Oso

A progressive variable font family in serif and sans-serif styles

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John D. Berry

With the introduction of variable font technology in 2016, type designers and engineers have continued to explore its creative potential with an eye toward making new fonts with advanced typographic capabilities. As we continue to see a decline in printed type material, in favor of online type usage tailored for responsive layouts, there is a growing need for typefaces that not only are easy to read on screen, but also adapt flexibly to the demands of the latest type technologies. The Oso type family was conceived with today's rapidly evolving typographic environments in mind.

Introducing the Oso Family

Oso is a modern variable font family designed by Robert Slimbach primarily for use in online environments. Its two subfamilies, Oso Serif and Oso Sans, complement each other to give typographers a coordinated system of highly readable typefaces.

Oso's letters are upright and slightly rectangular and feature super-elliptical bowl shapes and crisp detailing. Oso Serif, with sturdy serifs and moderate stroke contrast, feels straightforward and no-nonsense, while Oso Sans presents as simple and friendly. Both styles have a clear, open appearance and a neutral presence on the page. Oso's balanced look gives the family the elusive qualities of being both distinctive and utilitarian, making it suitable for applications ranging from large-volume text settings to architectural signage.

Oso Serif has strongly defined features and moderate contrast between its thick and thin strokes; these features help it to withstand the rigors of responsive on-screen environments. The interplay between the geometrically-shaped serifs and terminals and the more organically modulated bowl shapes gives the serif design a tense yet refined appearance.

Oso Sans follows the serif's letter shapes, but with softly rounded stroke endings and no noticeable stroke contrast, lending it a warm, uncomplicated feel that invites reading. Slimbach describes Oso Sans as "grounded within a minimalist sans aesthetic."

Oso is, by its nature, a functional typeface. The design of its letters follows a simple, unfussy pattern that is undemanding and welcoming, while its underlying technical details make it exceptionally readable on the screen. Slimbach intends Oso to be a type family that "can adapt quickly to different settings and moods, making it a reliable go-to family when looking to convey qualities of strength, permanence, and rationality." Oso is sturdy and workmanlike, ready to tackle any typographic task that you set for it.

Evolving Expression

Coherent Perspective | Minimalist Mindset

Multitudinous | Unfolding Technologies

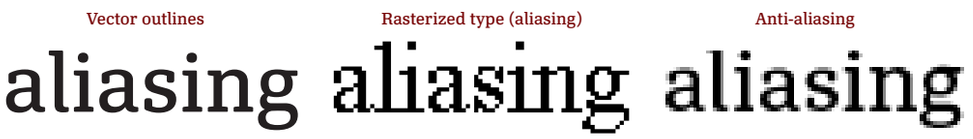
Pragmatic Dislocation

Form Serving Function

Slimbach designed Oso to be highly legible and easy to read. “In one sense,” he says, “Oso can be thought of as a legibility font.” *Legibility font* is a term that has been historically used to describe text typefaces designed specifically for use in newspapers. These specialty types were neutral in appearance and designed to withstand the distortions caused by lightning-fast print runs using highly fluid inks on absorbent paper. They were also designed to remain open and clear within the confined spaces of a crowded news page. The requirements of reading on-screen, although different, are in many ways comparable to the exigencies of newspaper printing. Consequently, Oso’s design features are “geared toward optimizing letter recognition, while being free of anomalous details that might catch the reader’s eye.” At the same time, says Slimbach, “it is welcoming on a human level, allowing readers to assimilate information without visual fatigue.”

Aliasing and anti-aliasing

With on-screen text usage being his primary concern, Slimbach aimed many of Oso’s design features at minimizing the negative effects of rasterization and anti-aliasing, which are most noticeable at text sizes. While anti-aliasing does a remarkable job at improving the appearance of rasterized text, it doesn’t yield an ideal result. Its most notable shortcomings include a dramatic loss of letter definition and contrast, and the imperfect resolution of design distortions caused by rasterization. These issues are compounded in fonts that have complex shapes or a high degree of nuance.



When type is displayed on-screen, the original vector outlines are converted to a bitmap representation. At smaller point sizes, pixelated type can appear very distorted because there simply aren’t enough pixels to properly represent small letters on an average screen. Anti-aliasing is usually employed as a technique to help smooth out the stair-stepping effect of pixelization. This is achieved by software that assigns various tonal densities to specific pixels, which, when viewed at normal reading distances, optically blend to make on-screen text appear more accurately rendered and pleasant to read.

Seeking clarity

Slimbach feels that one of the key ways of bringing clarity to letterforms is "to maximize and balance the internal white space of letter counters." In Oso, the super-elliptical counter shapes help accomplish this by letting the inside counters expand slightly. It is particularly important to keep the letters with small counters (like the **a, e,** and **s**) open and balanced, since they have a tendency to close up at smaller sizes. "In regard to Oso's letterfitting properties," says Slimbach, "the super-elliptical shapes also help balance the white space between letters, allowing text to compose more evenly."

Typophile Typophile

nandnenonpnsn nbadnenonpnsn

nandnenonpnsn nbadnenonpnsn

Establishing design parameters

In establishing suitable relationships between the heights of capitals, lowercase letters, and numbers, Slimbach had to take into account both stylistic and functional considerations. "Many traditional book faces benefit from having a short x-height set against large capitals and long extenders, to lend an air of elegance and calm to spacious book layouts; whereas a news type may require more compressed features, centered on a large x-height, in order to set well within narrow columns using tight leadings."

By current standards, the height parameters chosen for Oso are fairly compact, meaning that the heights of the capitals and numbers, and the lengths of the ascenders and descenders, are moderately short relative to the lowercase x-height. Slimbach's key objective was to normalize the appearance of the various cases and letter components, while balancing the internal white space of the letter counters to give an even color to a line of text. Oso was designed from the start to function comfortably and unobtrusively in text, while having distinctive stylistic details that become more apparent in display setting. Ultimately, what Slimbach was aiming for in Oso was three-fold: modernity, rationality, and humanity.

The above illustration compares the parameter height differences between Oso (left) and Minion (a traditional book face, right). Note the more compact height relationships between the height zones in Oso when both fonts are set at the same x-height. This was done to equalize the volumes of negative space within letter counters across cases. This de-emphasis of the capitals and numbers also quiets the overall appearance of text copy by centering the focus more on the lowercase x-height zone. The ascenders and descenders, however, are only moderately short relative to the x-height, in order to maintain optimum letter recognition.

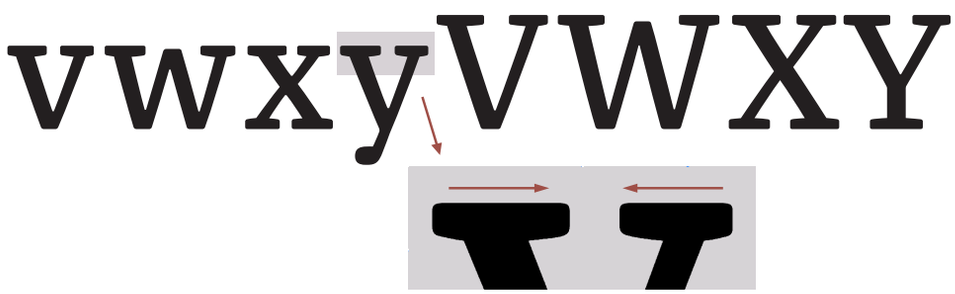
Although he considered giving Oso oldstyle figures, which usually blend in well with the upper- and lowercase letters in a paragraph, he ended up abandoning this idea, finding that oldstyle figures introduced an unwanted degree of visual noise. In their place, Oso has a set of non-ranging small-cap height figures, which are more in keeping with the rational aesthetics of the design.

HOLGA 283 Holga 654 HOLGA
HOLGA 283 Holga 654 HOLGA

Dealing with the diagonals

Slimbach gave special attention to the diagonal strokes in Oso. “Letters with diagonal stems are notoriously problematic when it comes to letterfitting,” he observes. “They often require a large amount of kerning to correct the large gaps between letters, and their serifs often produce unpleasant collisions or awkward pairings of neighboring letters.” To help minimize these effects, he shifted the serif structures on the diagonals inward. While the practical purpose of this inward shift was to help the fit of the letters, it is also a distinctive stylistic trait of the Oso family.

Similarly, in Oso Sans, the serif-less diagonal stroke endings are partially sheared off vertically, which also helps to improve letterfit. At the same time this stylistic trait helps unify the sans with the serif design.



In both the serif and the sans designs, Slimbach drew the junctions where the diagonal elements join in a broad, open fashion. This not only results in a more stable alignment of the V and W to the baseline, and the top of the A to the H-height, it helps to open the diagonal counters a bit for added clarity and makes the diagonals slightly more vertical for better letterfitting.

Shaping the terminals in the serif design

"Most historically influenced typefaces," says Slimbach, "have either stylized calligraphic terminals, which are modeled on shapes derived from the broad-edged pen in humanist handwriting, or ball terminals, which originated with round-hand handwriting styles from the seventeenth century."

In Oso Serif, the distinctive block-style terminals on letters such as **a, c, f, j, r, s,** and **y** have a constructed modernist appearance, to reflect the spirit of our own time. Slimbach describes them as functioning "almost like a vertical stem segment, adding structure and weight to these elements, while reinforcing the family's rational qualities." He softened the corners to integrate them better with the rest of the design and to add warmth to the otherwise harsh geometric shapes. He applied a similar block treatment to the serifs and terminals of the numbers, establishing a unifying trait across the entire serif design. In the italics, he used a crisply drawn ball-shaped terminal for the lowercase terminals, which he felt would integrate them with the design's semi-script qualities.

3Eacfrsz **3Eacfrsz**
3Egcfrsz ***3Egcfrsz***

The italics

Italic typefaces originated in the early sixteenth century, taking their basic form from the cursive hand used by humanist scholars in Renaissance Italy. They have continued to evolve through the centuries, usually reflecting characteristics of the popular handwriting styles of the time. But now, as Slimbach points out, "with handwriting becoming less of an influencing factor in modern times, contemporary type designers often strive to find novel and distinctly contemporary approaches to designing italics."

In the context of a text family, the primary role of italics is to act as a contrasting voice to the roman font. Typographers generally use italics to highlight key words and phrases within roman text, and sometimes to provide a stylistic contrast in display settings. Italics can also be used on their own as a less formal text style.

The italics in Oso don't directly follow any particular historical or contemporary model. Like the roman, they are designed to function well on-screen – retaining many of the roman's design features such as super-elliptical counter shapes and a sturdy well-grounded form. Rather than being merely a slanted version of the roman, the italics possess subtle script qualities that give them a fluid forward-moving appearance, which in turn helps to give them a suitable degree of contrast with the roman.

adponu | adponu
adponu | *adponu*

Like the roman, the italics for Oso have a consistent open feel. In the serif italic design, letters like the **a, d, p, n,** and **u** have simplified lead-in and exit strokes that are designed to rasterize cleanly and remain well-grounded within the x-height zone.

Lockwoode, Dansby. "Lessons from History, Culture, and Hearsay: Redferne's Dilemma." *Zephyr: A Journal for the Interdisciplinary Study of Literature* 25, no. 3 (2012): 27-36.
Gattwood, Ezra. *The Watcher's Keeper,* 2013. Oil on Panel (Ambrose Art Museum, Cascade Hill, CA). In *West Coast Paintings from the Collection of the Ambrose Art Museum,* by Judith D. Langhelt. Cascade Hill: Northwest College of Applied Arts, 2023, 89.

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In mixed settings such as bibliographies, the italics are designed to harmonize with the romans, while also standing apart from them.

Oso as a Variable Font

Variable fonts are an adaptation of the OpenType font specification developed jointly by Google, Apple, Microsoft, and Adobe. Since a variable font contains instructions for creating a range of design instances, rather than separate letter glyphs for each variation, its file size can be much smaller than the size of a comparable type family.

The technology allows software to present any design instance from within a type family's defined parameters, which gives designers access to a continuous range of interpolated font instances. Simply put, for a 2-axis design like Oso, designers can make incremental adjustments to both typeface weight and width, rather than being limited to the pre-built instances listed in the font menu.

As a variable font with two axes, weight and width, Oso can generate any number of variations along both of these axes. By default, the fonts come with five pre-defined weights and three pre-defined widths. Since both styles, serif and sans, have been carefully calibrated to each other, they can be used effectively and interchangeably in a variety of novel combinations. Mixing weight and width along with serif and sans gives the user a versatile tool for presenting information in clearly differentiated ways.

What are variable fonts?

Adobe introduced Multiple Master fonts in 1992 as an extension of the PostScript Type 1 font format. Each multiple-master font had one or more design axes, with a master design at each end (thus the name “multiple master”) and sometimes an intermediate master at some point within an axis; the font’s software could interpolate individual versions of the design at any point along the axis. While this technology was proprietary and ultimately did not catch on for various reasons, in 2016 a similar approach was adopted when Adobe, Apple, Google, and Microsoft announced OpenType Font Variations, a.k.a. variable fonts. This was an extension of Apple’s TrueType GX technology, and unlike Multiple Master, this was supported by all the major players in the type industry.

Variable fonts, like all OpenType fonts, are based on the Unicode standard, which distinguishes between a character (a meaningful sign, such as the letter ‘a’) and a glyph (what that character looks like in a particular typeface). For instance, the lowercase letter a in Bickham Script and in Acumin is the same character but takes the form of two distinctly different-looking glyphs. OpenType Font Variations offer all the possibilities of Multiple Master fonts, and then some, and the technology is supported across platforms and applications, both print and online.

You might have a variable font that can vary its weight from Extra Light to Extra Bold. In a non-variable font family, you might find several different weights: say, Extra Light, Light, Regular, Bold, and Extra Bold. But a variable font can have a sliding scale of weights: at one end might be Extra Light, at the other end Extra Bold. You can specify any weight between those extremes, along the scale. This is called a weight axis.

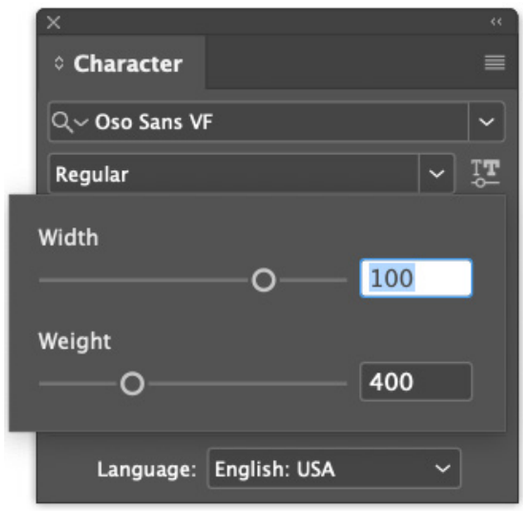
Or you might have a variable font with a width axis: from Compressed, say, to Extra Wide. Again, you could choose any width along that sliding scale, rather than being limited to three or four predefined widths.

The possibilities for variable design axes are much wider than just weight and width, but these are two of the most commonly encountered variations.
We are still in the early days of integrating variable fonts into mainstream typesetting, but the possibilities for automating their implementation in responsive typographic environments is particularly exciting.

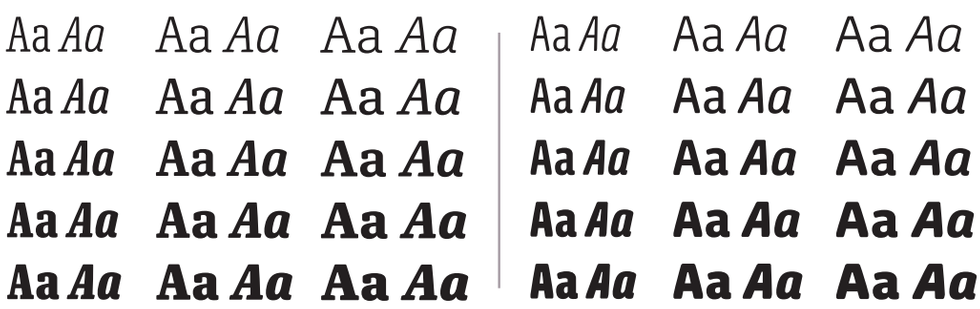
The illustration below shows a two-dimensional representation of Oso’s design space. Note that the extremes of the weight and width axes extend a little beyond the extremes of the pre-built instances, giving designers an even broader possible range.

OSO’S VF DESIGN SPACE

Oso's 2-axis design space is defined by the four designed masters located at each corner of its two-dimensional plane. These designs are indicated by the red dots in the above illustration. The black dots map the location of the fifteen pre-built instances. These f onts are generated through interpolation from the master designs and are analogous to the ones offered in non-variable designs. With a variable font, designers can also create custom font variations in any combination of weight and width within a family's design space, using the sliders located in the variable-font panel.



The sliders in the font panel demonstrate in visual terms how a seamless array of fonts can be interpolated between the designed extremes. Within Oso's font panel, designers can position the sliders at any point along each axis to generate custom instances for any combination of weight and width.



As with normal non-variable font families, Oso offers a set of pre-built instances. This core set of fonts has been precisely tuned to have specific weight and width relationships according to standard typographic protocol. When composing documents, the pre-built instances can serve as a reference point for further fine-tuning of weight and width within the variable-font panel. The pre-built fonts are offered in five weights (light, regular, semibold, bold, and black) and three width ranges (condensed, semi-condensed, and normal).

Using Oso

Incorporating variable fonts into your everyday workflow can become second nature once you get used to the basic principles of interpolation and custom font generation. For most typographic arrangements, the simplest approach is to start by composing a draft of a new layout using the pre-built instances, then refining your design by trying custom font variations until you achieve exactly the effect you want.

Mixing serif and sans-serif styles

While most style mixing is done using typefaces that bear little resemblance to each other, often creating dramatic contrasts of styles, Oso lends itself to a unified approach of style mixing. Because the serif and sans portions of the family are designed to be compatible with each other, both in their design features and in measurable terms (the various weights, widths, and design parameters are precisely calibrated to each other), you can achieve more harmonious pairings. "The mixing of serif and sans design in Oso," says Slimbach, "can be thought of as similar to the way that italics are typically used as a contrasting voice to a roman font. Incorporating the italics and case changes into the mix, along with a full spectrum of weights and widths, makes the creative potential for interesting pairings nearly limitless."

The following samples show just a few different style combinations for use in long documents, signage, advertising, and information design, in a variety of contexts.

SOCIAL THEORY & PROGRESS

Lisbon Institute for Sociological Studies

Social theory by definition is used to make distinctions and generalizations among different types of societies, and to analyze modernity as it has emerged in the past few centuries. Social thought provides general theories to explain actions and behavior of society as a whole, encompassing sociological, political, and philosophical ideas. In the past few decades social theory has begun to stress free will, individual choice, subjective reasoning, and the importance of unpredictable events in place of deterministic necessity.

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These samples show a common serif/sans-serif pairing of text and headline fonts. Given that the fonts are from the same family, there is a more neutral and refined effect than if the serif and sans were stylistically different.

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These more minimalist serif/sans layouts use only the regular and light italic fonts for both the text and headlines, creating a less formal, yet surprisingly readable result.

Social Theory & Progress

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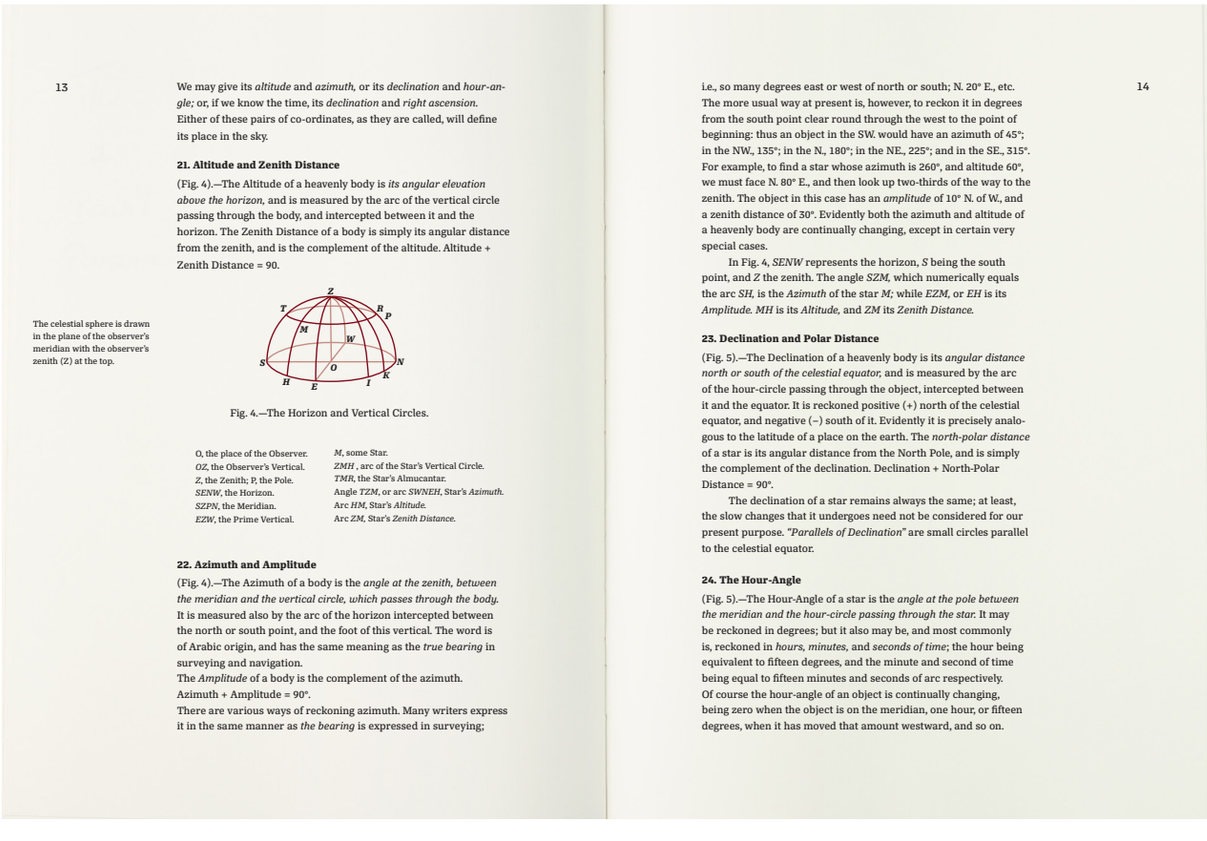
A more dramatic weight difference between the headline and text sizes may be called for when certain passages require more emphasis. You can also employ varied font widths to isolate certain information and to add tension to layouts. In these examples, the black condensed display is used in conjunction with the regular semi-condensed text.

Sample art

In addition to a standard array of test documents, Slimbach often creates a number of real-world typeset pieces as part of his reviewing process during the design phase of his type families. He says that “sample art not only helps me determine the scope of the family’s practical usage, it allows me to visualize the personality and character of a design and make adjustments accordingly.”

Sample art can be equally helpful to type users. By running a design through its paces using a variety of subject matter, set in various text and display contexts, these samples can assist designers in determining what kind of design might be a good fit for their particular typographic task.

The following examples show a few of the many ways in which Oso can be used effectively in a variety of different media.



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We may give its *altitude* and *azimuth,* or its *declination* and *hour-angle;* or, if we know the time, its *declination* and *right ascension.* Either of these pairs of co-ordinates, as they are called, will define its place in the sky.

21. Altitude and Zenith Distance

(Fig. 4).—The Altitude of a heavenly body is *its angular elevation above the horizon,* and is measured by the arc of the vertical circle passing through the body, and intercepted between it and the horizon. The Zenith Distance of a body is simply its angular distance from the zenith, and is the complement of the altitude. Altitude + Zenith Distance = 90.

The celestial sphere is drawn in the plane of the observer’s meridian with the observer’s zenith (Z) at the top.

Fig. 4.—The Horizon and Vertical Circles.

O, the place of the Observer.
OZ, the Observer’s Vertical.
Z, the Zenith; *P,* the Pole.
SENW, the Horizon.
SZPN, the Meridian.
EZW, the Prime Vertical.
M, some Star.
ZMH , arc of the Star’s Vertical Circle.
TMR, the Star’s Almucantar.
Angle *TZM,* or arc *SWNEH,* Star’s *Azimuth.*
Arc *HM,* Star’s *Altitude.*
Arc *ZM,* Star’s *Zenith Distance.*

22. Azimuth and Amplitude

(Fig. 4).—The Azimuth of a body is the *angle at the zenith, between the meridian and the vertical circle, which passes through the body.* It is measured also by the arc of the horizon intercepted between the north or south point, and the foot of this vertical. The word is of Arabic origin, and has the same meaning as the *true bearing* in surveying and navigation.
The *Amplitude* of a body is the complement of the azimuth.
Azimuth + Amplitude = 90°.
There are various ways of reckoning azimuth. Many writers express it in the same manner as *the bearing* is expressed in surveying;

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i.e., so many degrees east or west of north or south; N. 20° E., etc. The more usual way at present is, however, to reckon it in degrees from the south point clear round through the west to the point of beginning: thus an object in the SW. would have an azimuth of 45°; in the NW., 135°; in the N., 180°; in the NE., 225°; and in the SE., 315°. For example, to find a star whose azimuth is 260°, and altitude 60°, we must face N. 80° E., and then look up two-thirds of the way to the zenith. The object in this case has an *amplitude* of 10° N. of W., and a zenith distance of 30°. Evidently both the azimuth and altitude of a heavenly body are continually changing, except in certain very special cases.

In Fig. 4, *SENW* represents the horizon, *S* being the south point, and *Z* the zenith. The angle *SZM,* which numerically equals the arc *SH,* is the *Azimuth* of the star *M;* while *EZM,* or *EH* is its *Amplitude. MH* is its *Altitude,* and *ZM* its *Zenith Distance.*

23. Declination and Polar Distance

(Fig. 5).—The Declination of a heavenly body is its *angular distance north or south of the celestial equator,* and is measured by the arc of the hour-circle passing through the object, intercepted between it and the equator. It is reckoned positive (+) north of the celestial equator, and negative (−) south of it. Evidently it is precisely analogous to the latitude of a place on the earth. The *north-polar distance* of a star is its angular distance from the North Pole, and is simply the complement of the declination. Declination + North-Polar Distance = 90°.

The declination of a star remains always the same; at least, the slow changes that it undergoes need not be considered for our present purpose. *“Parallels of Declination”* are small circles parallel to the celestial equator.

24. The Hour-Angle

(Fig. 5).—The Hour-Angle of a star is the *angle at the pole between the meridian and the hour-circle passing through the star.* It may be reckoned in degrees; but it also may be, and most commonly is, reckoned in *hours, minutes,* and *seconds of time*; the hour being equivalent to fifteen degrees, and the minute and second of time being equal to fifteen minutes and seconds of arc respectively. Of course the hour-angle of an object is continually changing, being zero when the object is on the meridian, one hour, or fifteen degrees, when it has moved that amount westward, and so on.

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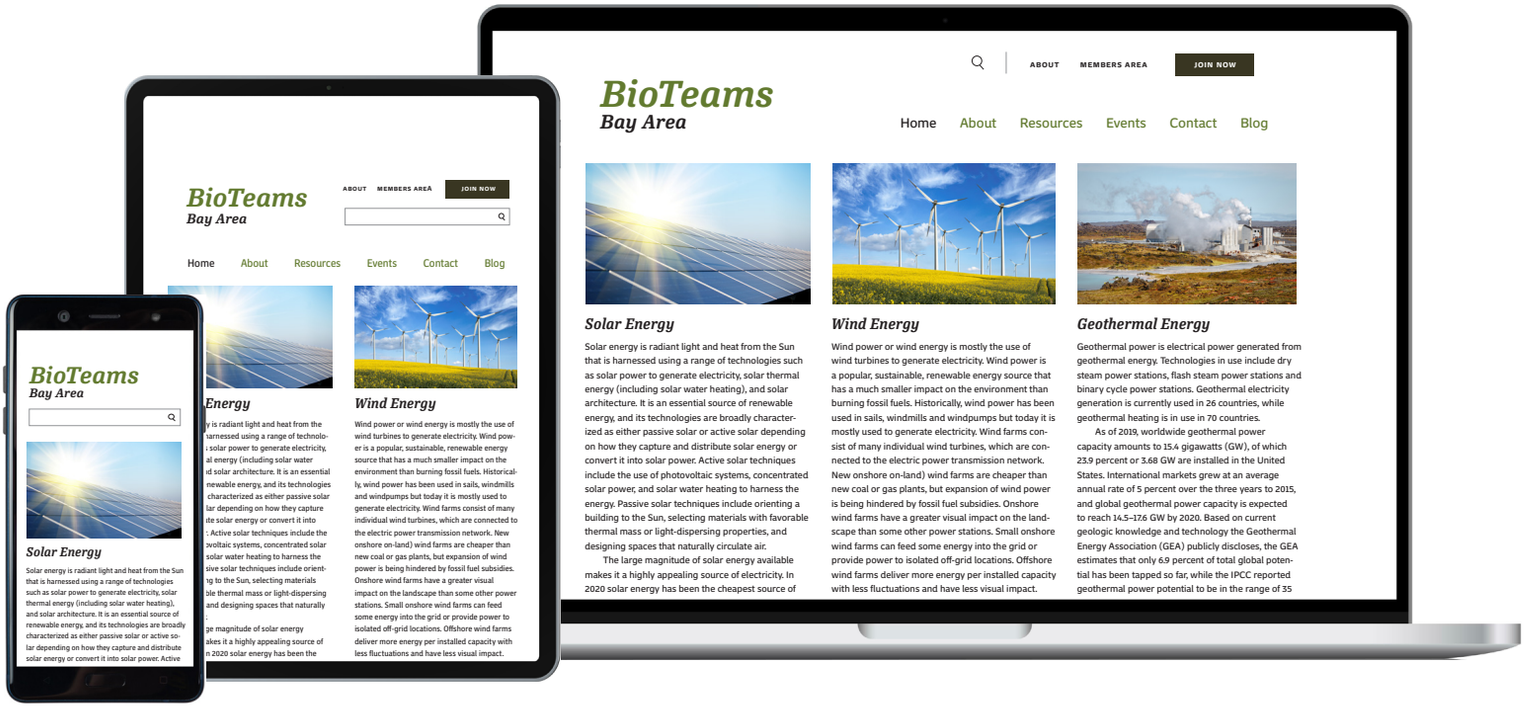

EGYPTIAN HOUSE

5 | HOTEL BENEVENTI

EGYPTIAN HOUSE

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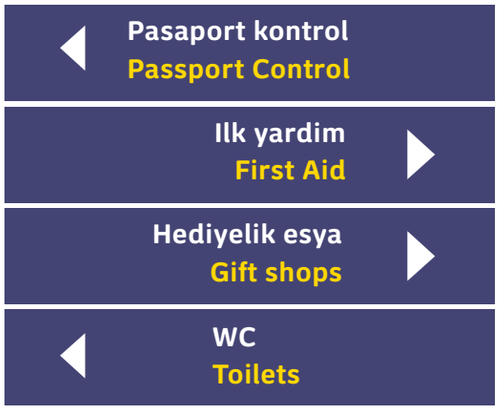
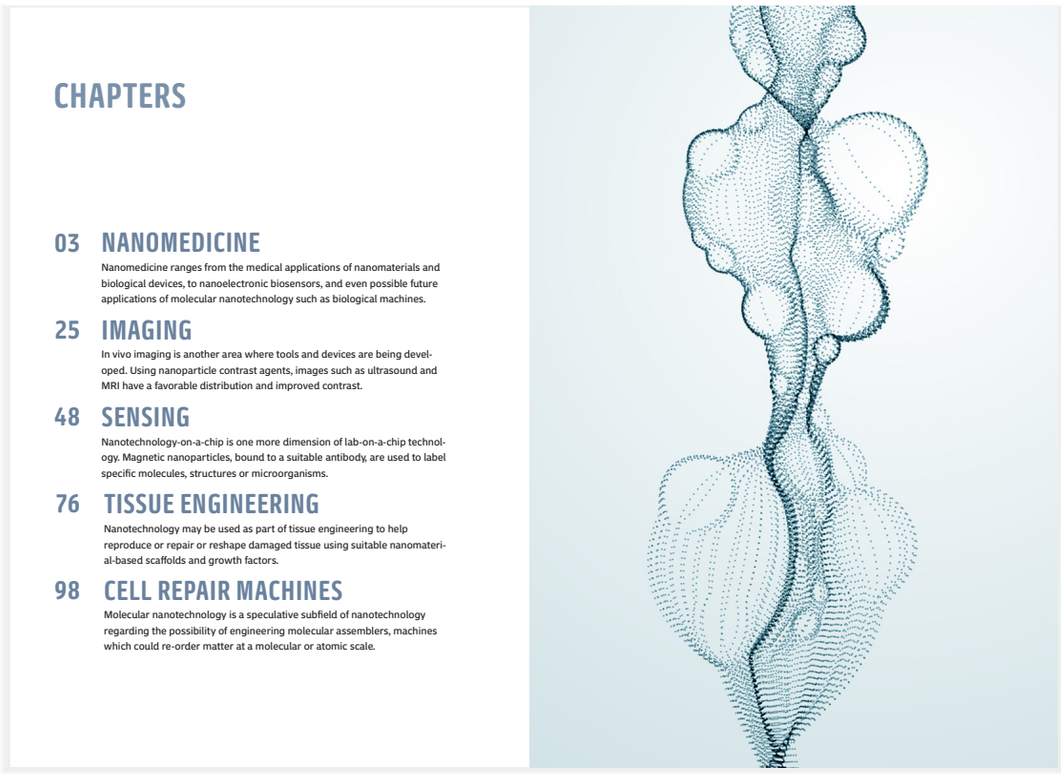




CHAPTERS

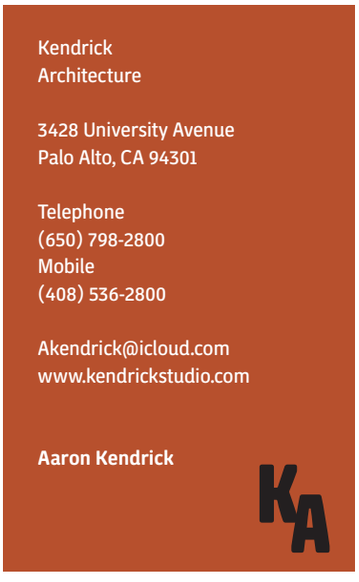
03 NANOMEDICINE
Nanomedicine ranges from the medical applications of nanomaterials and biological devices, to nanoelectronic biosensors, and even possible future applications of molecular nanotechnology such as biological machines.

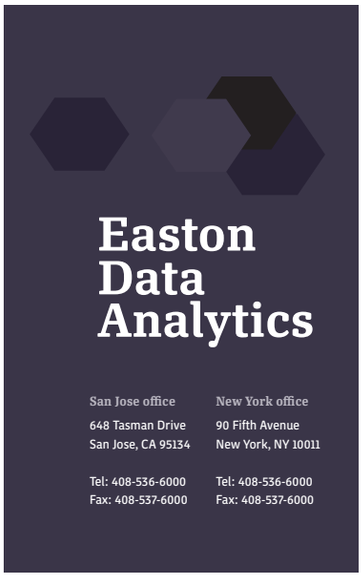
25 IMAGING
In vivo imaging is another area where tools and devices are being developed. Using nanoparticle contrast agents, images such as ultrasound and MRI have a favorable distribution and improved contrast.

48 SENSING
Nanotechnology-on-a-chip is one more dimension of lab-on-a-chip technology. Magnetic nanoparticles, bound to a suitable antibody, are used to label specific molecules, structures or microorganisms.

76 TISSUE ENGINEERING
Nanotechnology may be used as part of tissue engineering to help reproduce or repair or reshape damaged tissue using suitable nanomaterial-based scaffolds and growth factors.

98 CELL REPAIR MACHINES
Molecular nanotechnology is a speculative subfield of nanotechnology regarding the possibility of engineering molecular assemblers, machines which could re-order matter at a molecular or atomic scale.





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SCULPTURE
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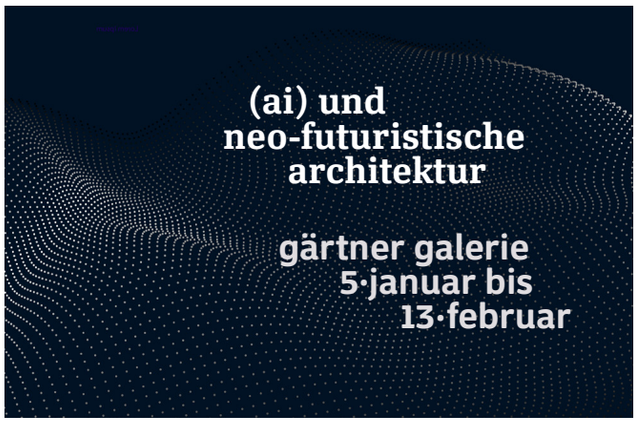
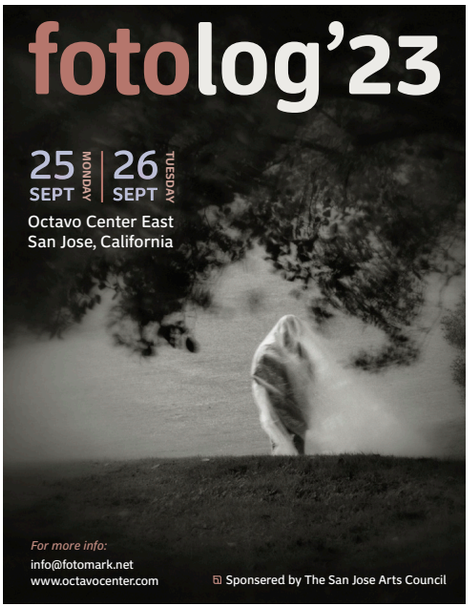
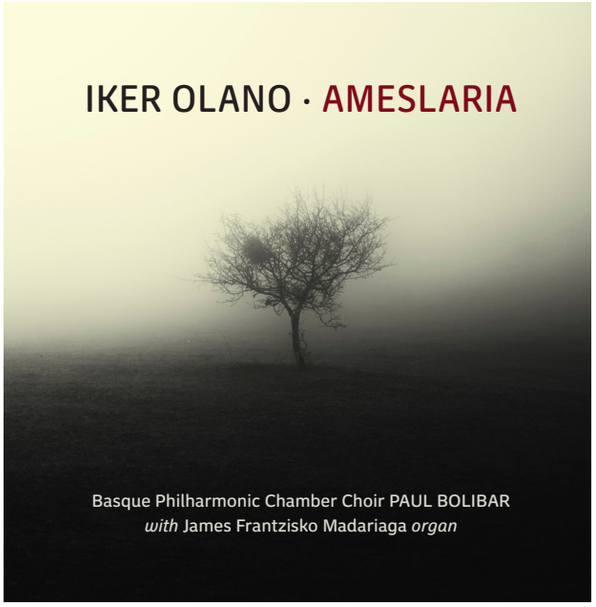
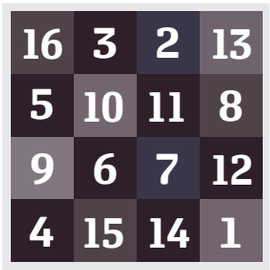
E. Harada New Paintings
May 10-June 30, 2021 Paul Zimmerman Gallery, 3892 Bowry









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4	15	14	1

Some sample art layouts use material from the Wikipedia articles "Social theory," "Solar energy," "Wind power," "Geothermal power," and "Nanomedicine," which are released under the Creative Commons Attribution-Share-Alike License 3.0.

Document design and layout by Robert Slimbach