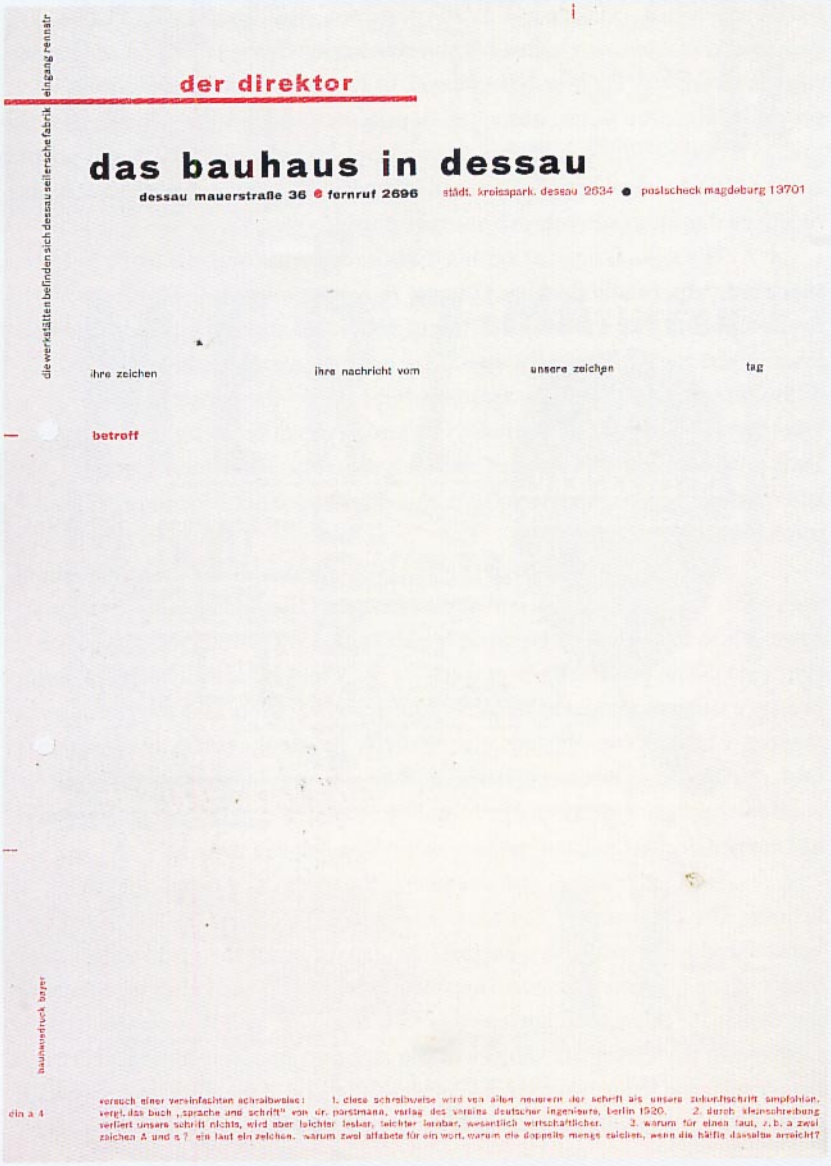
In the nineteenth century, the multi-columned, multimedia pages of newspapers and magazines challenged the supremacy of the book and its insular edge, making way for new typogologies of the grid. By questioning the protective function of the frame, modern artists and designers unleashed the grid as a 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



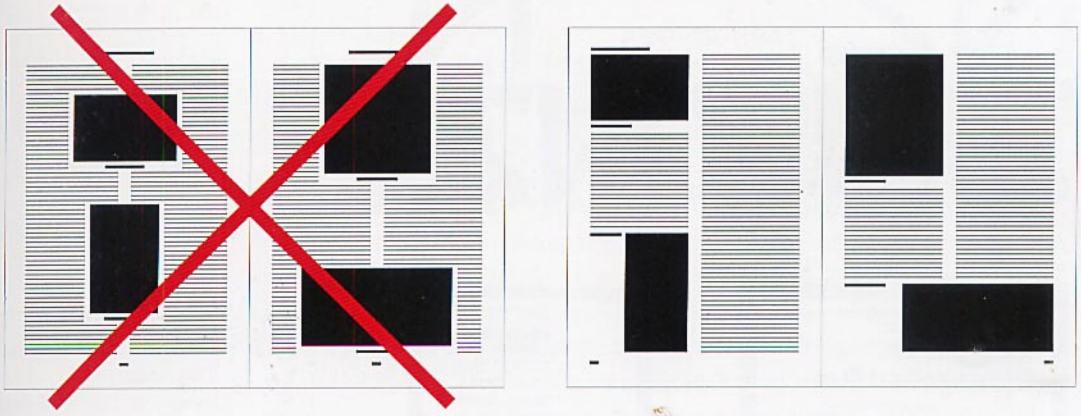
DAS BAUHAUS IN DESSAU
Letterhead, 1924
Designer: Herbert Bayer
Collection of Elaine Lustig Cohen

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.

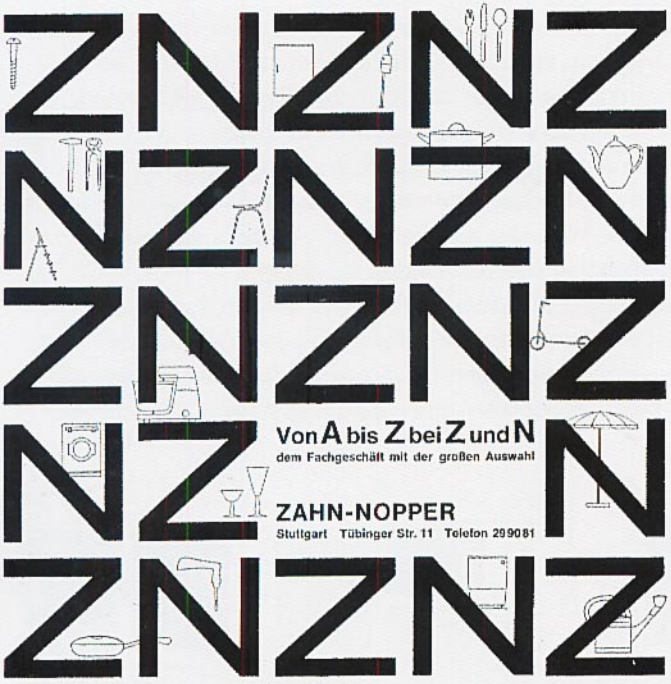
By describing the expansion of space in all directions, the modern grid slipped past the classical frame of the page. Similarly, modern architecture had displaced the centered facades of classical building with broken planes, modular elements, and continuous ribbons of windows.



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."

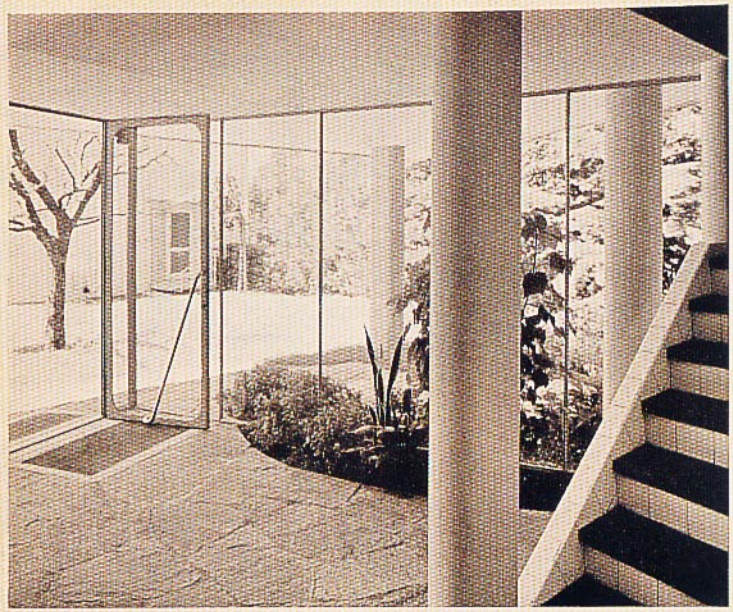
Karl Gerstner's book *Designing Programmes* (1964) is a manifesto for systems-oriented design. Gerstner defined a design "programme" as a set of rules for constructing a range of visual solutions. Connecting his methodology with the new field of computer programming, Gerstner presented examples of computer-generated 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.

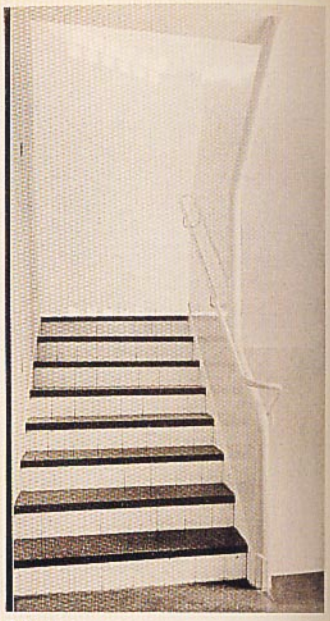
This approach, which quickly became known as "Swiss design," found adherents (and detractors) around the world. Many American designers dismissed Swiss rationalism as irrelevant to a society driven by pop culture and hungry for rapidly transforming styles. Programmatic thinking is now being revived, 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-Appartement 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

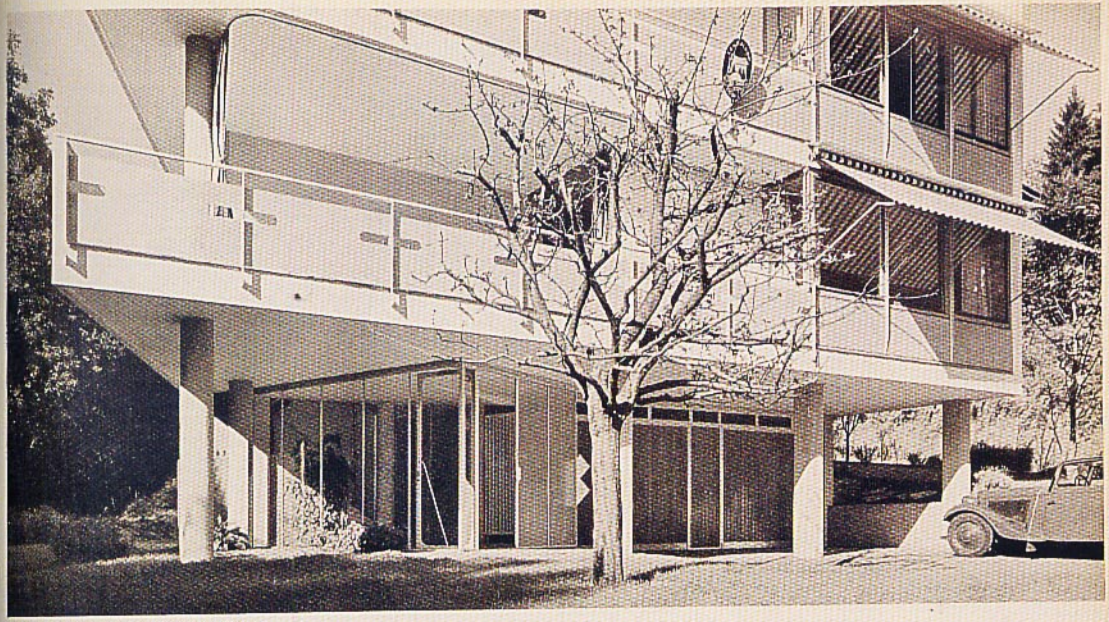
(vgl. Technische Details)

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 Aussern sind ausschließlich Materialien mit unterhaltsloser Oberfläche verwendet worden: Edelputz (weisser Zement, Natursteinpartikeln, ohne Farbbeigabe); Eternit für Rolladenkasten, Brüstungen, Sonnen-Storen-Verdach und Dachgeschoßaufbau; lackierles 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, alle 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] (44), für die Schlafzimmer Roll-Jalousien. Heizung: Jedes Haus hat seine eigene Warmwasserheizung für Kleinkaliberkoks, 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 Skelettkonstruktion 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).



15. 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 Variabekleidung 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. Fenstersimsen: 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 Mstd.= 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 Zurücksetzen 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 Zusammenfassen 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.

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."

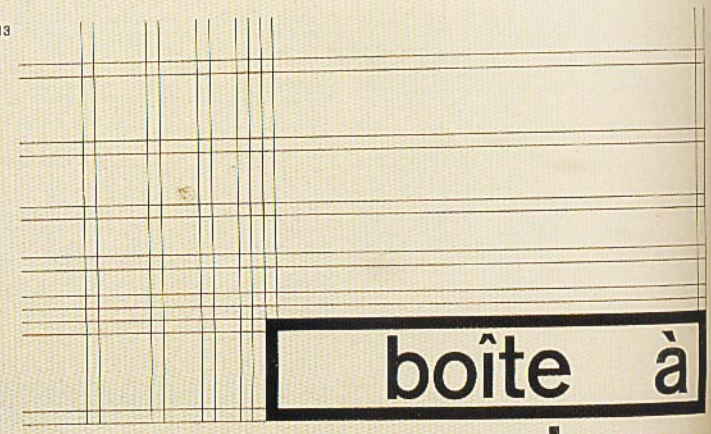
Der New-York-Times-Prospekt zeigt die Lösung einer komplexen Aufgabe; zeigt, wie eine Idee, ein Text und die typographische Darstellung über mehrere Phasen hinweg integriert werden. Darüber hinaus kann sich die Aufgabe stellen, Prospekte wie diesen wiederum mit andern Werbemitteln und Drucksachen zu 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.

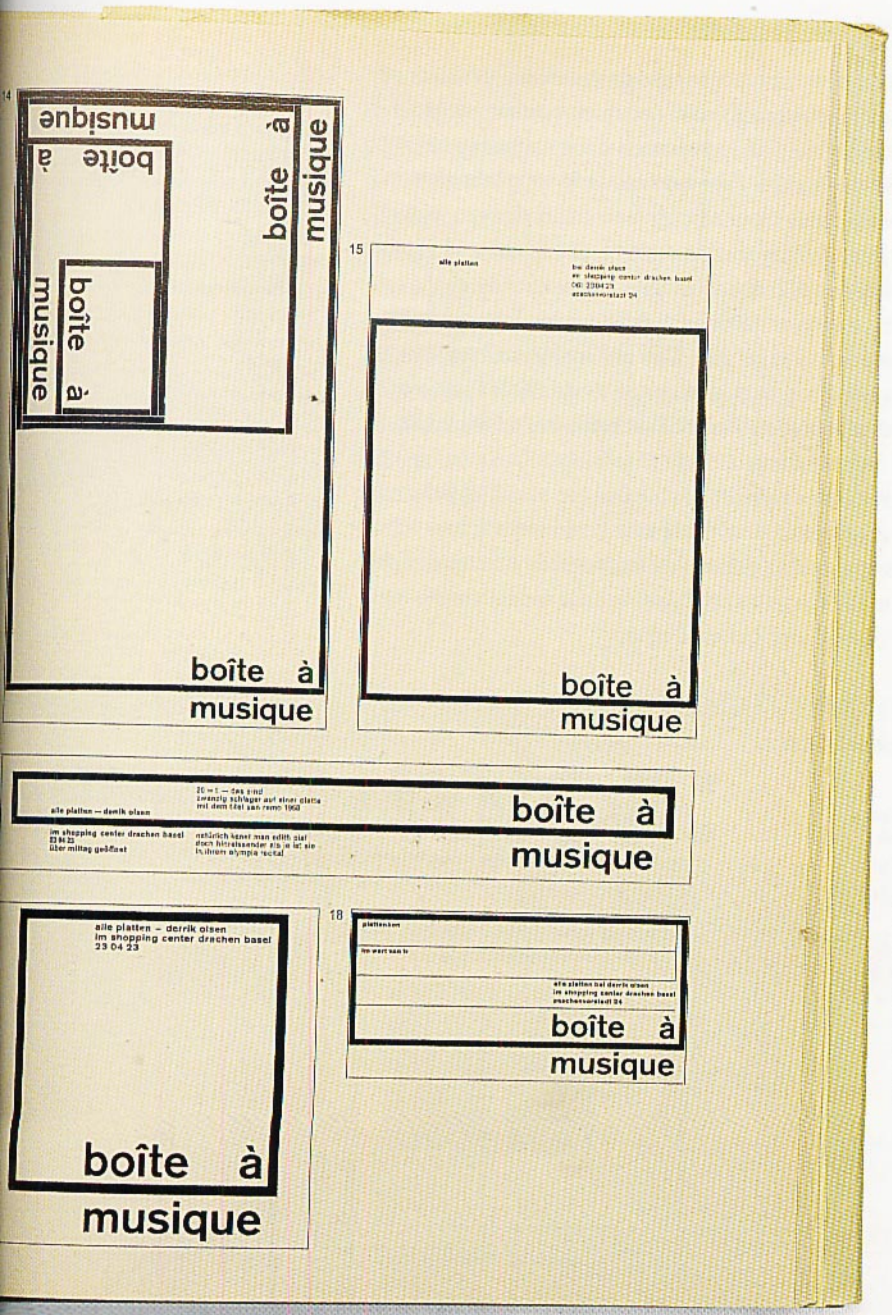
Die Beispiele dieser Seiten geben die Physiognomie der boîte à musique, eines Grammophongeschäfts in Basel, wieder. Die boîte à musique hat ein Signet und einen firmeneigenen Stil – und doch wieder nicht, wenn man unter dem einen ein starres, nachträglich überall dazugesetztes Zeichen und unter dem andern 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





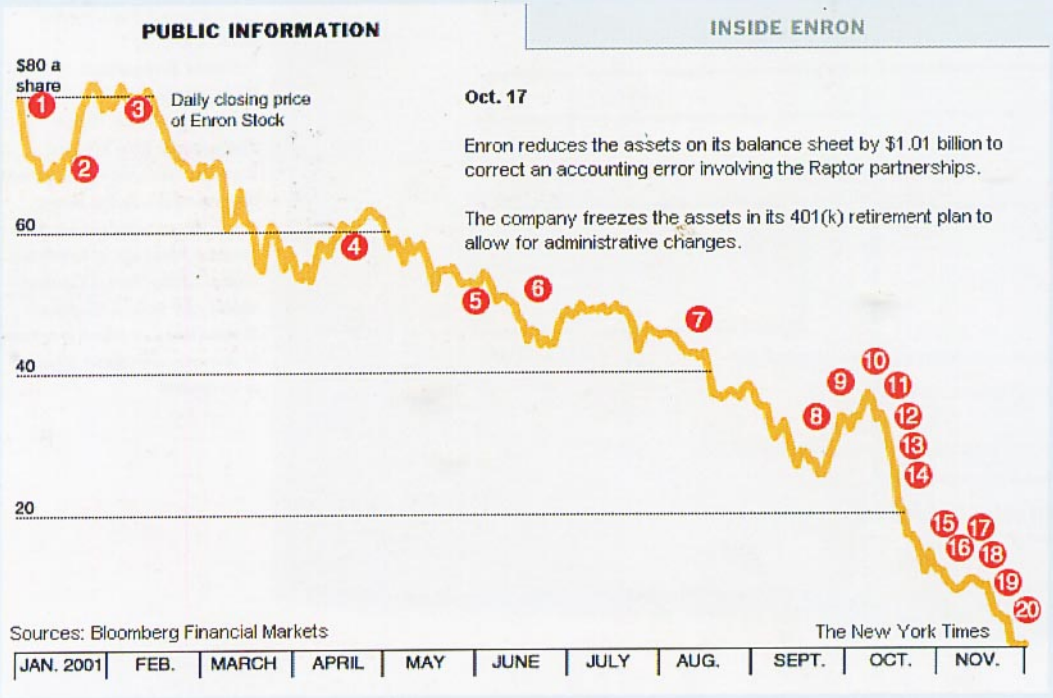
PROGRAMME ENTWERFEN
(DESIGNING PROGRAMS)
Book, 1964
Designer and author:
Karl Gerstner
Publisher: Arthur Niggli
Photograph: Dan Meyers
Karl Gerstner's book Designing Programs *is a design theory classic whose relevance has been renewed in the age of networked media. Shown here is Gerstner's identity 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).

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.

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.

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.

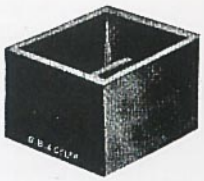
BEYOND HTML

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.

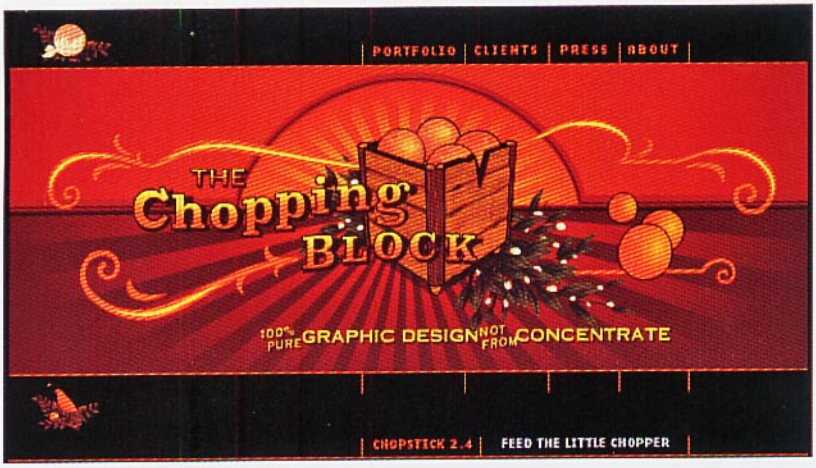
HTML coexists with other languages on the Web, just as alternative technologies appeared alongside letterpress. Lithography, invented for the manufacture of images in the eighteenth century, quickly became an advertising medium that incorporated words as well as pictures, just as letterpress made space 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.

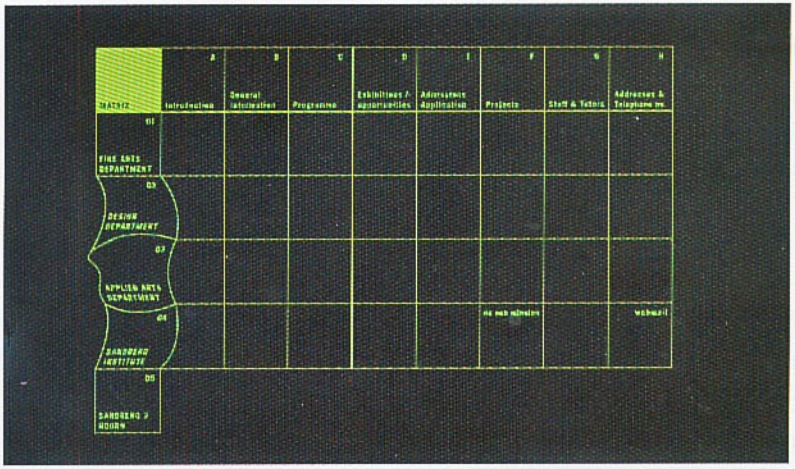
Although Flash scripting manipulates objects in a field of x and y coordinates, the sites created with this technology often appear less tightly controlled by grids than the tabulated pages of HTML. The Flash sites that became, in the late 1990s, icons of a new Web aesthetic are more cinematic than typographic,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

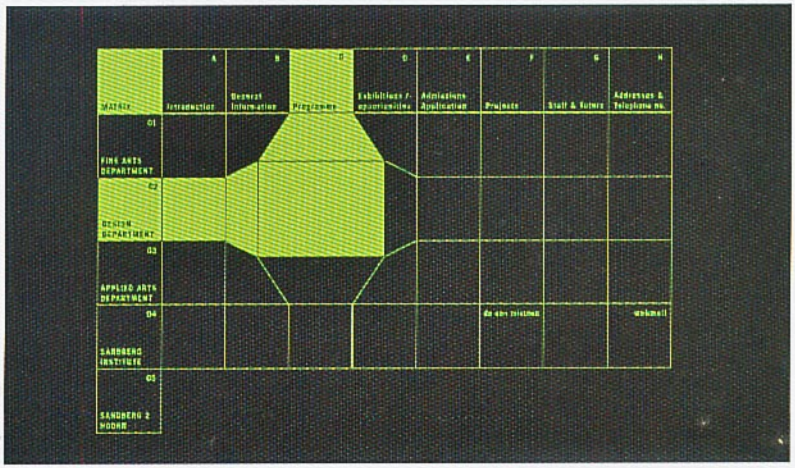


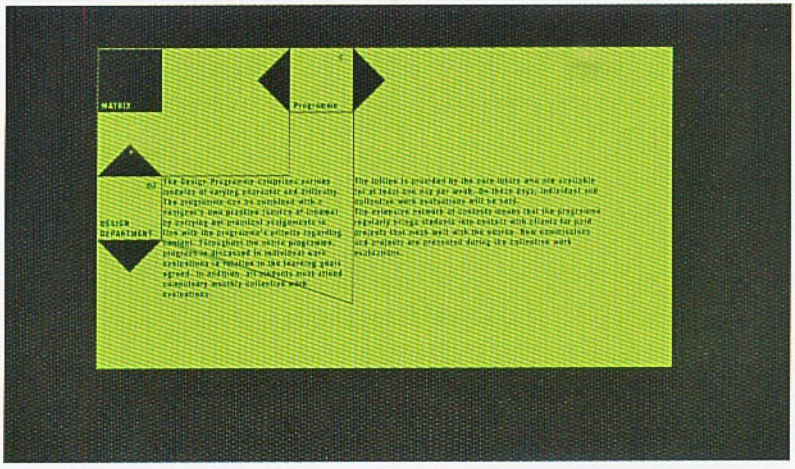
Hand-coding HTML is as slow and deliberate as setting metal type. Empty table cells are used to out areas of open space, but HTML makes these collapse if the cells are truly empty, causing the grid to implode. The transparent images that often fill these spaces are virtual equivalents to the blank spacing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

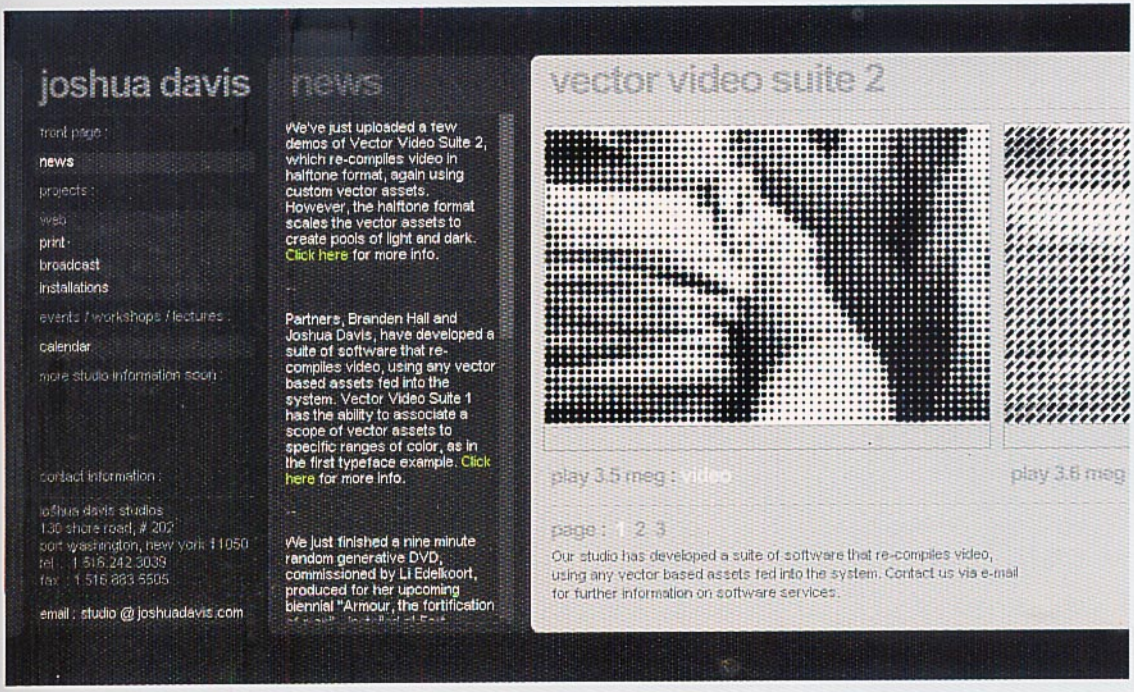
The grid as infinite space—defying edges and dominated by mind rather than body—is a powerful instrument within modernist theory, where it is a form both rational and sublime. In the early twentieth century, avant-garde designers exposed the grid in order to dramatize the mechanical conditions of print. 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



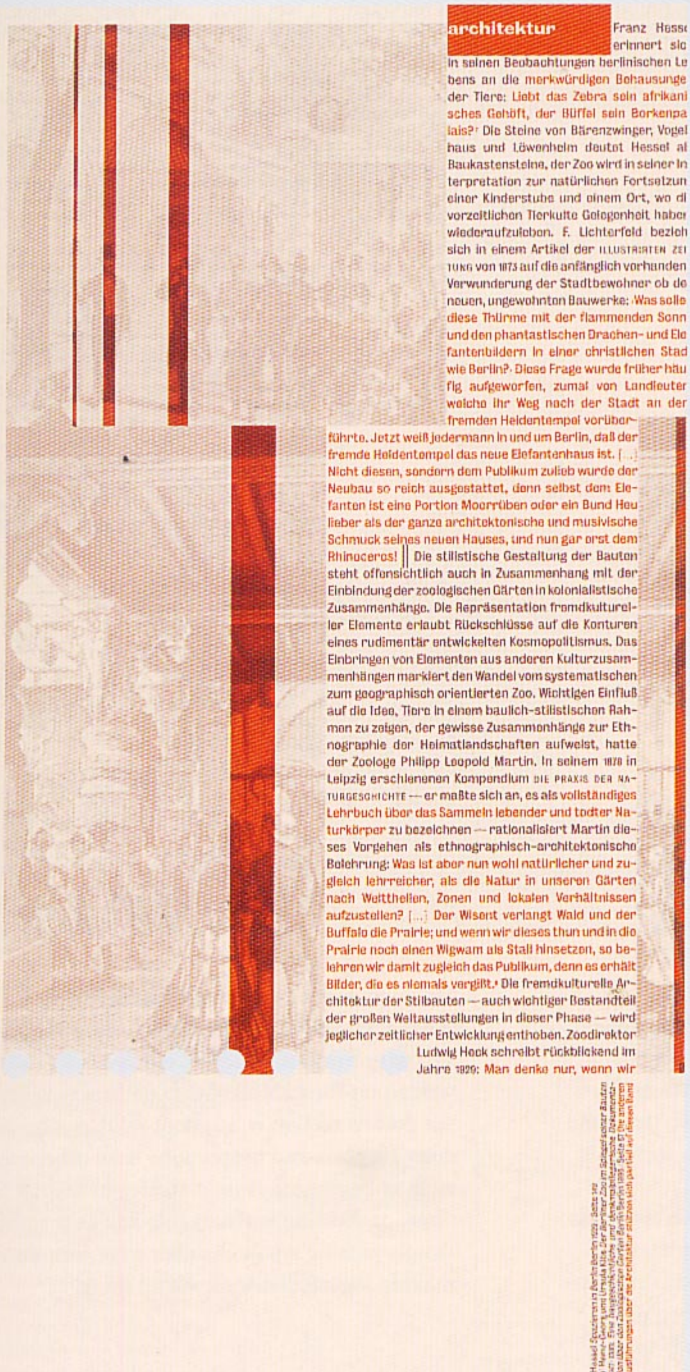
JOSHUADAVIS.COM
Web site, 2004
Designed by Joshua Davis
The anonymous coolness of "old school" Swiss rationalism resurfaced in Web design, as seen in the use of flush left, lowercase Helvetica and consistent grid systems.

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 Lennéschen 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 1886. || 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.[5] Dabei gilt es stets, die Konfrontation mit potentiell Abscheu oder starkes Befremden erregendem tierischem Verhalten zu verhindern. || Die zunehmende Popularität der Zoos korreliert 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.

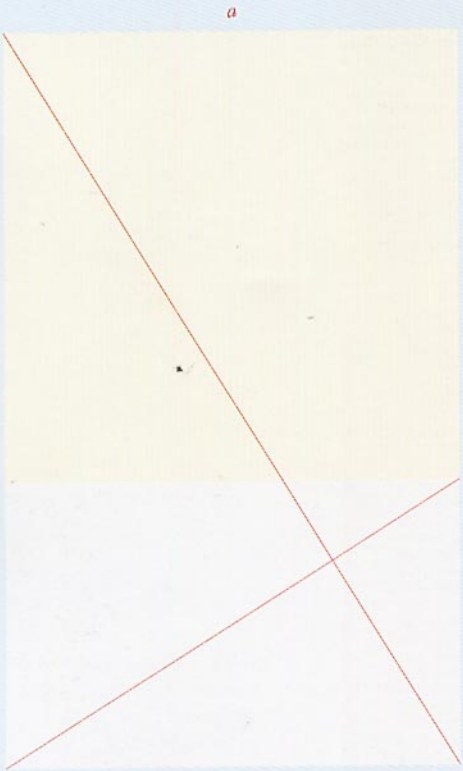
[1] R. Springer Berlin: Die deutsche Kaiserstadt. Reprint Berlin 1877.

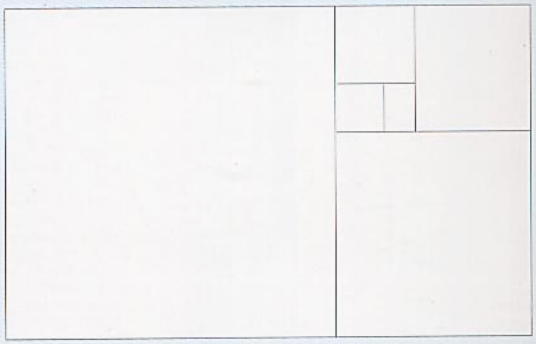
[5] Interessanterweise vollzieht sich in einigen nordamerikanischen Gärten heute eine dem entgegengesetzte Entwicklung. Sowohl in Washington D.C. als auch in Montreal wurden gezielt unspektakuläre, wertlose Tiere eingeführt, die immerhin 98 Prozent des gesamten tierischen Lebens auf der Erde ausmachen. Diese Veränderung ist Teil einer Vielzahl von Eingriffen in die traditionelle Gestaltung, um einem grundlegend veränderten Verständnis von Mensch und Tierwelt Rechnung zu tragen. Vgl. Alexander Wilson The Culture of Nature: North American Landscape from Disney to the Exxon Valdez Cambridge 1992 / Seite 233 ff



architektur Franz Hess
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 habe
wiederaufzuleben. F. Lichterfeld bezieh
sich in einem Artikel der ILLUSTRIRTEN 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 vorüber-
führte. 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 todter 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. 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

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.

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

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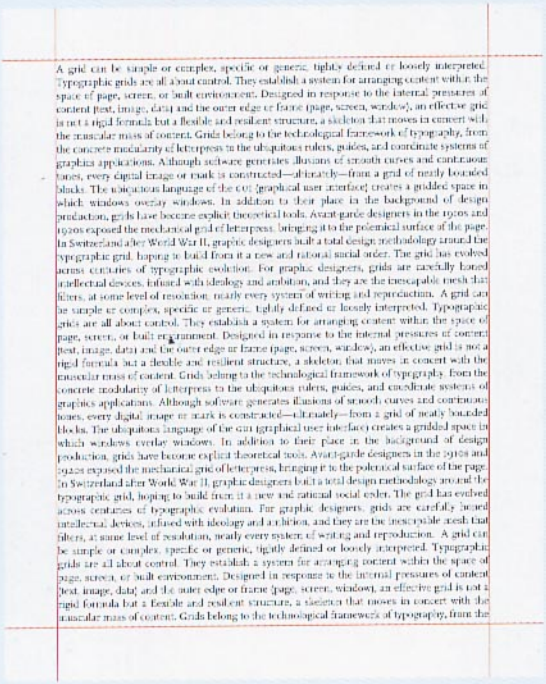
Golden rectangle of text on A4 page (European standard, 210 x 297 mm)

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.



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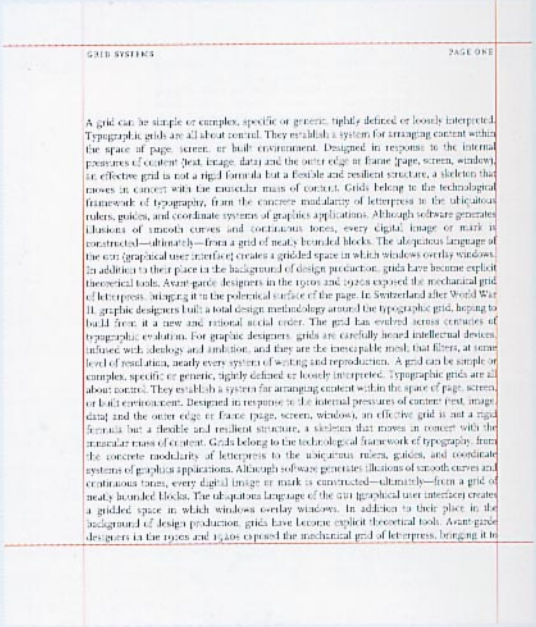
This standard, 8.5 x 11-inch page has even margins all the way around. It is a highly economical, but not very interesting, design.



GRID SYSTEMS PAGE ONE

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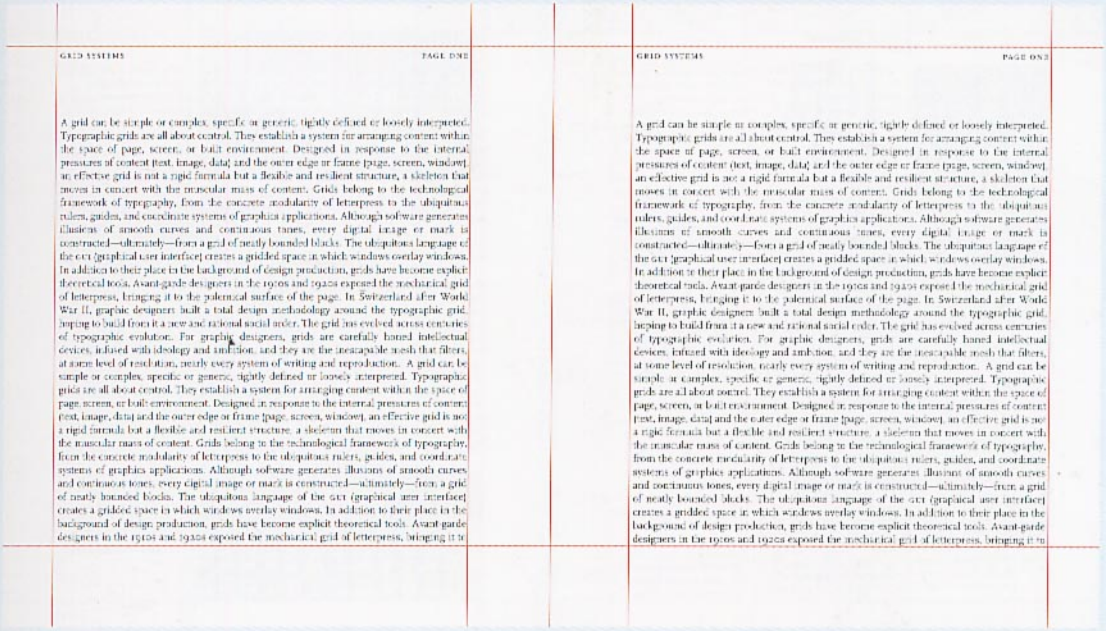
This page is an inch shorter than a standard US office sheet. The text block is a square, leaving margins of varying size.

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.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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.

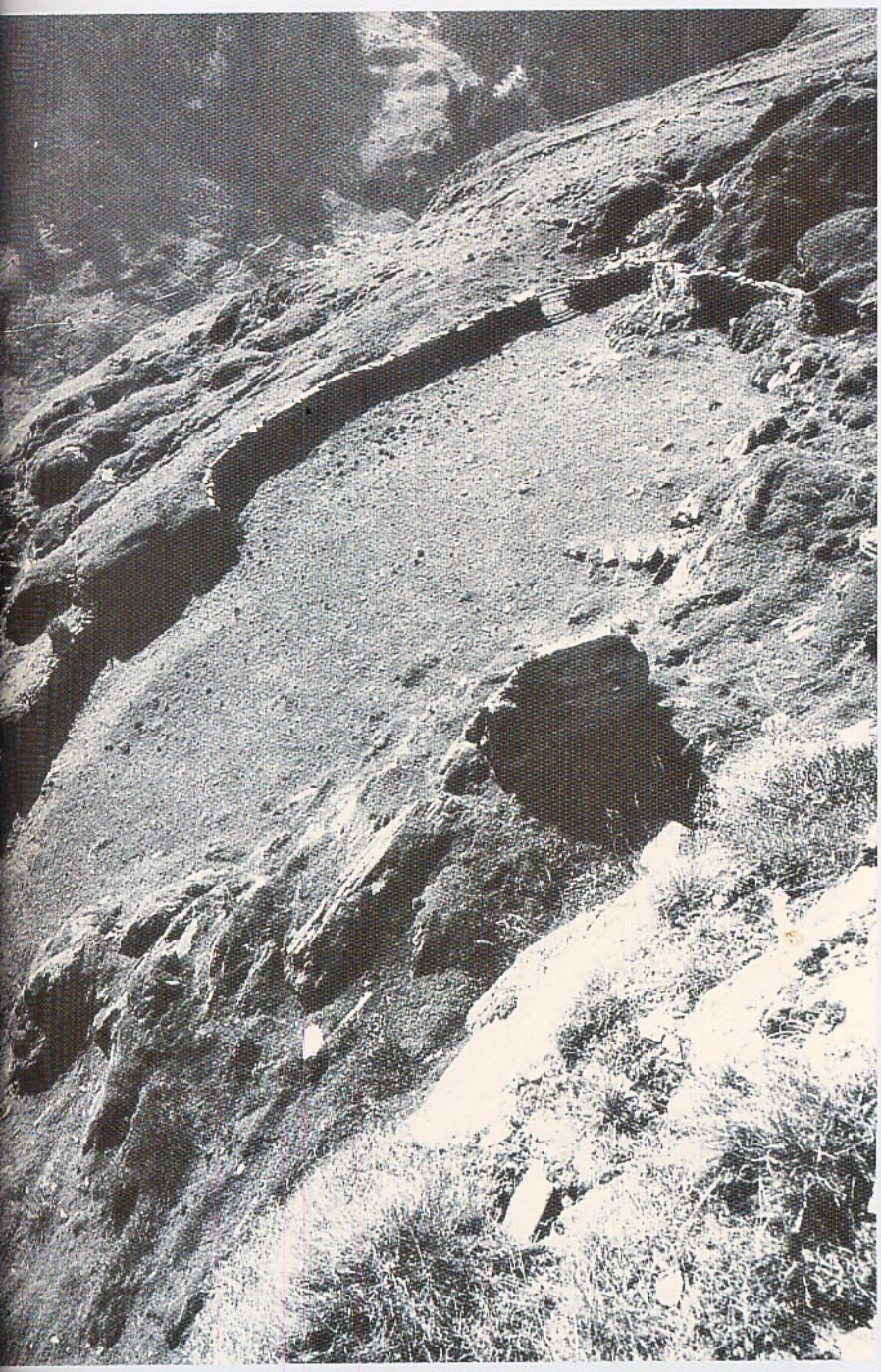
Peter Zumthor

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.

Paperback
0 7148 3164 6

£ 14.95 UK
$ 24.95 US
€ 24.95 EUR
$ 39.95 CAN
$ 49.95 AUS

Béla Bartók

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**
- **Covers the full range of his work from his early explorations of the folklore of Hungary to his Third Piano Concerto composed on his deathbed in the United States**
- **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

225 × 156 mm
8¾ × 6¼ inches
240 pp
c.80 b&w illus.

Paperback
0 7148 3203 0

£14.95 UK
$24.95 US
€24.95 EUR
$39.95 CAN
$49.95 AUS

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 forluitous 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

4/8

> 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-

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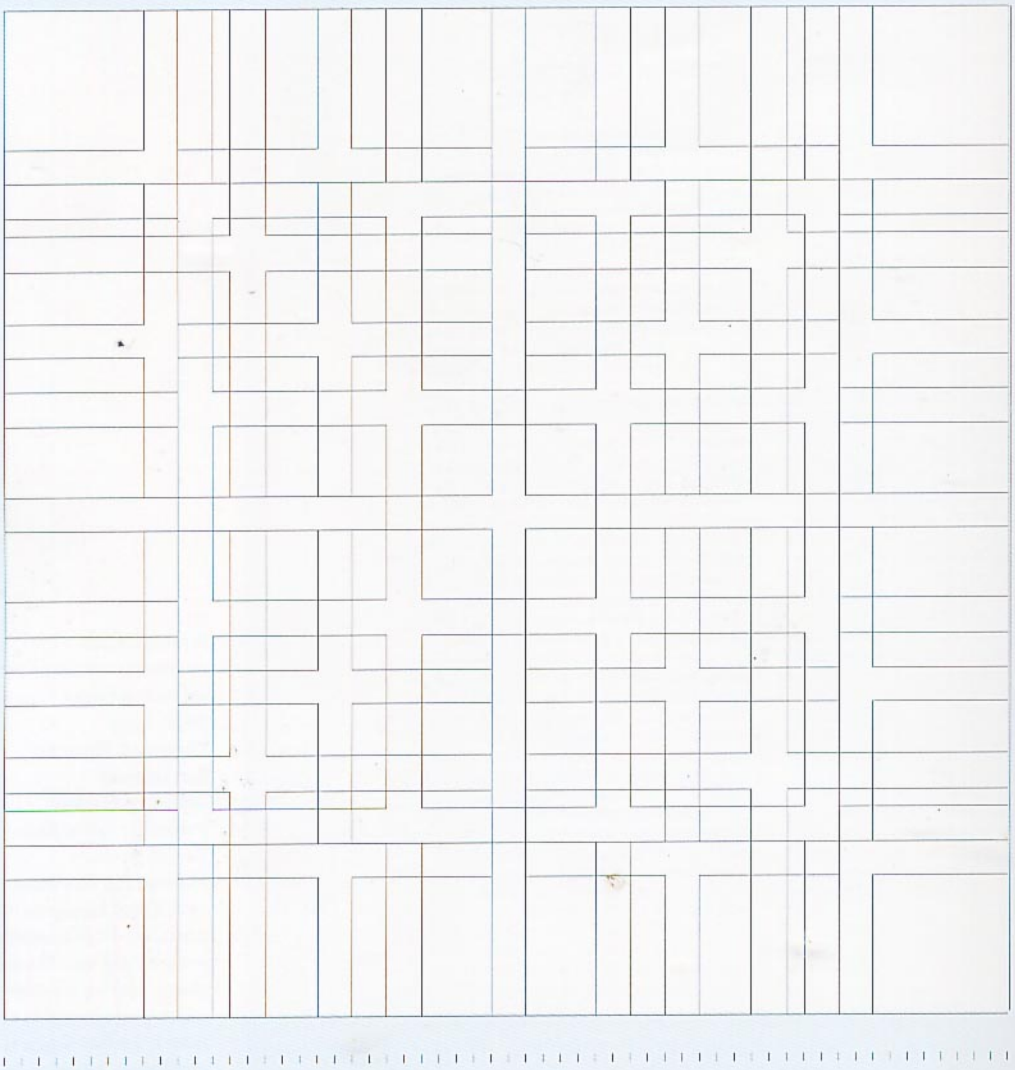
3 David Sudnow, *Ways of the Hand—The Organization of Improvised Conduct*, Cambridge, MA: Harvard University Press, 1978, p 7.
4 Herbert Read, *Art and Industry—The Principles of Industrial Design* New York: Horizon Press, 1954 [1934]
5 *Ibid.*

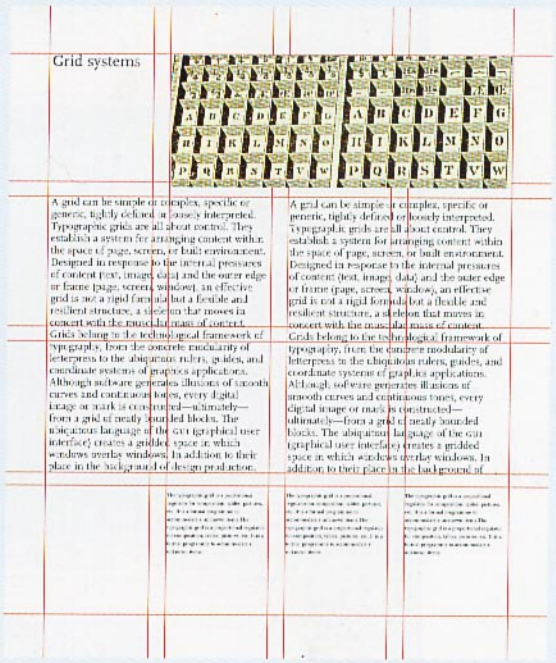
IF/THEN PLAY:
DESIGN IMPLICATIONS
OF NEW MEDIA
Book, 1999
Designers: Mevis and
Van Deursen
Editor: Jan Abrams
Publisher: Netherlands
Design Institute
Photograph: Dan Meyers
In this book about new media, a two-column grid contains the main body of text. The pull quotes, running across two columns, are 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.

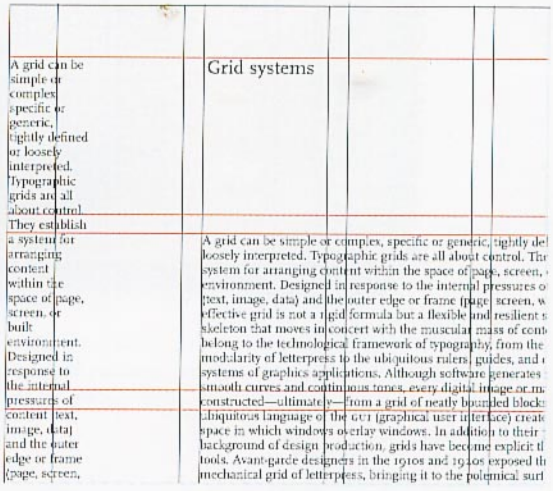


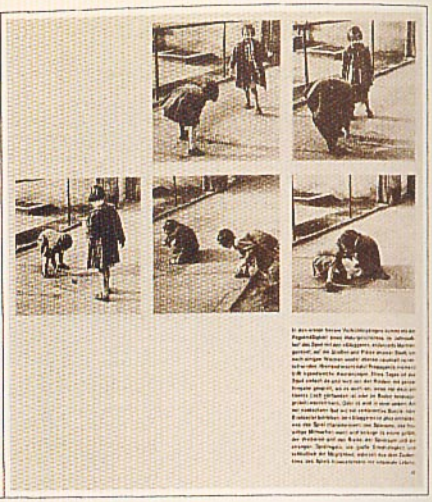
This modular grid has four columns and four rows. An image or a text block can occupy one or more modules.

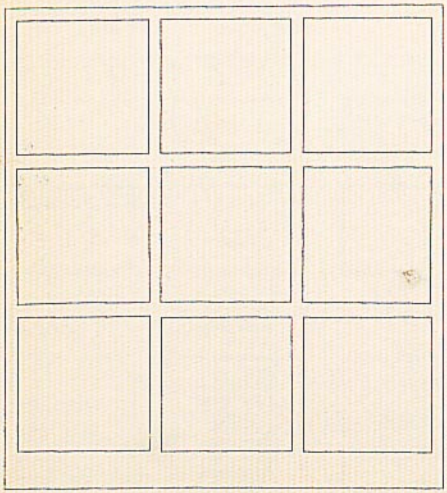
Endless variations are possible.

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.







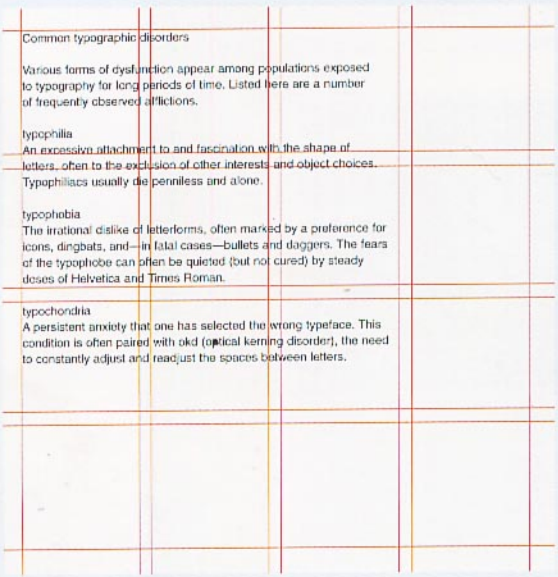
Seiten 226/227/228
Ein Bild- und Textbuch, auf der Grundlage eines Rasters von 9 Quadraten aufgebaut. Der Raster ist hier das Mittel, das die unterschiedlichen Textmengen, unterschiedlichen Bildgrößen und Bildformate zu einer formalen Einheit zusammenfaßt. Im Endergebnis soll der Raster nicht auffallen,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

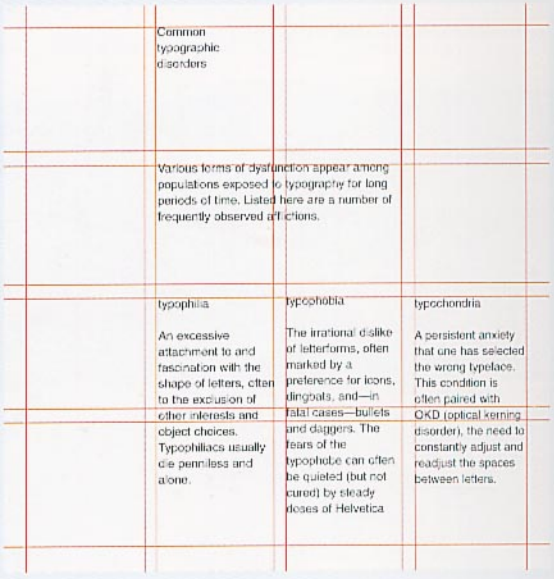
Pages 226/227/228: A book containing pictures and text based on a grid pattern of nine squares. This pattern is the means of establishing a formal unity between the different amounts of text and different sizes and shapes of picture. The pattern should not be conspicuous in the final result but rather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

Pages 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.

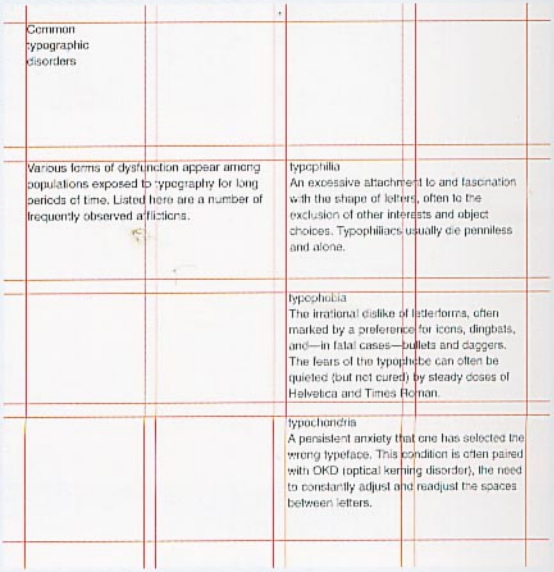
TYPOGRAPHY
Book, 1967
Designer and author:
Emil Ruder
Publisher: Arthur Niggli
Photograph: Dan Meyers

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	3615	3817	3619	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	....
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Trenton, N.J.	....	....	2 42	4 58	6 03	....	7 28	....	8 01	....	8 31	8 44	8 52	....	9 16	....	9 52	....	10 15	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	1₄44	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	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.

	Chloroformed Ants.					
	Friends			Strangers		
	To Nest	To Water	Unremoved	To Nest	To Water	Unremoved
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

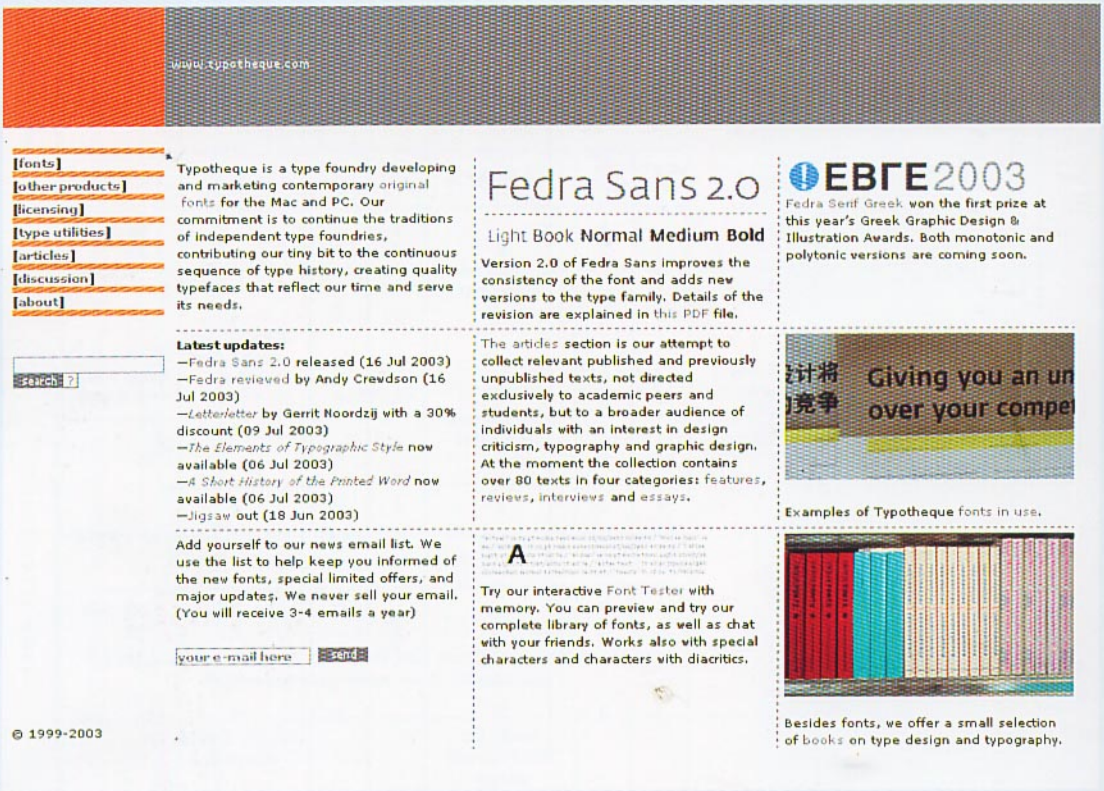
	FRIENDS				STRANGERS			
	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER
SEPT 10	••••						••••	
14			••••				••	••
15			•	•	••		••	
29			•••••				••••	
OCT 02			•••••				••••	•
06			•••••				••••	
TOTAL	04		20	01	02		20	03

INTOXICATED ANTS

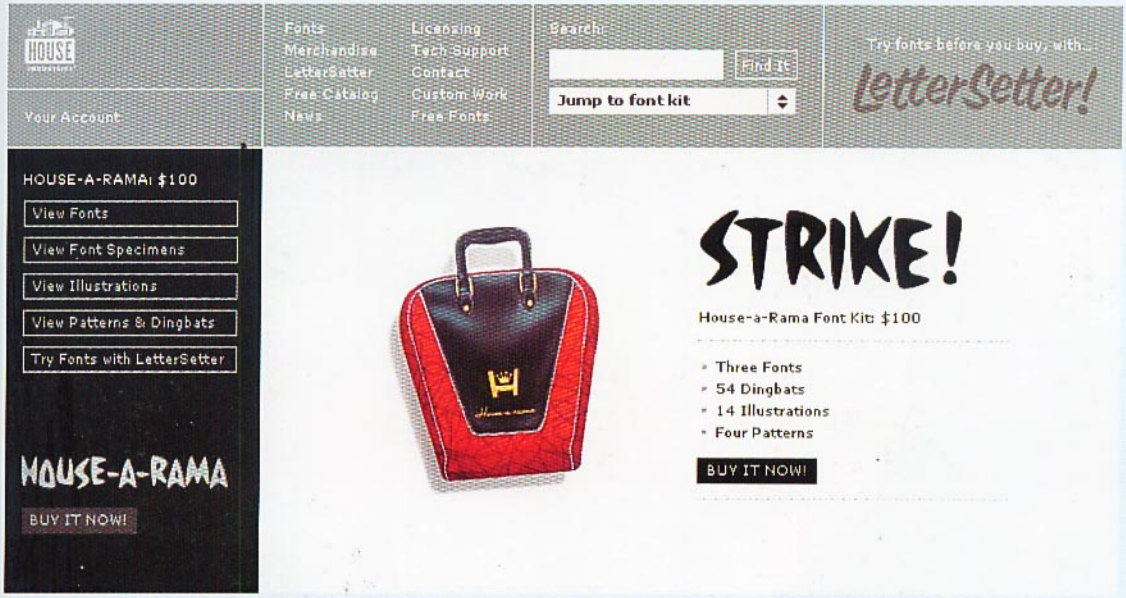
	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER	LEFT ALONE	TAKEN TO NEST	THROWN IN WATER	BOTH NEST AND WATER
NOV 20		•••	••		•		•••••	
22	••	••					••••••••	
DEC 01		•••••••	••				••••••	•••
05		••••••••••• •••••	•••••				••••••••••• •••••	•••
JAN 15	••••				•		•••	
17		••••				••	••••••	•
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.