Etching – Seamless Alignment of Lines and Patches as Role Model for a Graphic Geometry as Design Crossover of Pixels and Vectors in the Direction of All-in-one Image Reliefs

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Figure 1. Fritsche, N.-C., Nature does not decide ... Etching. 1993. 33 x 47 cm as detail of a composite print.

Abstract
Rather shopworn etching classes in art academies provide handcraf to align crisp as well as fuzzy lines with sharp and faint patches of color and brightness. Do we have a role model for design crossovers of pixels and vectors in front of us? If so, at least three layers of consideration emerge. The math layer: Is it desirable or heretic, to think of points and lines in geometry with length, width, and even thickness? The software layer: Do we stick to the math layer or subscribe to WYSIWYG and artificial intelligence? The design layer suggests morphological sequences to allow modelling the growth of natural and artificial structures. Philosophically, we ask ourselves the “out-of-nothing” question. How do things unfold? Eventually (and returning to etching): Are there ways to etch 3D print-style, i.e. to merge the subtractive manner of the etching process with an additive merger of lines and patches as well as to revive and reanimate pixels and vectors as “pixors” and “vexels”?

Keywords
Lines and patches; etching; pixels vs. vectors; fuzzy edges; graphic geometry
1. **Introduction**

In the middle of the 20th century, art practice put art education to the test. The quest for novelty had long since called for experimentation rather than trainable skill sets. As much as the etching process opens up to experimentation, how much experimentation does the paper and image-based technique allow for considering the array of mid-century evolutions in the arts, not to mention science "in search of the invisible" (Miller 2004, p. 3) and "the black stack" on digitalization (Bratton 2015, p. 363)?

2. **Guesswork = discussion**

During my experience in etching, three light bulb moments emerged. Regardless how crisp a line was scratched into polished metal, the etched (acid-treated) line came out of the printing press as a blurred something, remarkably artsy as well as a hapless, if not deplorable piece of failed reproduction. The second observation concerned the rather autonomous etching of patches by acid that, if left unsupervised, would allow itself to "devour" the substance of the metal plate during lunch break (Fig. 2).

The biggest eureka effect, however: Etching, apparently, disturbingly, amazingly and miraculously, blurred lines and patches (Fig. 3). It, thereby, amalgamated the hostile genres of drawing and painting: a fusion rather than a dichotomy.

3. **Layers of consideration**

This paper probes the digitization of etching characteristics to dissolve borders between drawing and painting, to clear minefields between pixels and vectors as well as to pair their software branches.

To transfer the lines-and-patches merger in etching as contingent role model for design crossovers of pixels and vectors, at least five considerations appear on the horizon, all of them stand-alone fields of research, and each far beyond the scope of this proposal.

3.1. **Visualizing Invisibility: “Molecular Aesthetics”**

In printing, images are considered "fields of dots". Within the “dialectic of the line", “… line’s central job is to abstract from form the manifold of perception …” (Cubitt 2014, p. 5, p. 70, p). Two 20th century art paradigms support this: Modernist artists focused on pure color and abstract lines (Kandinsky 1911; Klee 1925).

In 1977, Charles and Ray Eames completed their documentary film "The Powers of Ten". Whereas William Anders had popularized the cosmic view, a zoom-out, during the Apollo 8 mission 1968, zoom-in focused on the invisible that, although lenses and microscopes were available for centuries, was considered mere scientific instruments (Fig. 4). The arts kept on relying on eyesight without much media support as "an extension on the sensory organs" (Weibel 2013, p. 46).

3.2. **Math layer**

Is it naïve, desirable and / or heretic to think of a point in graphic geometry in terms of length, width, and thickness? Is there a way to "grow" points and lines with formerly negligible width and depth without turning them into circles or spheres and rectangles or cylinders (Fig. 5)?

Gradually, "molecular aesthetics" (Hermann Josef Roth), the other half the Eames spectrum, is made visible through media art. Media art, as Weibel (2013, p. 46) points out, "seeks to represent media reality, or media constructed reality, rather than nature, as Leonardo had required of painting."

Figure 2. Fritsche, N.-C., Embarkment 3/8. Zinc plate (worked rear panel), partially corroded by acid (left) and corresponding print (right). 1993, 11 x 12,5 cm.

Figure 3. Fritsche, N.-C., "Perfect" versus "eaten-up" line (detail). 1993/2021. Montage, 6 x 12,5 cm.

Figure 4. Fritsche, N.-C., From Nothing, 1:1 and Everything: The range of visibility sandwiched between zoom-in, the invisible, and zoom-out, the cosmic view. 2015. Exhibition template, 60 x 90 cm.

Figure 5. Fritsche, N.-C., Nothingness, an idea, something, tininess, body and space, further growth into an allcompassing totality, ever expanding in both directions. 2021. Pencil, 4 x 26 cm.
3.3. Software layer

Do we get help from a prospective fuzzy-edge math layer or shall we subscribe to WYSIWYG and artificial intelligence? Make it happen; you do not have to tell us how! Do we manage to substantialize points and lines within the various kingdoms of geometry, or break their ideal nothingness into pieces, Big Bang like? Across the border, clunky “picture elements” line up as apologists for the flatness in the empires of pixels (Fig. 6).

Figure 6. Fritsche, N.-C., Armies of abstract points and lines (top left) in cold geometric space eye rather uniform but spirited pixel grids (bottom right) in the desert heat of colorful visibility. How do we bridge the demilitarized zone between eternal geometry and compulsorily stratified image processing? 2021. Pencil, Ink, 13 x 22 cm.

3.4. Design layer

In contemporary design and architecture, a tool to transition hard edges of buildings and subject matter into nothing, and back, seems to be desirable, if only to simulate decay and recyclability. Seamless morphological sequences between vectors to pixels would allow modelling the growth of natural and artificial structures. How do things disintegrate over time and in detail? How do we design a sustainable and recyclable lifespan of a structure or, better, the “antifragile” (Taleb 2012), “Bio Art” (Eduardo Kac), the compostable, and the process of decay?

We witness “the birth not just of a new art movement”, to quote Miller (2014, p. 342), but “a whole new culture – a third culture, in which art, science, and technology will fuse.” Scientifically resilient time-lapse apps could lead us through the cradle-to-cradle lifespan simulation of materials and combinations thereof within a sociology of waste and philosophical “reflections on surfaces” (Stroll 1992) in our “rubbish society” (O’Brien 2007).

Are there ways to merge artificial construction material with natural components like plants in order to design naturally artificial buildings as garden pottery (Fig. 7)?

Figure 7. Fritsche, N.-C., Contemporary three-layer exterior wall made of concrete, oil-based thermal insulation and weather protection layer (left) versus garden pottery green wall (right): Yet to be developed vertical garden wall with the fuzzy pottery appeal, vine frames + flower boxes = urban gardening potential and sponge city capability. 2021. Ink, pencil, 18 x 35,5 cm.

3.5. Etching 2.0: Papermaking, embossed printing, 3D printing and etching at once as subtractive additionalism

Regardless of thorough mergers of points, lines and patches on the math and software layers: Does imitating etching characteristics through digital image processing and generative adversarial networks provide more original, even semi-authentic imagery than common applications focused on ubiquitous photorealism? As much as we ought to question the uncritical imitations of authentic manual work, digitally manageable disruptions of preconceived notions of genres such as drawing and painting appear alluring.

The subtractive metaphor of etching suggests reverse ideas, an array of 1/x techniques as “speculative everything” and “physical fictions” as “invitations to make-believe” (Dunne, Raby 2013, p. 89). Instead of only allowing paint fill etched voids, vectors and pixels could latex itself: “Voxel yourself, substantialize beyond color traces on image carriers… unlike the pixel grid, the voxel grid need not be regular, as Picasso’s and Braque’s spatial geometries are not, and the relational spaces can preexist the objects, as they do in analytical cubism” (Cubitt 2014, p. 230).

Hereby, “micro/macro readings” (Edward R. Tufte) and “captology” (persuasive computing according to B. J. Fogg) transcend traditional scaling, architectural significance and conventional work patterns.

Figure 8. Fritsch E, N.-C., Etched all-in-one and / or sequential image relief (“high” and “sunk”) landscape: Additive paper pulp with various densities, varied fiber structures, transparent and / or translucent appearances, hand-made and / or digitally applied graphic points, lines, patches plus surface patterns like folds and embroidery, sharp as well as fuzzy edges, soft and hardened subtractions like penetrations as well as possible support structures and much more. 2021. Pencil, 14 x 26 cm.

Traditionally, the metal plate dents into the sheet of paper. Alternatively, we could teach AI to paint voids, to unfold reliefs and to raise (itself) above surfaces as additive pulp of lines and patches and 3D development of “pixors” (pixelated vectors) and “vexels” (vectored pixels). Eventually, Etching 2.0 could unify papermaking as an additive pulp of lines, patches, edges, embossed printing and 3D printing as well as etching as perforating or subtractive additionalism. The 3D image carrier and images carried would become one (Fig. 8).
4. Conclusion

In quoting the conference title “Beyond the lines. Graphics and its uses”, as well as image bites like graphic points of interest (and points of no return), “I walk the line” (Johnny Cash), taking the “active line” for a walk “for its own sake” (Paul Klee) and “Blade Runner” (Philip K. Dick), the idea of venturing on a micro-macro zigzag course of graphic geometry in the demilitarized zones between vector geometries and pixel graphics appears worthwhile.

Figure and ground:
Let’s go for the next round!

References


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