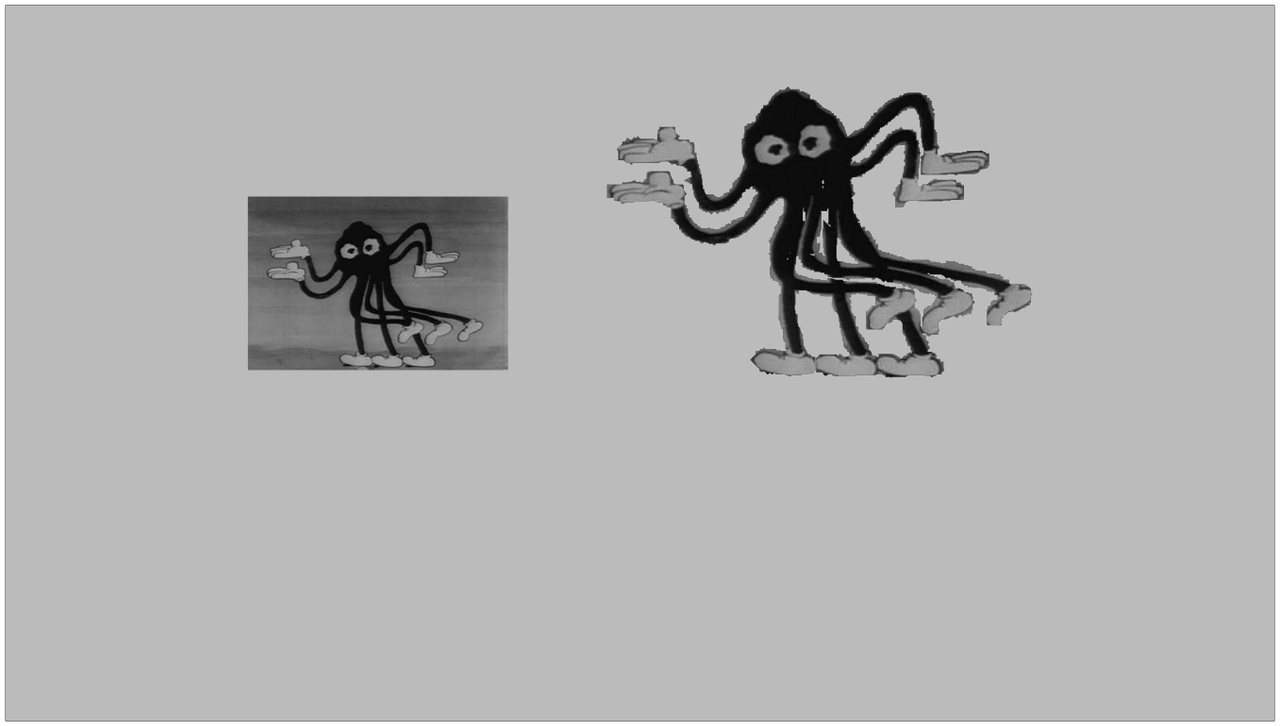


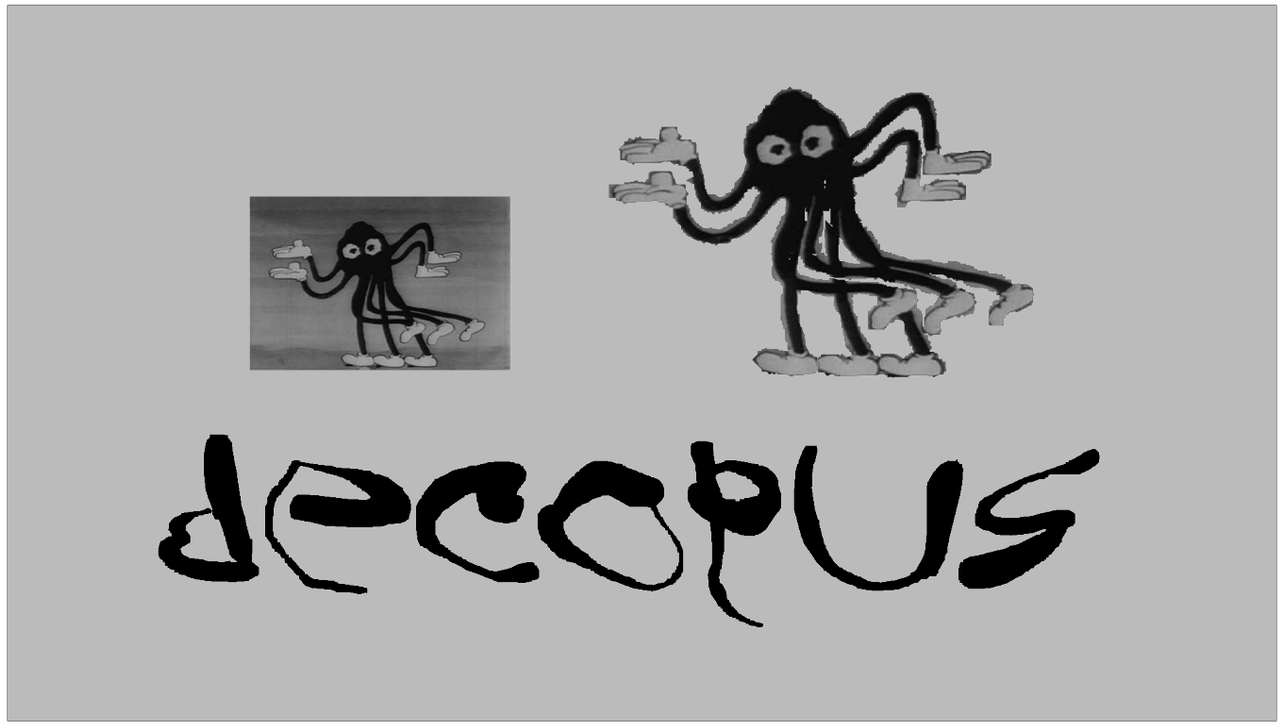
I’m introducing a topic that I call **proportional graphics**. I’ll take around 15 minutes to present it and then cover some entry points into this material for students. We can do that second part discursively if you like.

In this presentation the relative size — by surface area — of each piece of text and image content is controlled using custom typefaces, a Javascript cropping tool, and an Adobe InDesign script, all made for this purpose. The format of each slide is 1920 × 1080 pixels, which means one slide has a surface area of just over 2 million pixels (2,073,600).

Within that area, this rectangular image occupies 103,680 pixels.



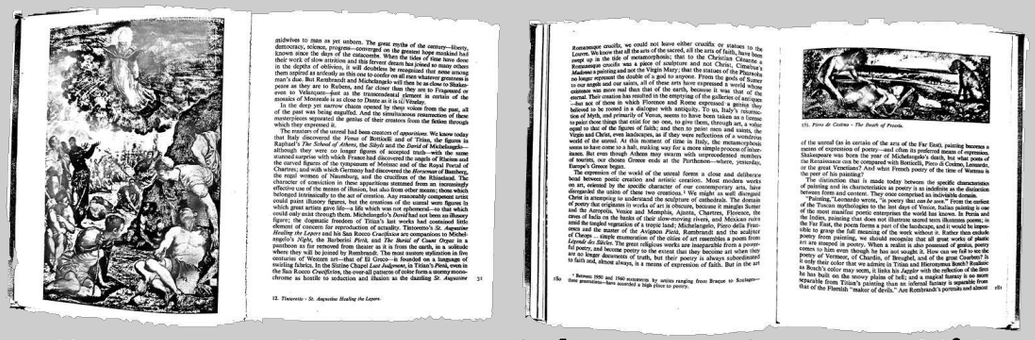
This irregular form also has 103,680 pixels,



and the letter strokes of this word amount to 103,680 pixels, too.

Comparing the surface area of complex shapes is counterintuitive. You might perceive the word as the bigger graphic object because it stretches across more of the slide.

In this presentation I introduce a discourse around some of the factors — historical, cultural, and technical — which determine the size of text and image elements in graphic layouts.



midwives to men as yet unborn. The great myths of the century—liberty, democracy, science, progress—converged on the greatest hope entailed had known since the days of the catacombs. When the tides of time have obscured their works of slow attrition and this fervent dream has joined so many others in the limbo of the past, it will doubtless be recognized that some arising from inspired as seriously as this one to confer on all men whatever greatness is man's due. But Rembrandt and Michelangelo will then be as close to Bisticci- even to Velazquez—just as the stained-glass element in certain of the mosaics of Monreale is as close to Dante as it is to Giotto.

In the deep yet narrow chasm opened by these voices from the past, all of the past was being engulfed. And the simultaneous intersection of these masterpieces separated the genius of their creators from the fetters through which they expressed it.

The painters of the unreal had been creators of *apparitions*. We know today that Italy discovered the *Venus* of Botticelli and of Titian, the figures in Raphael's *The School of Athens*, the *Sibyls* and the *David* of Michelangelo—discoveries which, in the overthrow of accepted truth—with the same stunned surprise with which France had discovered the angels of Rheims and the carved figures of the tympanums of Autun, Moissac, Vézelay, and Chartres; and with which Germany had discovered the *Horsemen* of Bamberg, the regal women of Naumburg, and the crucifixes of the Rhineland. The character of conviction in these apparitions stemmed from an increasingly effective use of the means of illusion, but also from other means; those which belonged intrinsically to the act of creation. Any reasonably competent artist could paint illusory figures, but the creations of the unreal were figures in which great artists gave life—a life which was not ephemeral—to that which could only exist through them. Michelangelo's *David* had not been an illusory figure, but a figure which could only live in him. He had contained little element of concern for reproduction of nature in his Prisoners, in the figure of *Healing the Lepers* and his San Rocco Crucifixion series, in the figure of *Evangelist's Night*, the Barberini *Pietà*, and *The Burial of Count Orgaz* in a pantheon as far removed from theater as it is from the earth, in a solitude where they will be joined by Rembrandt. The most austere opinions in fine creations of Western art—that of El Greco—is founded on a language of swirling fabrics. In the Sistine Chapel *Last Judgment*, in Titian's *Pietà*, even in the San Rocco Crucifixion, the over-all patterns of color form a stormy monochrome as hostile to seduction and illusion as the dazzling *St. Augustine*

21

12. *Tintoretto - St. Augustine Healing the Lepers*

Romanesque crucifix, we could not have either crucifix or statues in the Louvre. We know that all the arts of the sacred, all the arts of faith, have been metamorphosis; that to the Christian Creative a Romanesque crucifix was a piece of sculpture and not Christ, Cimabue's *Madonna* a painting and not the Virgin Mary; that the statues of the Pharaohs no longer represent the double of a god to anyone. From the gods of Rome to our nigh and our saints, all of these arts have expressed a world whose existence was more real than that of the earth, because it was that of the eternal. Their creation has resulted in the emptying of the galleries of antiques —but not of these in which Florence and Rome expressed a genius they believed to be immortal. To us, Italy's virtuosity, and primarily of Venice, seems to have been taken as a license to paint those things that exist for no one, to give liberties to the art, a value equal to that of the figures of faith; and then to paint stars and saints, the Virgin and Christ, even landscapes, as if they were reflections of the splendid world of the unreal. At this moment of time in Italy, the metamorphosis seems to have come to a halt, making way for a more simple process of inheritance. But even though Athens may swarm with unprecedented numbers of tourists, nor chosen Greece ends at the Parthenon—where, yesterday, Europe's Greece began.

The expression of the world of the unreal forms a close and deliberate link between Romanesque creatures and artistic creation. Most modern works on art, external by the specific character of our contemporary arts, have disregarded the unity of style. Perhaps we ought as well disregard Christ in attempting to understand the sculpture of Chartres. The domain of poetry that originates in works of art is obscure, bottomless. The domain of Venice and Memphis, Ajanta, Chartres, Florence, the caves of Italy on the banks of their slow-moving rivers, and Mexican ruins amid the tangled vegetation of a tropic land: Michelangelo, Piero della Francesca and the master of the Avignon *Pietà*, Rembrandt and the sculptor of Angers—simple enumeration of the cities of art resembles a poem from *Les Orientales* by Hugo. The great religious works are inseparable from a powerful poetry, and become poetry to the extent that they become art when they are no longer documents of truth, but their poetry is always subordinated to faith and, almost always, is a means of expression of faith. But in the art

18a

* Between 1930 and 1940 excursions by artists ranging from Braque to Soulages—

13). *Piero de Cosimo - The Death of Procris.*

of the unreal (as in certain of the arts of the Far East), painting becomes a means of expression of poetry—and often its preferred means of expression. Shakespeare was born the year of Michelangelo's death. But what poets of the Renaissance can be compared with Botticelli, Piero di Cosimo, Giorgione or the great Venetians? And what French poetry of the time of Watteau is the peer of his painting?

The distinction that is made today between the specific characteristics of painting and its characteristics as poetry is an indefinite as the distinction between poetry and literature. They exist comprised an indivisible domain.

"Painting," Leonardo wrote, "is poetry that *can be seen*." From the outset of the Tuscan myth-making, the Sistine Chapel has been and remains one of the most manifest poetic enterprises the world has known. To the Greeks, the Indies, painting that does not illustrate sacred texts illustrates poems: in the Far East, the poem forms a part of the landscape, and it would be impossible to grasp the full meaning of the work without it. Rather than exclude poetry from painting, we should recognize that all great works of plastic art are steeped in poetry. When a realist is also possessed of genius, poetry comes to him even though he has not sought it. How can we fail to see the poetry in Vermeer, of Chardin, of Breughel, and of the great Cranbers? It is only clear proof that we admire in Titian and Hieronymus Bosch? Analysis of Bosch's color may seem, it fitits his Jupiter with the reflected flashes he has built on the snowy plains of Italy and a caspian sunrise is no more wearable from Titian's painting than an infernal factory is separable from that of the Flemish "maker of devils." Are Rembrandt's portraits and almost

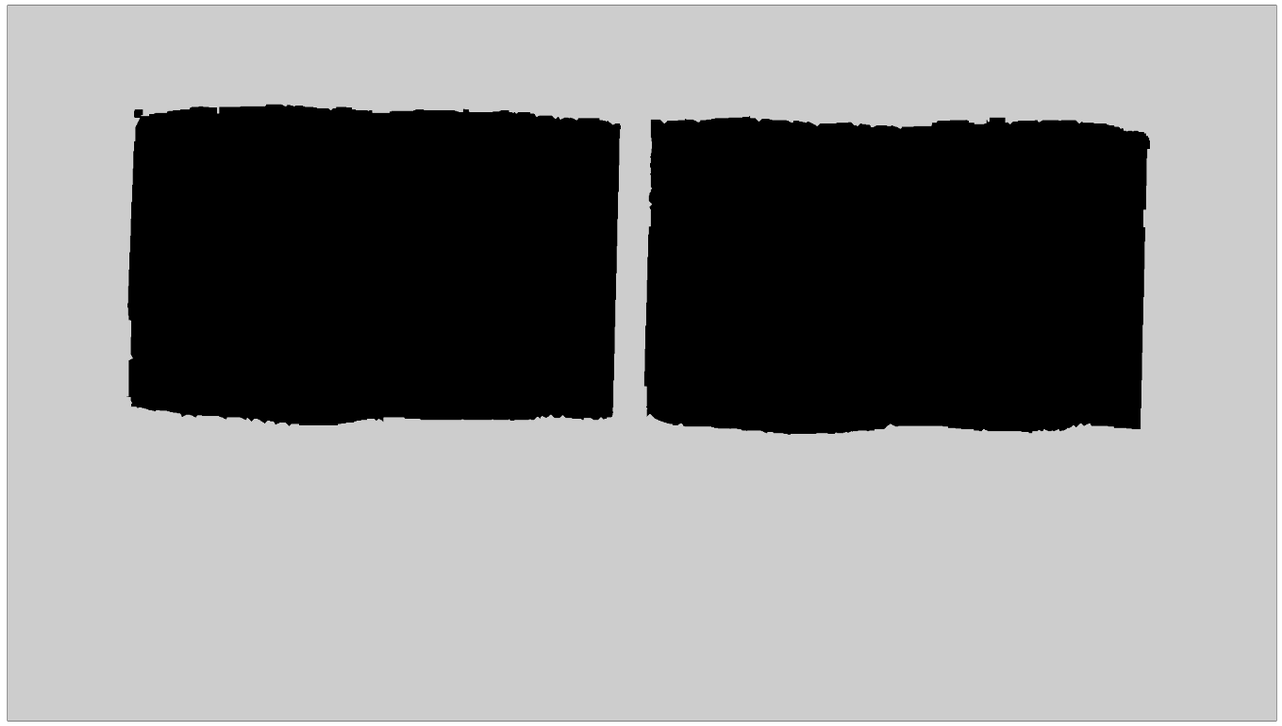
18b

big as possible

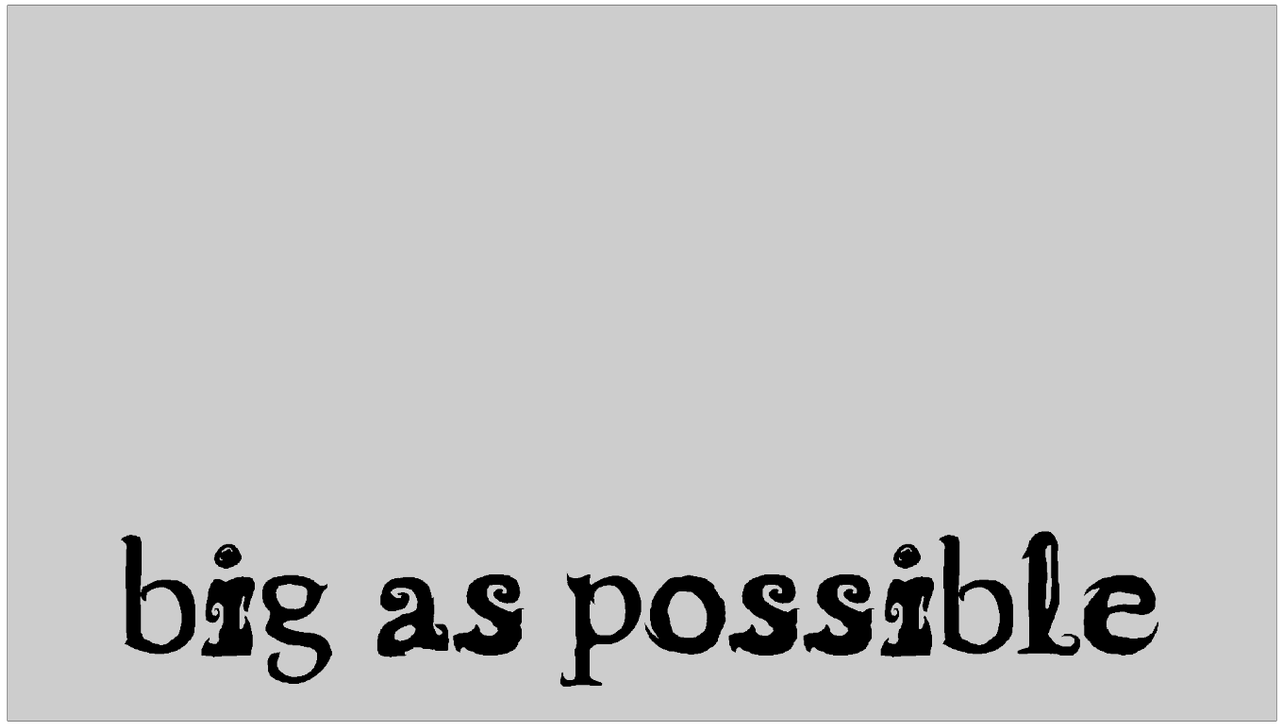
Starting with image elements:

On these two double-page openings from the same book you see a common tendency — these images are as big as they can be on pages of this format while maintaining their original aspect ratios. Vertical pages privilege vertical format images — think of how the smartphone has popularised vertical format video.

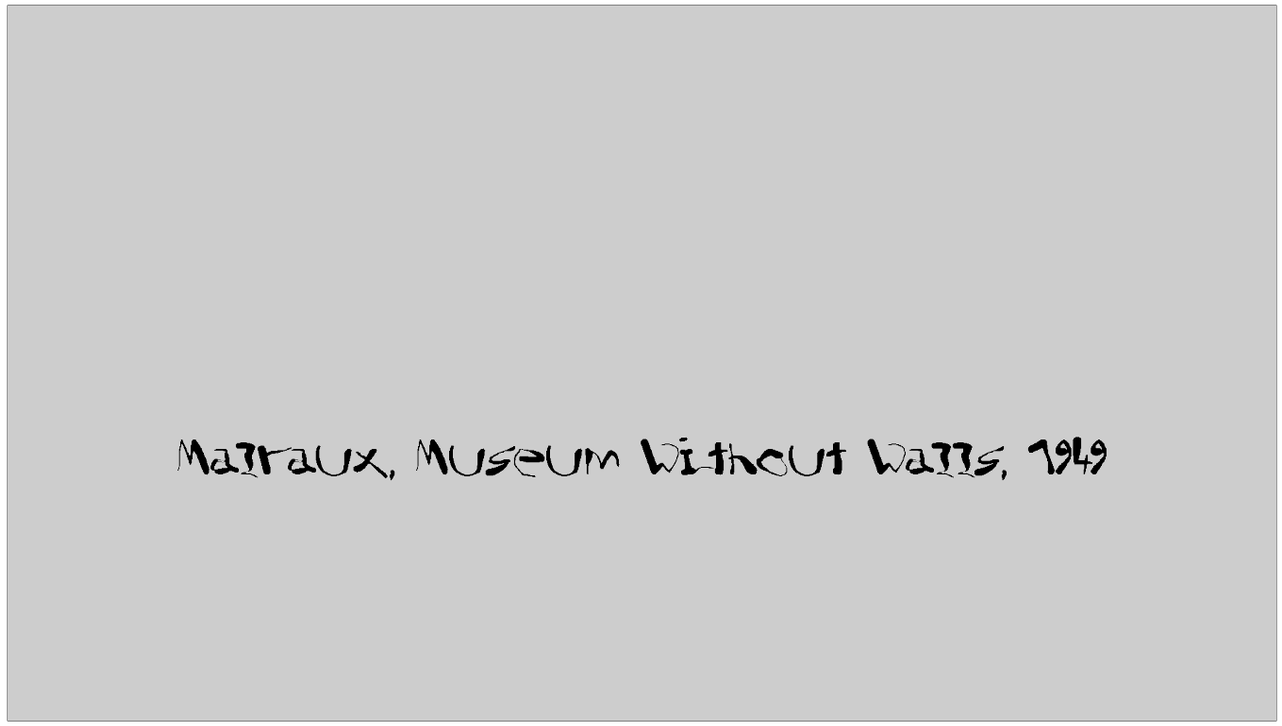
By the way, the rest of the slides in the presentation observe the following logic regarding the relative size of their elements:



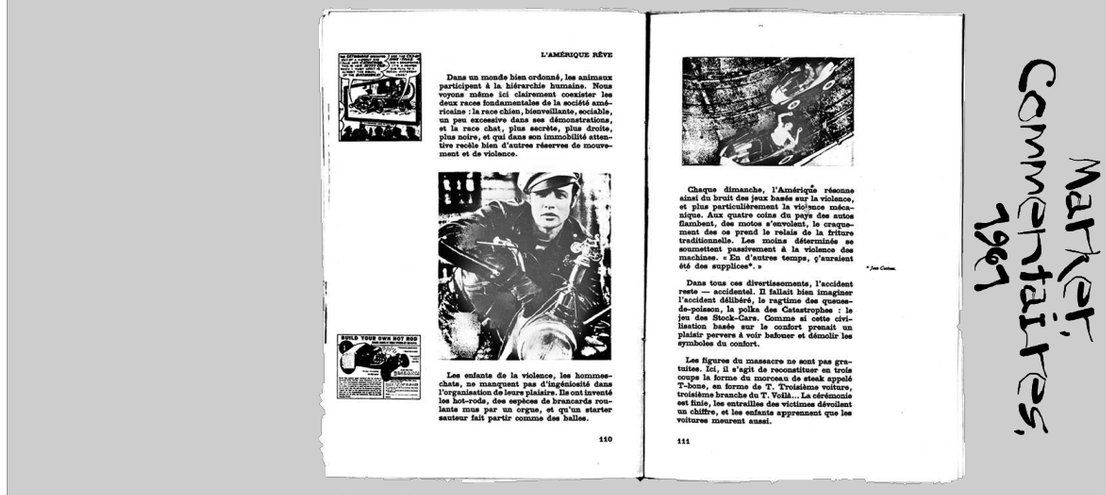
33% of the pixels on each slide are for image,



5% of the pixels are for a high-level thematic text,



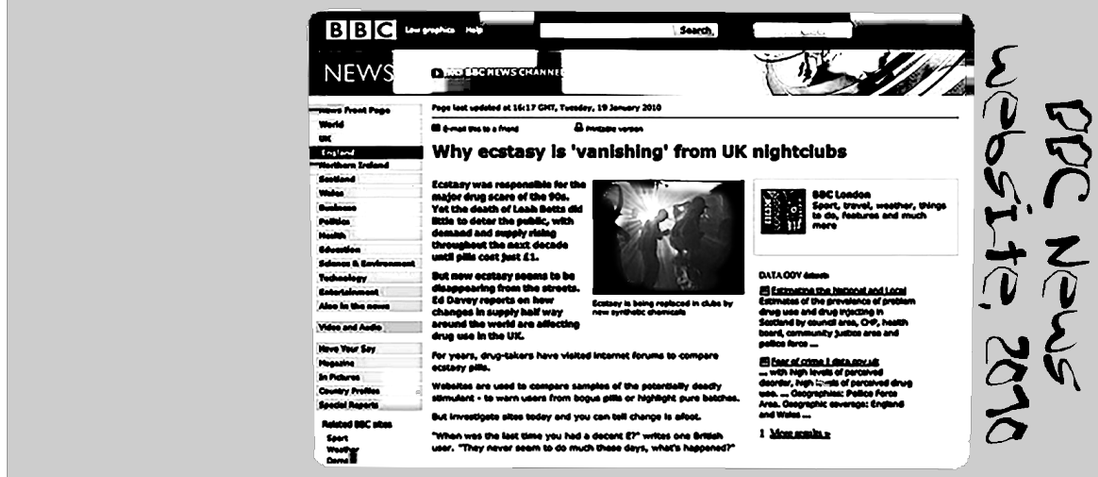
and 1% are for captions, when needed.



Marker, Commentaires, 1967

small as possible

The two marginal images on the left page of this book layout are as *small* as possible while still being recognisable and understandable.



BBC News website, 2010

reasonably big

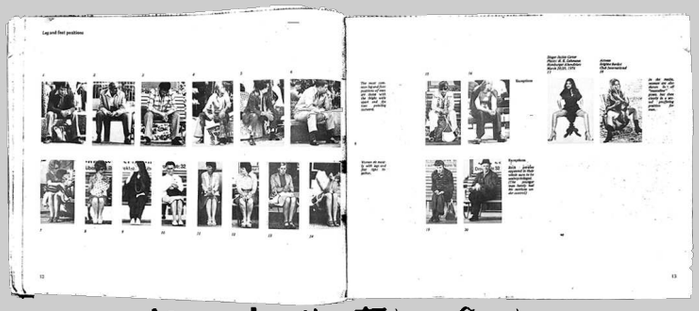
On scrollable digital displays, size constraints manifest differently. In the main column of this early version of the BBC website, full-width images would occupy too much vertical space, pushing the text below the scroll point when the page initially loads. The half column-width image is a reasonable solution.



On this twelfth-century page there is a small illustration made by a specialist scribe,



using expensive ultramarine pigment and gold leaf. *Its* size is directly proportional to its bill of materials.



Wex, Let's Take Back Our Space, 1979



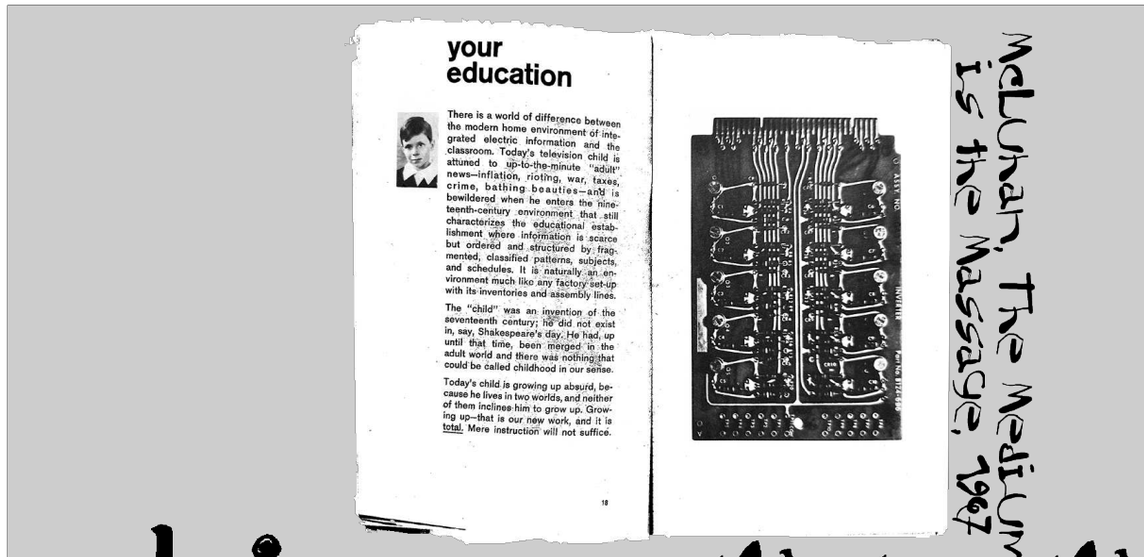
Ivins, Prints and Visual Communication, 1953

this big

Size can be determined by relations between images. Here on the left is an opening from a book which forces all of its images to the same height and varies their width depending on their composition. This layout supports comparison between the two rows of images.

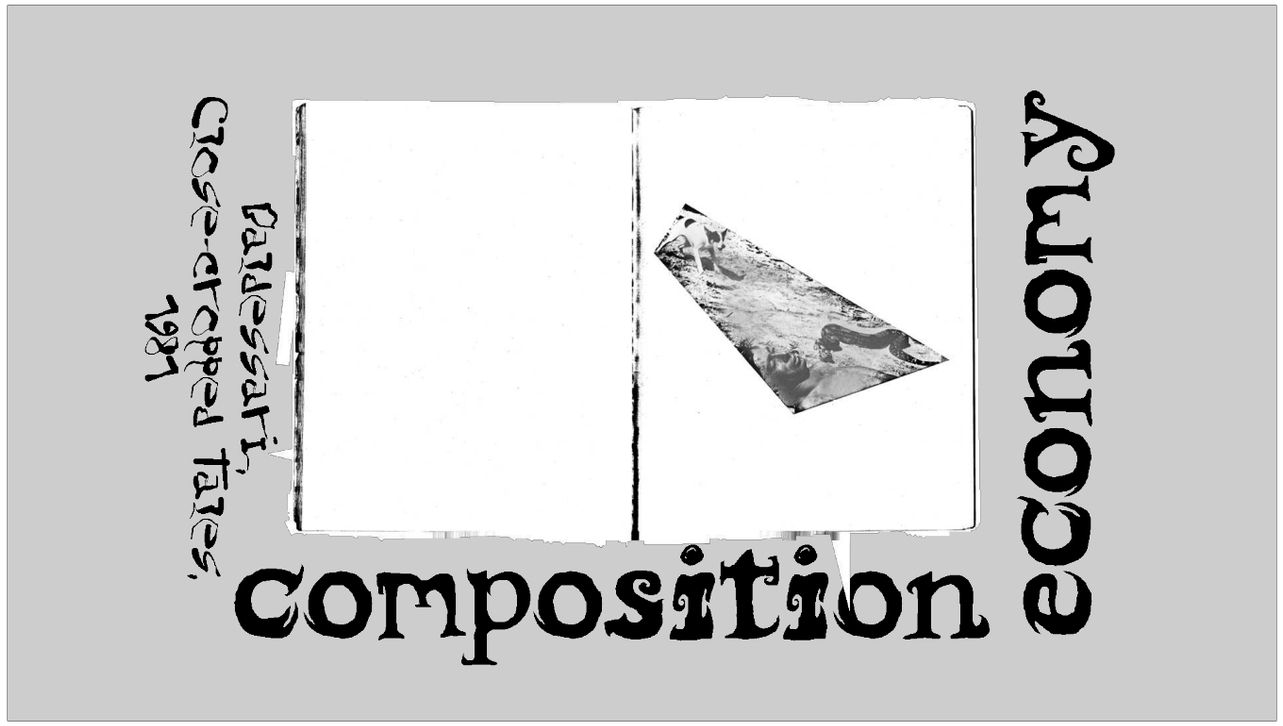
And on the right, from a book about historical print techniques, the upper image is shown at actual size, matching the original print that it reproduces.

Images might also be big or small for purely artful reasons,



creating dynamic relations, as in this example from Marshall McLuhan’s ‘The Medium is the Massage.’

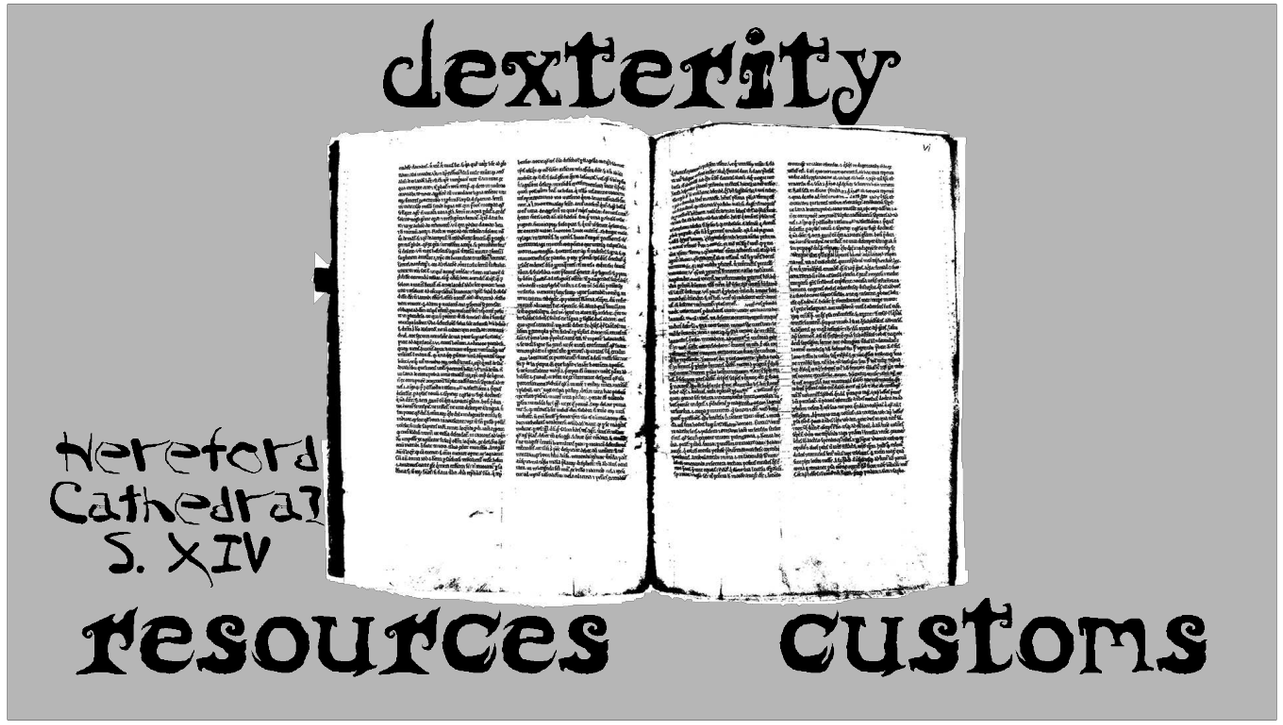
And some digital images are simply too low resolution to be shown big. The look of a pixelated image is a function of size.



To speak of image size we also need to address the rectangle. Since the advent of print, and before, the great majority of images are presented in rectangular formats. Our computerised image editing software only accommodates polygonal images within rectangular images, and there are no interface mechanisms to relate the size of non-rectangular objects in page layout software.

This is an example from a book by artist John Baldessari, in which found images are cropped according to their dramaturgy — the main protagonists of this scene define its corners, and there is no inactive background.

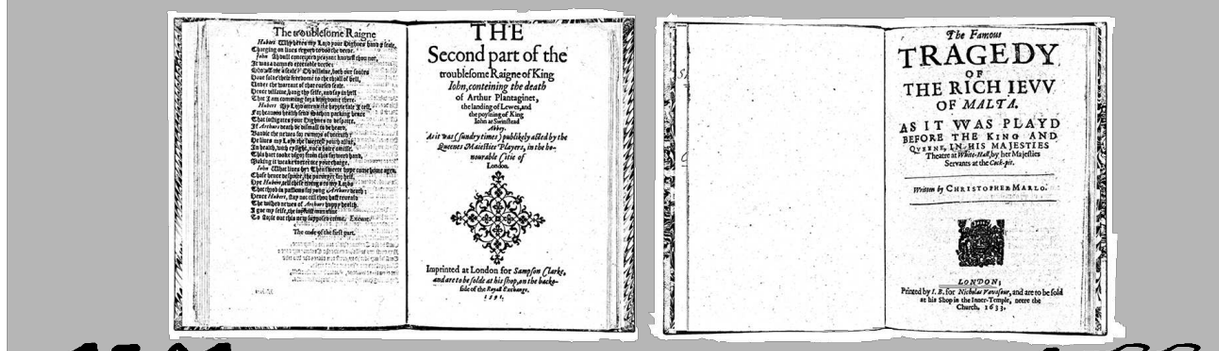
To summarise — images are often sized arbitrarily, limited by the dimensions of pages, and in relation to practical and technical considerations not specific to their content. Rectangular formats persist by default.



What determines the size of text?

Text and image are not similar graphic objects. Text size is construed differently because the significance and legibility of words is not defined by the number of letters they contain.

The size of the writing performed by medieval scribes was pressured by several factors: the dexterity and laboriousness of their craft, the commodity value of the materials they wrote on, and the capacity of readers to consume small text. These pressures shaped customs of page layout that still remain.

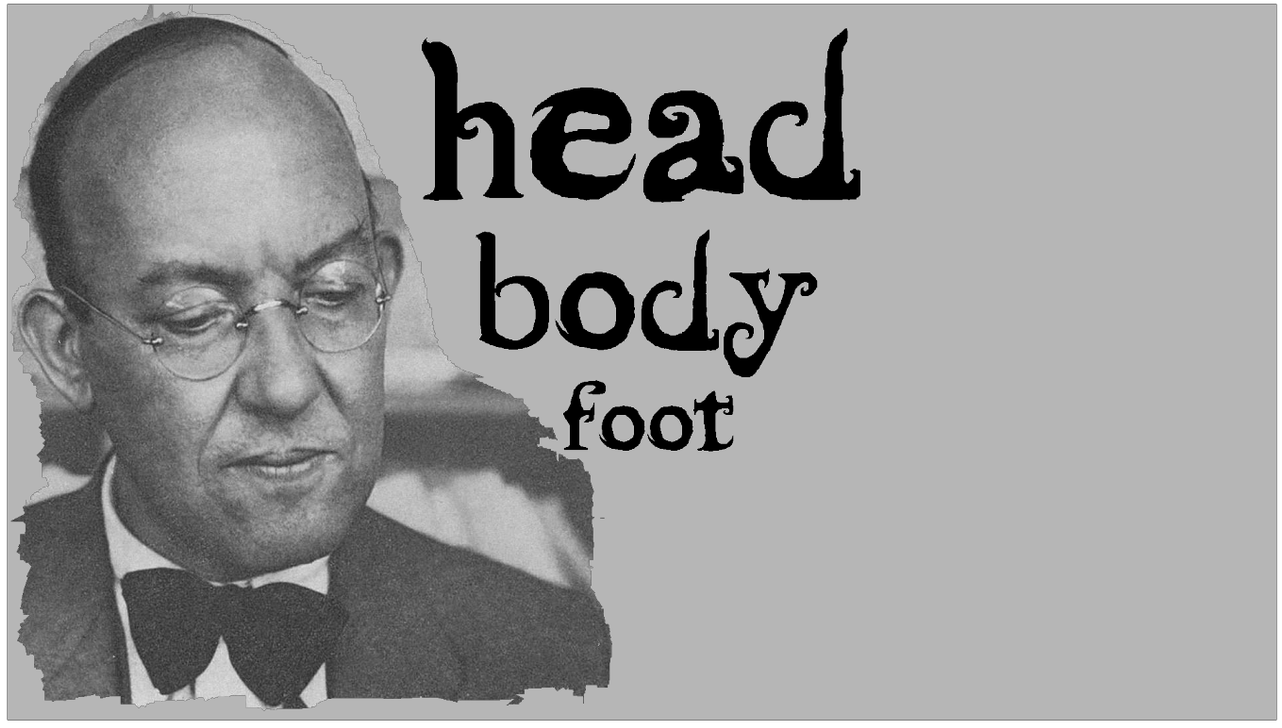


1591 typography finally gets it 1633

Typographic hierarchy — the sizing of words according to their function in a text had clumsy beginnings.

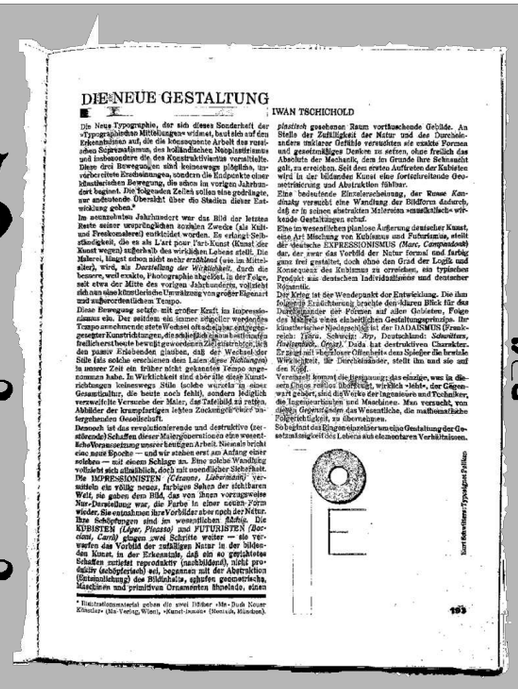
This sixteenth century title page on the left lacks hierarchical reasoning. Its typography is pure decoration. Lines break at arbitrary points just to create its triangular formations. ‘THE’ is set as the biggest, most prominent word. The title of the book, ‘The troublesome reign of King John’, is hidden in a preamble, spread over three lines, set in three different typefaces.

On the right, this seventeenth century title page represents a tendency to rationalise its type sizes, plotting the structure of information in graphic space. The largest word is the most telling in the title, and the line breaks make semantic sense.



In the typography manuals of the twentieth century are protocols for how type size should be used to differentiate categories of text. Jan Tschichold here prescribed “ideally three” and “not more than five” type sizes in a single document. Tschichold stated his preferences as matters of comprehension, but when these words were written, 100 years ago, they were also expressions of *economical thinking.* Movable metal type for letterpress printing had always been hard capital — a significant investment for the printer, who had to economise on the range of type sizes that they offered.

big
normal
small



DIE NEUE GESTALTUNG

I

IWAN TSCHICHOLD

Die Neue Typographie, der sich dieses Sonderheft der »Typographischen Mitteilungen« widmet, bezieht sich auf den Erkenntnissen auf, die die bekanntgewordene Arbeit des russischen Suprematismus, des holländischen Neoplastizismus und insbesondere die des Konstruktivismus vermittelte. Diese drei Bewegungen sind keineswegs plötzlich, im vorbereiteten Erscheinungen, sondern die Endpunkte einer künstlerischen Bewegung, die schon im vorigen Jahrhundert begann. Die folgenden Zeilen sollen eine gedrängte, nur andeutende Übersicht über die Stadien dieser Entwicklung geben.*

Im neunzehnten Jahrhundert war das Bild der letzten Reste seiner ursprünglichen sozialen Zwecke (als Kult- und Prunkmalerei) entkleidet worden. Es erlangt Selbstständigkeit, die es als L'art pour l'art-Kunst (Kunst der Kunst wegen) außerhalb des wirklichen Lebens stellt. Die Malerei, längst schon nicht mehr erzählend (wie im Mittelalter), wird, als Darstellung der Wirklichkeit, durch die bessere, weil exakte, Photographie abgelöst, in der Folge, seit etwa der Mitte des vorigen Jahrhunderts, vollzieht sich nun eine künstlerische Umwälzung von großer Eigenart und außerordentlichem Tempo.

Diese Bewegung setzte mit großer Kraft im Impressionismus ein. Der seitdem ein immer schneller werdendes Tempo annehmende stete Wechsel oft sich schnell entgegengesetzter Kunstrichtungen, die schließlich keine bestimmte, freilich erst heute bewußt gewordene Zielsetzung mehr hatten, den ganzen Erdball umfaßt, daß der Wechsel der Stile (als solche erscheinen den Laien diese Richtungen) in unserer Zeit ein früher nicht gekanntes Tempo angenommen habe. In Wirklichkeit sind aber alle diese Kunstrichtungen losgelöst von Stile (solche würden in einer Gesamtkultur, die heute noch fehlt), sondern folglich verzweifelte Versuche der Maler, das Tafelbild zu retten. Abbilder der krumpfartigen letzten Zuckungen einer untergehenden Gesellschaft.

Dennoch ist das revolutionierende und destruktive (zerstörende) Schaffen dieser Malergeneration ein erwünschtes Echo Vorraussetzung unserer heutigen Arbeit. Niemals bricht eine neue Epoche — und wir stehen erst am Anfang einer solchen — mit einem Schlage an. Eine solche Wandlung vollzieht sich allmählich, doch mit unendlicher Sicherheit. Die IMPRESSIONISTEN (*Cézanne, Lautrec*) vermitteln ein völlig neues, farbiges Sehen der sichtbaren Welt, sie geben dem Bild, das von ihnen vorzugsweise Nur-Darstellung war, die Farbe in einer neuen Form wieder. Sie entnahmen ihre Vorbilder aber noch der Natur. Ihre Schöpfungen sind im wesentlichen Abbild. Die KUBISTEN (*Léger, Picasso*) und FUTURISTEN (*Boccioni, Carrà*) gingen zwei Schritte weiter — sie verwarfen das Vorbild der zufälligen Natur in der bildenden Kunst, in der Erkenntnis, daß sie so gestaltete Schaffen zurückst reproduktive (nachbildend), nicht produktiv (schöpferisch) sei, begannen mit der Abstraktion (Entstofflichung) des Bildinhalts, schufen geometrische, Maschinen- und primitiven Ornamenten ähnliche, einen plastisch gesehenen Raum vortäuschende Gebilde. An Stelle der Zufälligkeit der Natur und des Durcherlebens intuitiver Gefühle versuchten sie exakte Formen und gesetzmäßiges Denken zu setzen, ohne freilich das Absolute der Mechanik, dem im Grunde ihre Sehnsucht galt, zu erreichen. Seit dem zweiten Auftreten der Kubisten wird in der bildender Kunst eine fortschreitende Geometrisierung und Abstraktion fühlbar.

Eine bedeutende Einzelerscheinung, der Russe *Kandinsky* versucht eine Wandlung der Bildform dadurch, daß er in seinen abstrakten Malereien »musikalisch« wirkende Gestaltungen schuf.

Eine im wesentlichen plastische Äußerung deutscher Kunst, eine Art Mischung von Kubismus und Futurismus, stellt der deutsche EXPRESSIONISMUS (*Marc, Campendonk*) dar, der zwar das Vorbild der Natur formal und farbig ganz frei gestaltet, doch ohne den Grad der Logik und Konsequenz des Kubismus zu erreichen, ein typisches Produkt aus deutschem Individualismus und deutscher Romantik.

Der Krieg ist der Wendepunkt der Entwicklung. Die ihm folgende Ernüchterung brachte den klaren Blick für das Unbefriedigende der Formen auf allen Gebieten. Folge des Mangels eines einheitlichen Gestaltungsprinzips. Ihr künstlerischer Niederschlag ist der DADAISMUS (Frankreich: *Tzara*, Schweiz: *Arp*, Deutschland: *Schwitters, Hausmann, Grosz*). Dada hat destruktiven Charakter. Er zeigt mit überlegener Offenheit den Bankerott der bisherigen Wirklichkeit, ihr Durcheinander, stellt ihn aus sie auf den Kopf.

Verwandt kommt die Bestrebungen; das einzige, was in diesem Chaos restlos überzeugt, wirklich »lebt«, der Gegenwart gehört, sind die Werke der Ingenieure und Techniker, die Ingenieurbauten und Maschinen. Man versucht, von diesen Gegenständen das Wesentliche, die maßlose Sachlichkeit, zu übernehmen.

So beginnt das Ringen um eine Gestaltung der Gesetzmäßigkeit des Lebens aus elementaren Verhältnissen.

Karl Schwitters: Typografie Plakat

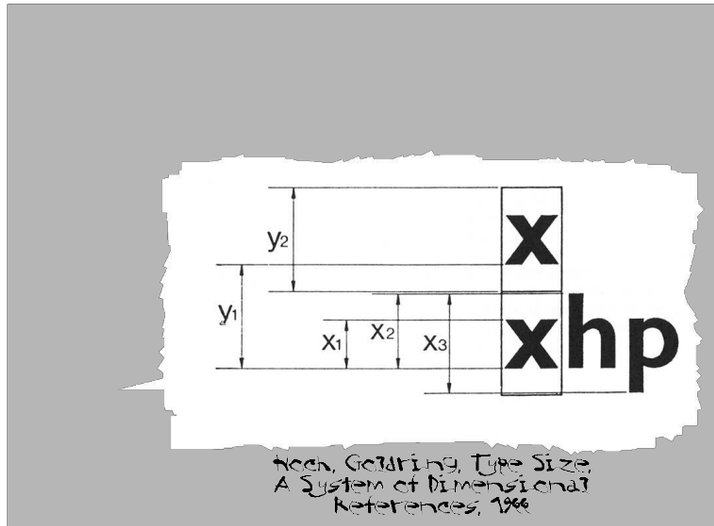
193

* Illustrationsmaterial geben die zwei Bücher »Mé-Buch Kasper Klinsbar« (Mé-Verlag, Wien), »Kunst-dada« (Boemia, München).

Tschichold, Elementare Typographie, 1925

Tschichold adapted that material constraint to practices for sorting information typographically.

In the conventional typographic hierarchy that we inherit, larger type is not necessarily more important, but usually more abstract.



Hoch, Goldring, Type Size, A System of Dimensional References, 1966

To temporarily override the measurement units:

Highlight the existing value in a palette or dialog box, and type the new value using the notation in the following table:

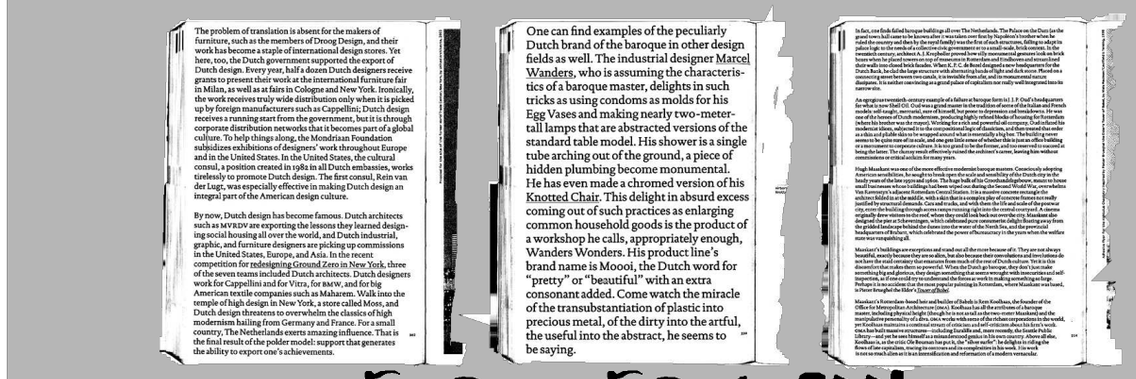
To specify:	Type these letters after the value:	Example (original)	Example (InDesign notation)
Inches	i *or* in *or* inch	5 1/4 inches	5.25i
Millimeters	mm	48 millimeters	48mm
Picas	p	3 picas	3p
Points	p *(before value)*	6 points	p6
Picas and points	p *(after value)*	3 picas, 6 points	3p6
Ciceros	c	5 ciceros	5c

Note: *Like other graphic-arts software from Adobe and other companies, InDesign uses PostScript points, which don't correspond exactly to traditional printer points. There are 72.27 traditional printer points in an inch, as opposed to 72 PostScript points.*

Adobe InDesign 1.0, User Guide, 1999

no coordination

Typographic measurement is problematic. Today our standards for measuring typographic space are uncoordinated: points, picas, ciceros, fractions of an inch, and millimetres must all be accommodated in software. The fact that there is no unified measurement for type size and interlinear space is a failure of twentieth century attempts to rationalise the printing industry.



False Flat, 2004

BOOM

If there is one unbreakable rule in the sizing of text, it is that words belonging to a continuous text should be the same point size. We are so accustomed to this that anything else immediately looks wrong.

In this book, designed by Irma Boom, paragraphs end precisely at the bottoms of pages. Paragraphs are treated more like images — size is adjusted to fit. Larger text is not meant to communicate significance.



Consistent type size can actually distort information.

This print advertisement for HKW, an art venue in Berlin, follows standard Tschicholdian protocol — not more than five type sizes are used, and information is categorically organised.

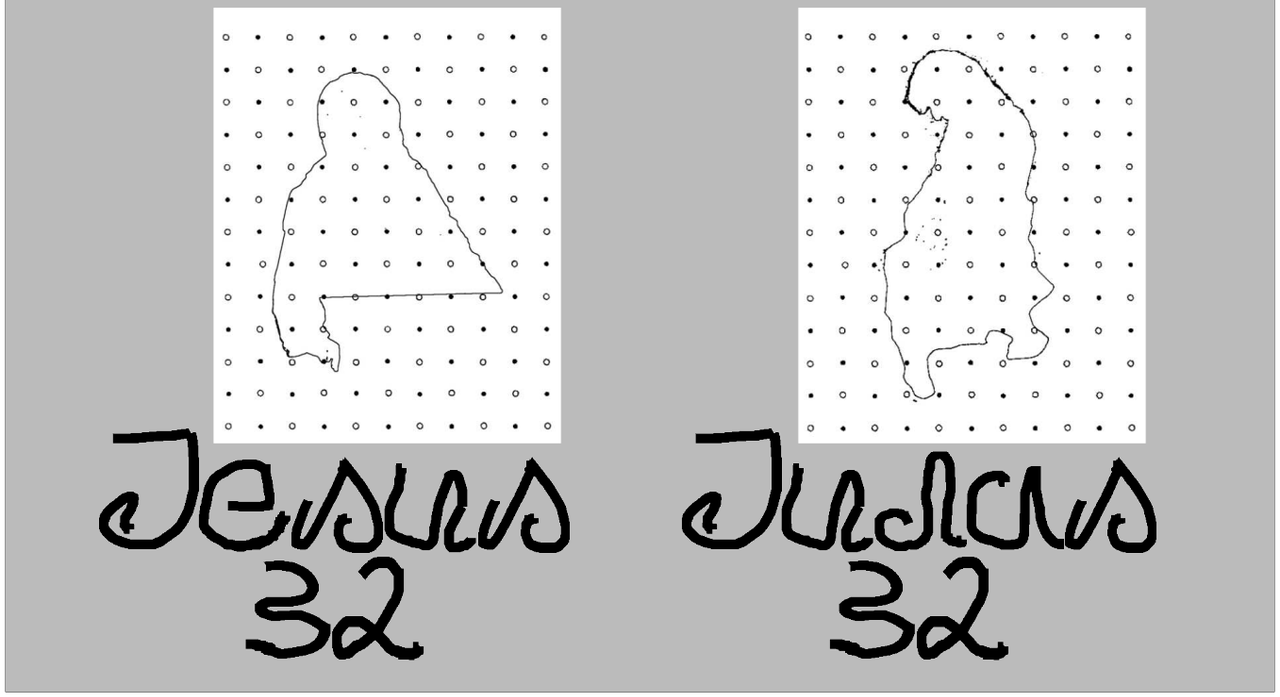
However, this use of type size to structure information has a negative consequence for the relation between the two exhibitions being announced. They are equally important parts of the institution’s programme, but one takes much more space simply because its name is longer.

A corrective gesture — the words on the bottom of the slide, ‘long title’ and ‘title,’ are resized to have the same surface area.

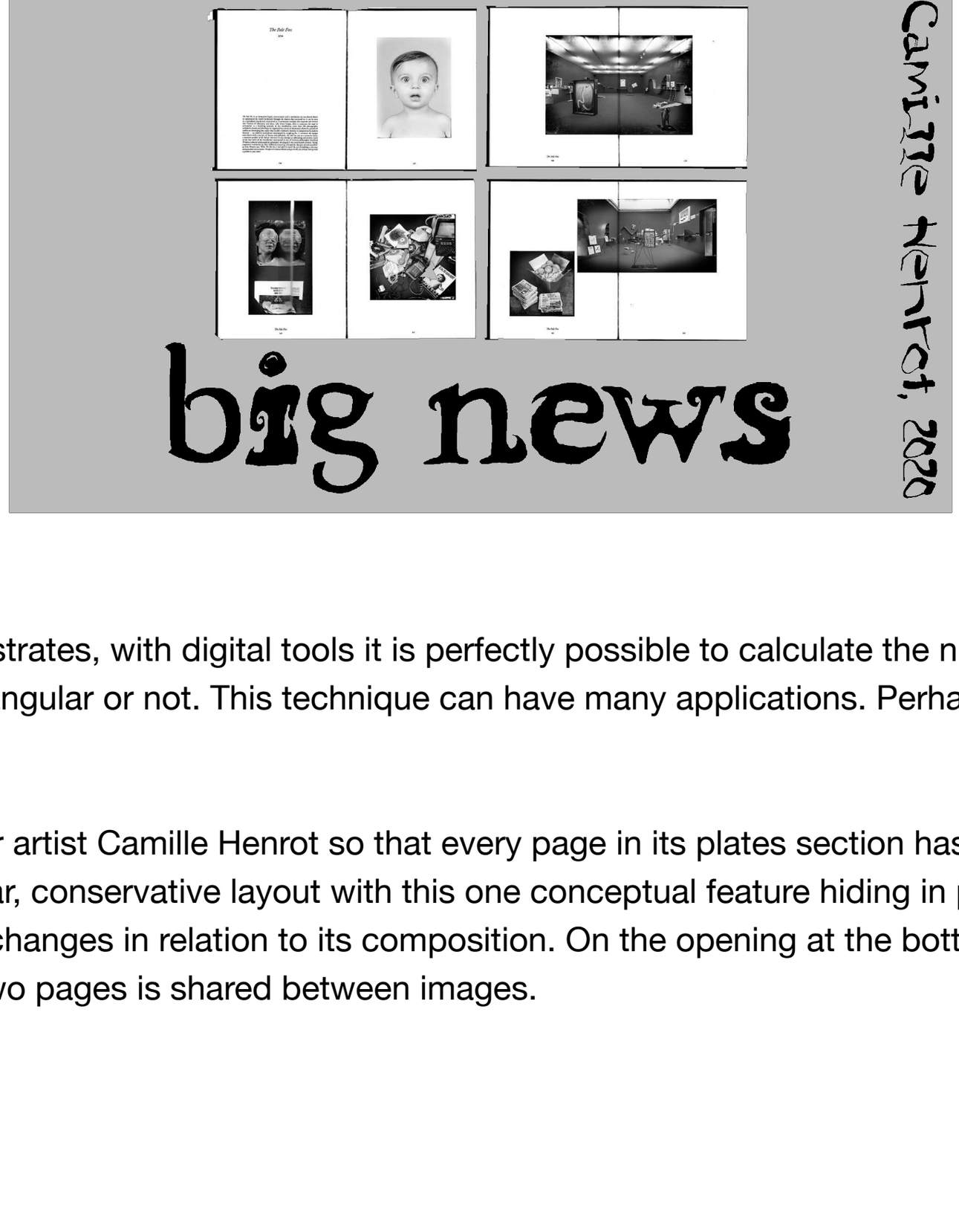
Now that I’ve given an overview of ways to reason about image and text size, I want to make an argument for using surface area to specify and manipulate size in digital layout.



Here is an inspiration – a painting of the last supper in the Gemäldegalerie in Berlin. The compositional problem-solving in this painting is premodern, but seems to follow a certain logic. The main character, Jesus, occupies the prominent position at the head of the table and the upper centre of the painting. The composition makes the disciples appear small compared to their idol, *and* it creates an equality of pictorial space.

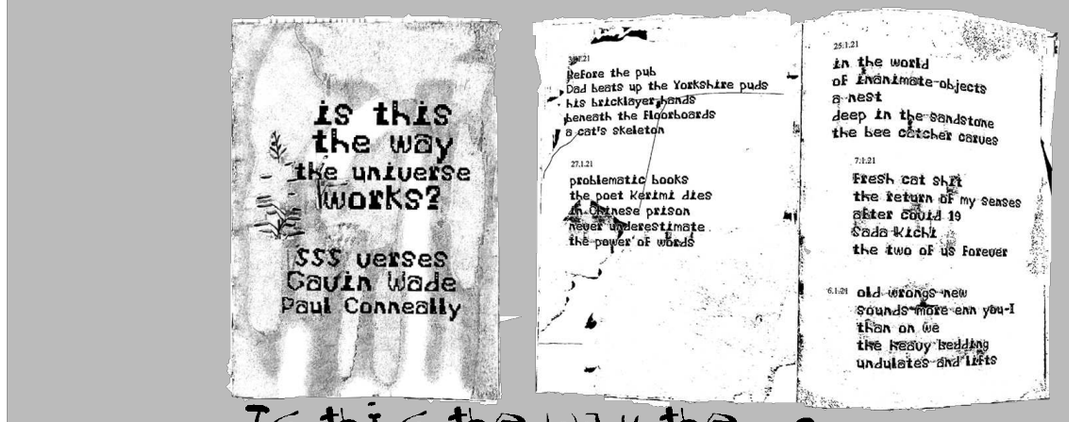


These are dot planimeters. This is a technique used in forestry to calculate irregularly shaped areas on a map. By imposing a dot grid and counting the number of dots covered by a shape it is possible to estimate its area. Alternating the count — including the open dots and excluding the closed dots — smooths out the calculation, compensating for the curving path of the outline. By this method, Jesus and Judas do indeed occupy the same area in the painting.



As this presentation demonstrates, with digital tools it is perfectly possible to calculate the number of pixels in any graphic: image or text, rectangular or not. This technique can have many applications. Perhaps it will be the future of layout!

I designed this catalogue for artist Camille Henrot so that every page in its plates section has the same amount of image by surface area. It’s a familiar, conservative layout with this one conceptual feature hiding in plain sight. Notice how the aspect ratio of each image changes in relation to its composition. On the opening at the bottom right of the slide, the surface area allowance of two pages is shared between images.

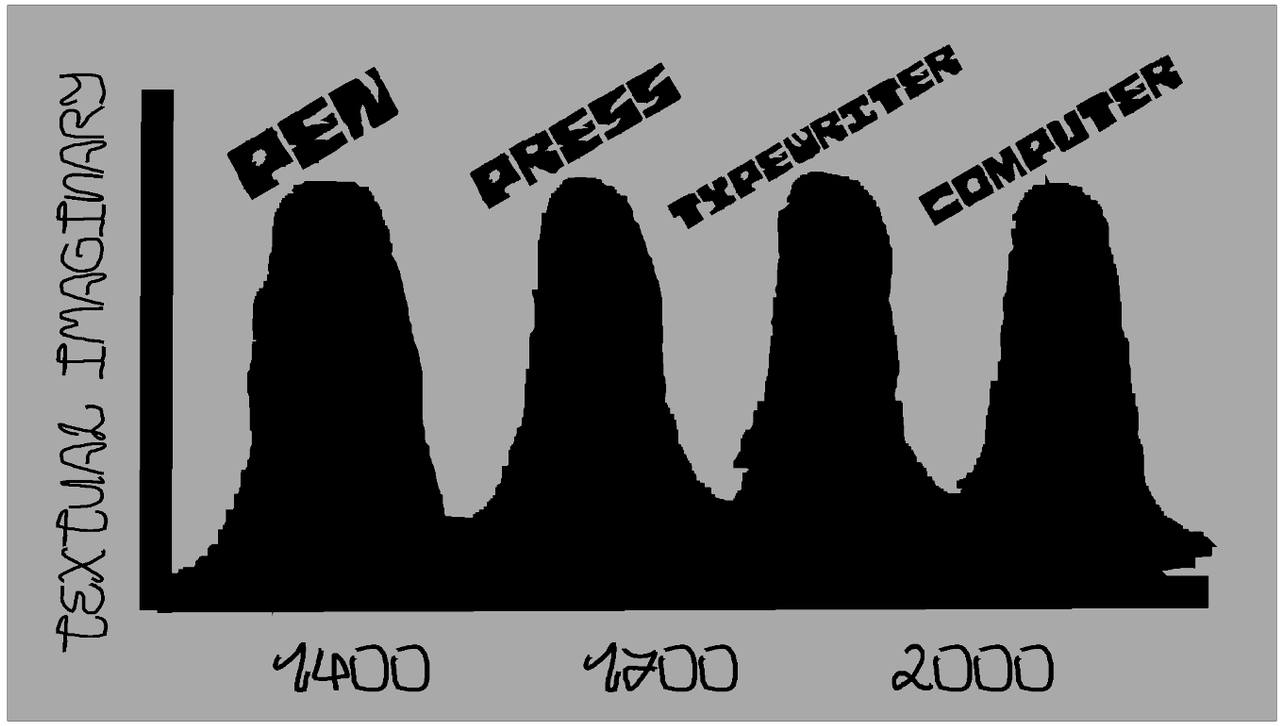


I typeset this book of verses so that each verse has the same surface area. Verses with a relatively large number of letters are automatically set in a smaller conventional point size in InDesign, as calculated by a script, in order to achieve the effect.

I will make two claims for this ‘proportional graphics’ approach:

- proportional graphics enables precise control of the relative size of specific pieces of text and image content in a layout, correcting for distortions introduced by the arbitrary variables of page format and word length
- it is a digitally-native technique, already integrated with Adobe InDesign, and it could readily be adopted as a feature of industry-standard graphics software

So, what are the prospects for this elemental new graphic practice? When will Adobe adopt proportional graphics? This is where the presentation takes a final, darker, turn!

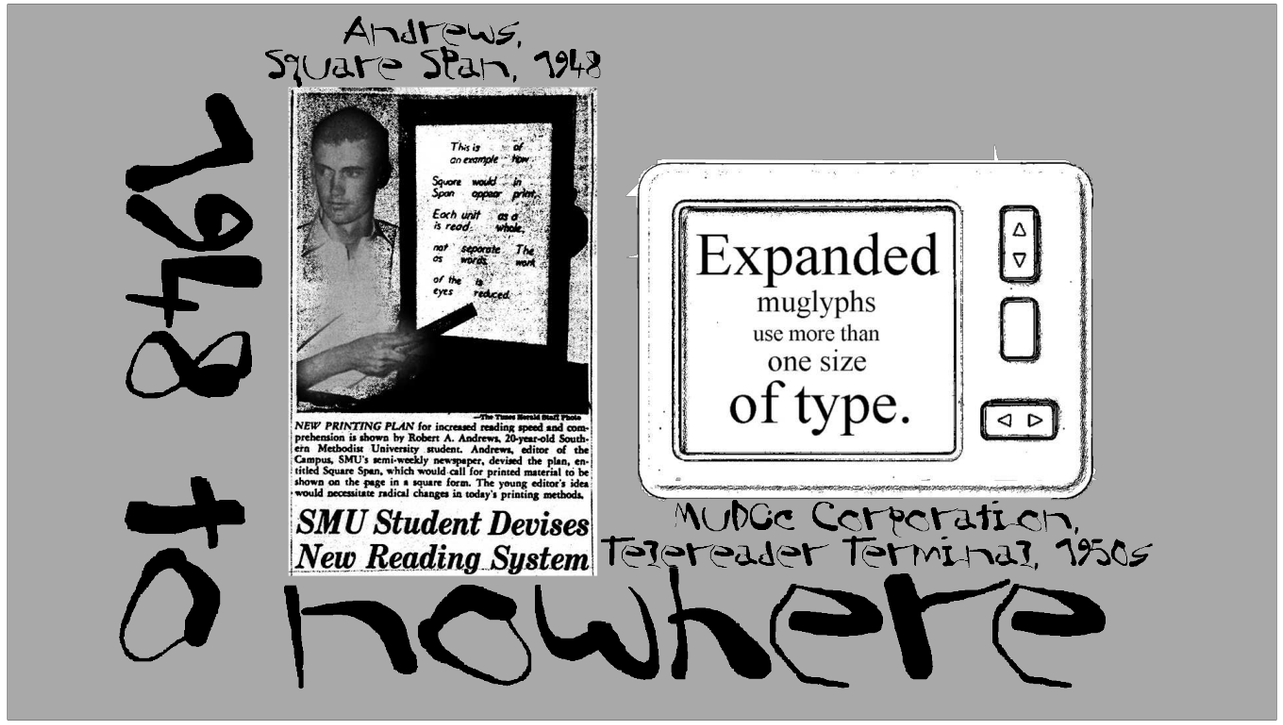


We might imagine a high-level history of the last millennium of graphic design looking something like this. In this diagram, the X-axis shows time and the Y-axis represents the life-cycle and influence of a series of media technologies which have conditioned graphic production. I labeled that axis TEXTUAL IMAGINARY but GRAPHIC IMAGINARY would have been better.

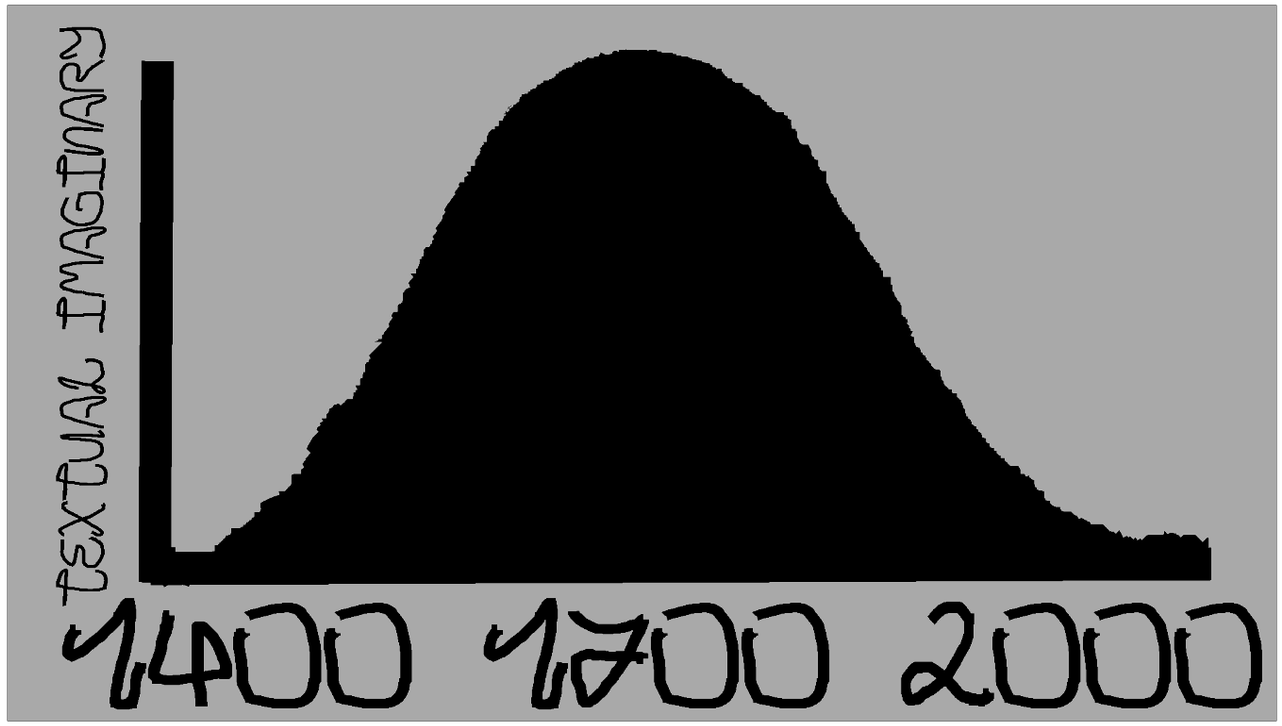
Each medium implies, or stimulates, or enforces a certain range of technical possibilities, and consequently each medium produces something like its own distinct imaginary. Its message, as Marshall McLuhan put it.

Friedrich Kittler, in his book ‘Gramophone, Film, Typewriter’ discusses the typewriter’s influence on Friedrich Nietzsche’s writerly imaginary. “Our writing tools are also working on our thoughts,” Nietzsche had written, and Kittler notes how the machine changed the philosopher’s prose “from arguments to aphorisms, from thoughts to puns, from rhetoric to telegram style.”

But I would argue that this diagram does not reflect the reality of how visual cultures evolve.



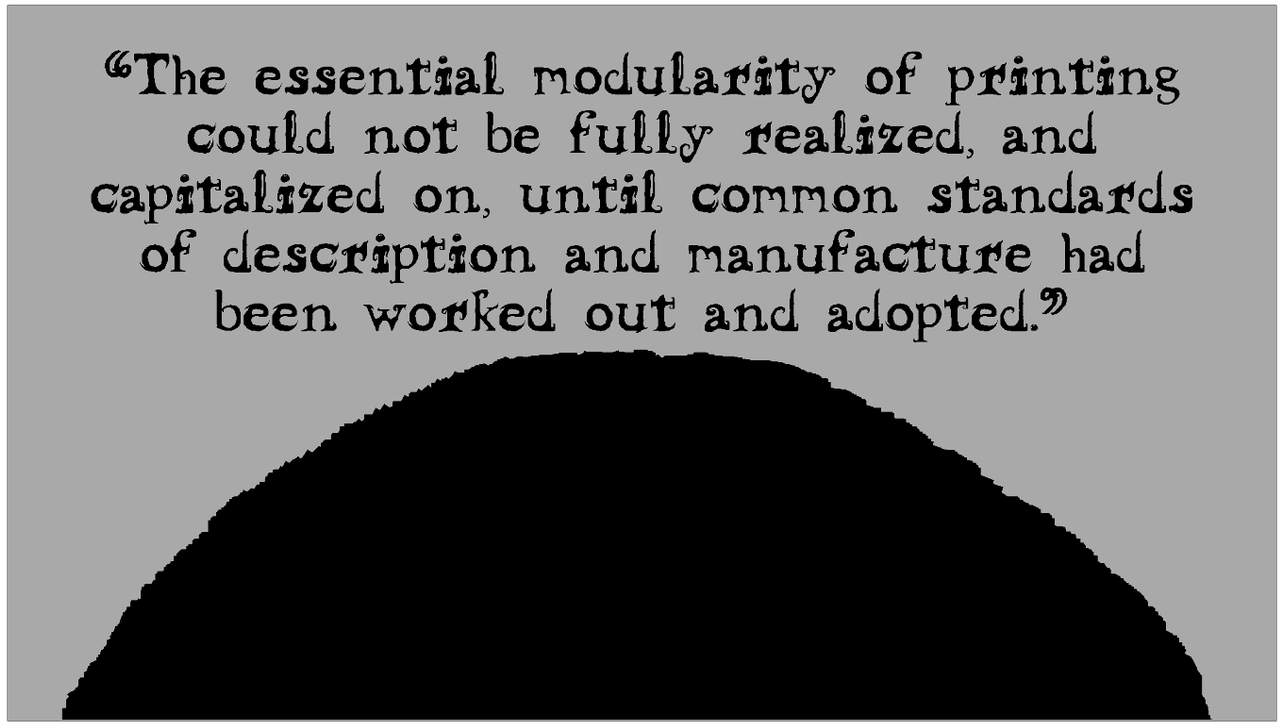
If it did we would all be reading like this by now. Visions of truly digitally-native typography have existed for almost a century. The image on the left here shows an invention called square span. This method of chunking sentences into their constituent ‘meaning units’ anticipated screens which scroll or refresh, meaning page space would no longer be constrained by the costs of materials and labour. Animated chunks of text would flash directly into the eyes of readers with incredible efficiency.



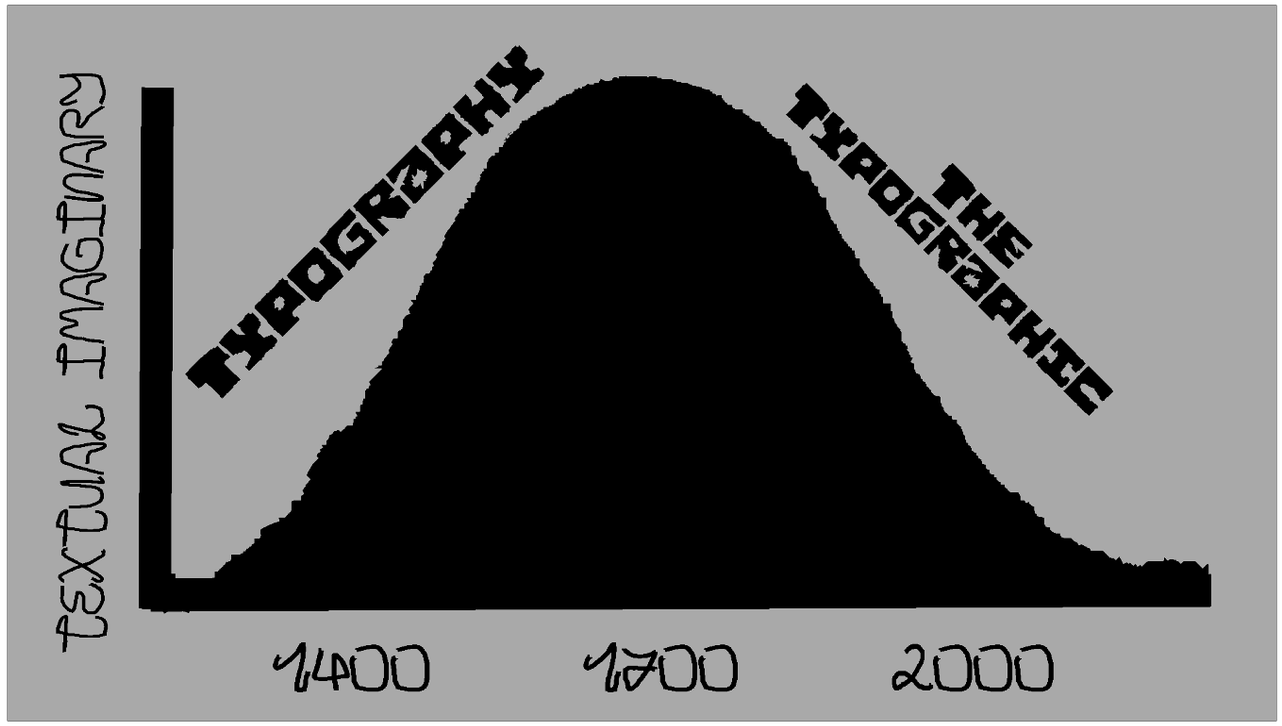
If you ask me, the history of typography should properly be presented like this.

Instead of phases corresponding to distinct technological imaginaries, typography is defined by a single accumulation of techniques and products which a succession of after-the-fact technological advancements only serve more economically to automate.

This compounding effect is called a Whitehead protocol, based on this passage from the philosopher A. N. Whitehead: “Civilisation advances by extending the number of important operations which we can perform without thinking about them.”



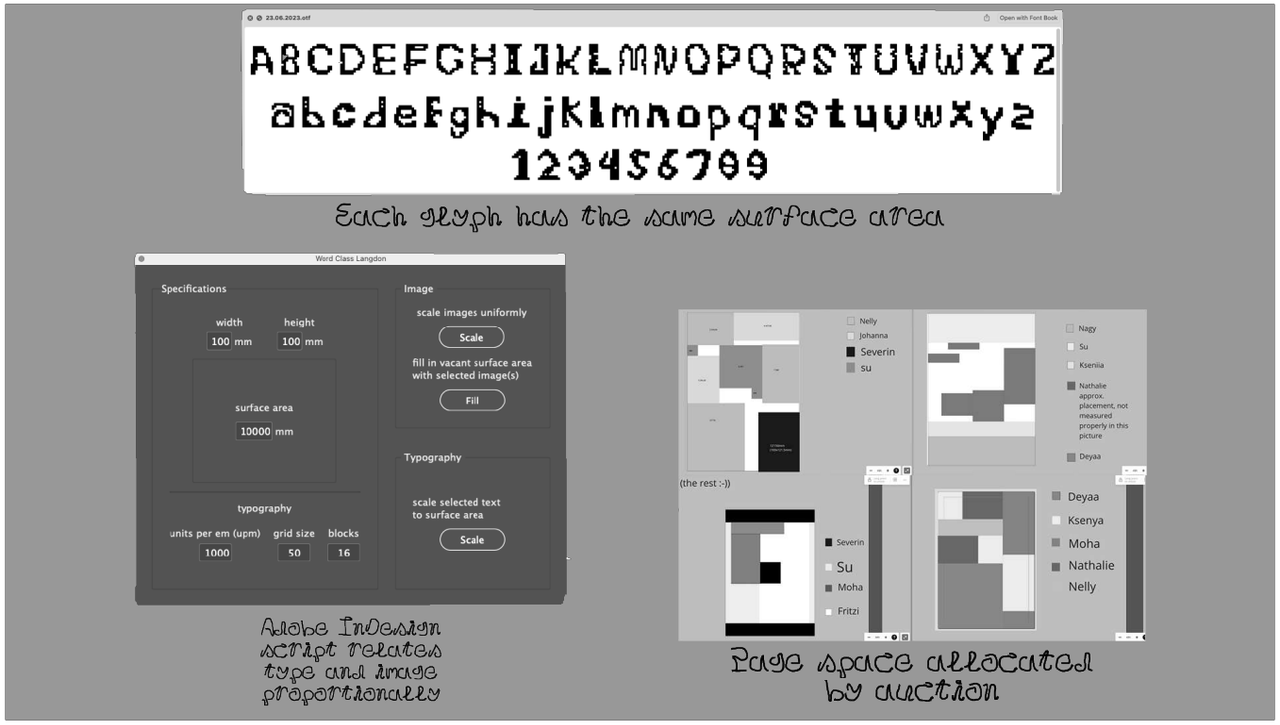
Typography as such ended here, at the top of the curve, in around 1700, to misappropriate the argument of Robin Kinross’s book ‘Modern Typography’ which I quote on the slide here. Once typography was standardized and industrialized, it resisted formal invention and reinforced established practices for presenting image and text.



Bruno Latour, in his book ‘We Have Never Been Modern,’ argues that western culture never arrives at definitive breaks with the past. Our practices are hybrids of old and new. What *we* do now is hybrid: a simulation of typography which we should call ‘the typographic.’ The typographic remediates and automates typography, abstracting craft from wood, metal, and human labour, while preserving its familiar visual products by default.

Even if every practitioner could agree today that proportional graphics is a more sensible, digitally-native technique for sizing image and text, it will never become mainstream because it contradicts foundational customs of layout on which efficiency and productivity depend. We are too late for a new typography.

Break here for questions, then on to entry points.



Practical paths

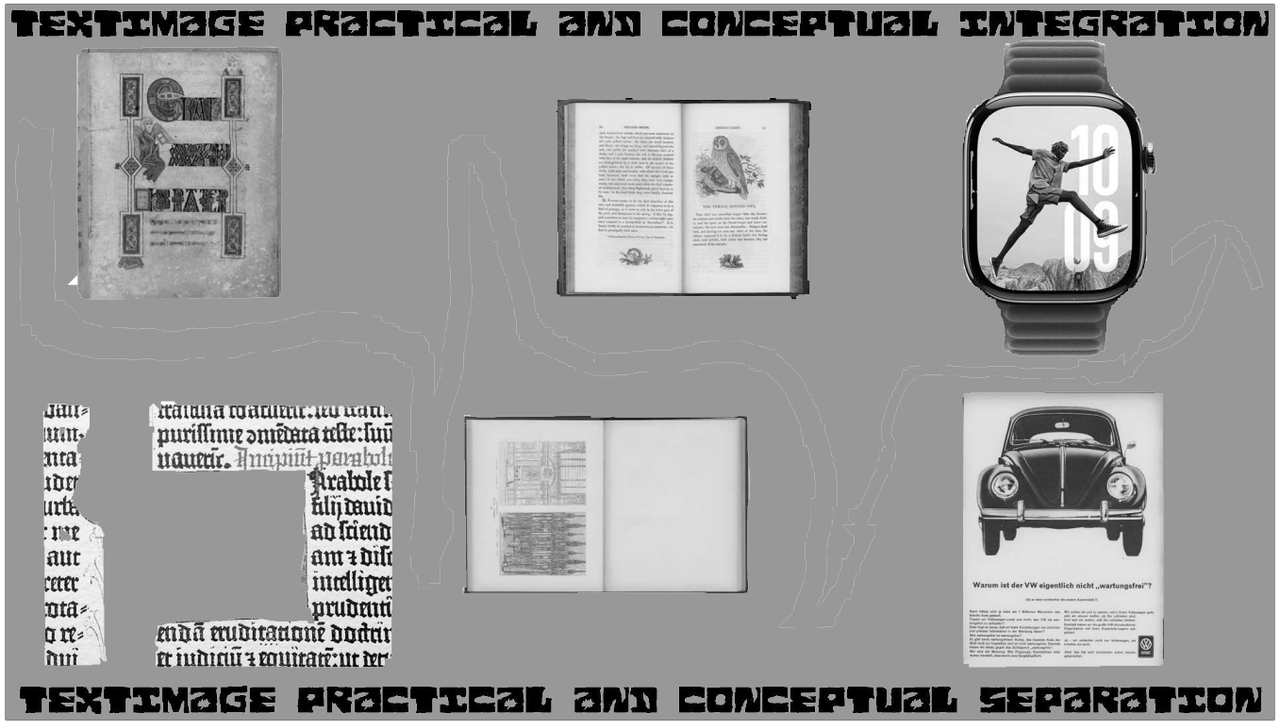
This is not (necessarily) about code and calculations! This research is practically about becoming more conscious and deliberate with size and proportion!

I would make these tools available for students but not essential.

Workshops
- redesign an existing graphic object
- drawing typefaces for proportional graphics
- statistical typography

Integrate these approaches into other projects and assignments
For those who are code capable, the tools themselves could be worked on

Publishing
- page space by auction example



Research paths

Research on text image integration (shown here)
Text and image overlapped *for bigness*.

- 800, Book of Kells
- 1450, Gutenberg
- 1800, Bewick
- 1950, departmentalisation
- 2020s, automated integrations, computational photography

Research on the display/text distinction
Tschichold “not more than five” is a product of constrained hardware. Digital type size can be manipulated to the hundredth of a point and yet the dogma persists.

Research on the history of commodification of space by surface area
In advertising and other realms