Aerial Visions / Ground Control

The art of illustrative plans and bird's-eye-views

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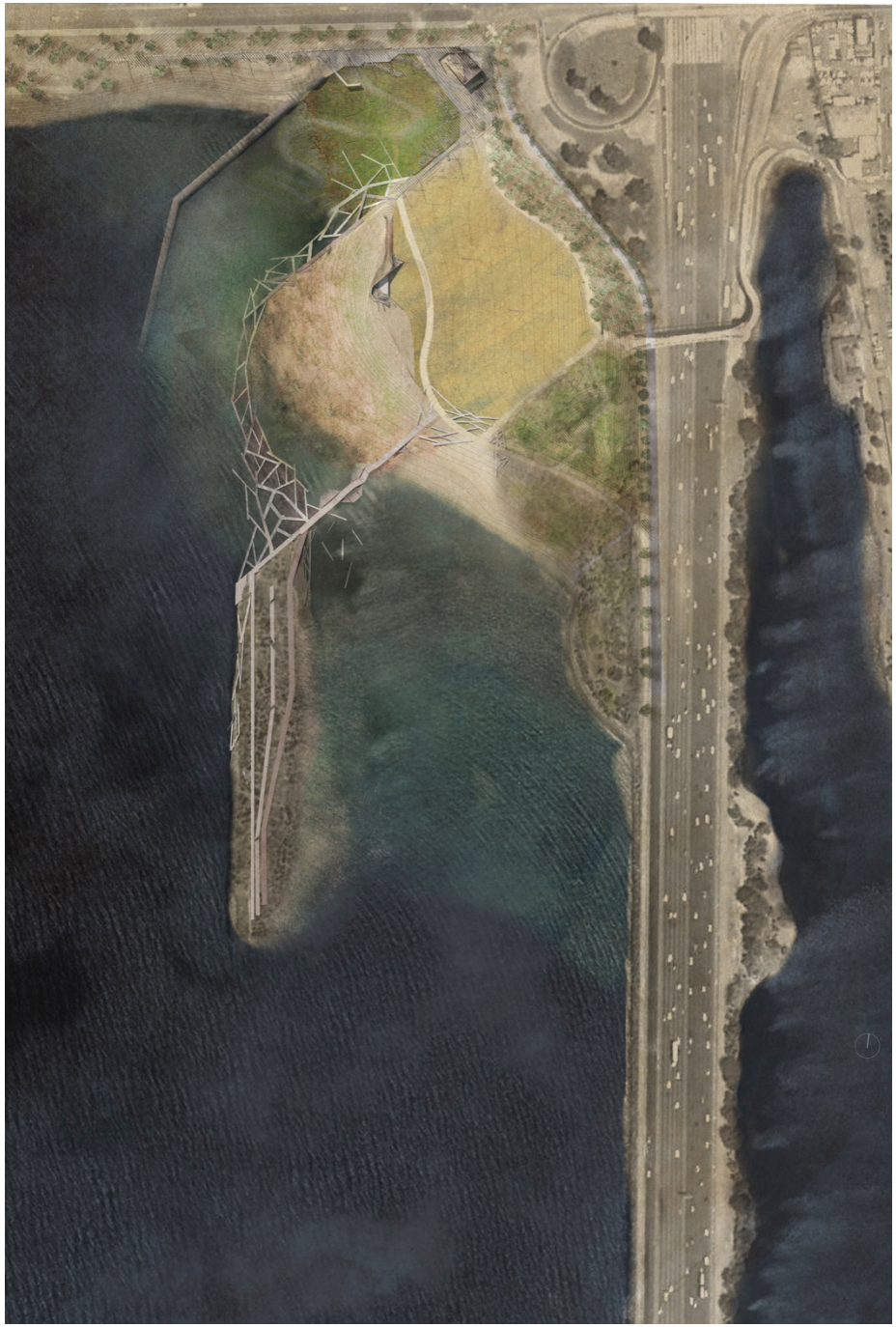
As is apparent in cross-sections, landscape is comprised mostly of thin air. The solid features that we tend to fixate on are actually dispersed sparingly across the ground plane. To make sense of these landscapes of air, a drawing from overhead has long been essential for the spatial organization and representation of design concepts. While this perspective was once acquired from terrestrial vantage points, landscape representation echoed modern cartographic constructions and projections of Cartesian space. As a result, the orthogonal landscape plan supplanted the oblique overview as the primary drawing of proof, with the latter relegated to a supporting scenic role. Culminating in orbiting satellites, a century of progressively higher flight reinforced the primacy of the downward gaze.

In the 21st century, two technologies have begun to reorient the directly downward alignment of the satellite's eye. Web-based mapping applications and consumer drones enable the revival of the lower-altitude bird's eye, which is angled down and across. To be sure, this anachronistic oblique viewpoint dates from a time when we oriented off church steeples and hilltops, while today we use mobile devices to triangulate off geostationary satellites. Yet the renaissance of the bird's eye view suggests that while our devices tell us our precise *location*, they aren't as adept at telling us where our *place* is. In effect, the bird humanizes the satellite.



7.1 Illustrative plan demonstrating a possible future melded with a map of the present. The image was created by importing AutoCAD line-work into Photoshop, where aerial imagery and texture fills were composited and manipulated to draw out subtleties such as the wave lines in the water. By Erik Jensen

In contemporary digital landscape visualization, both modes of aerial imaging are likely to co-exist, providing different points-of-view on the same site. For this reason, here they are explored together—whether orthogonal or oblique, effective aerial visions simultaneously soar overhead, while grounding us in a place. The techniques for achieving these divergent objectives are collated into five key motifs, which inform the digital visualization processes of students at U.C. Berkeley. Two themes span these motifs; (1) the role of perception of both landscape and representation, and (2) the residual value of the analogue, with which landscape design retains a greater affinity than other design disciplines.

1. Precision/vision

Apart from newly created ground, the landscape precedes the designer's projections of their visions. As a result, illustrative plans and bird's eye views are most often tasked with projecting possible futures whilst simultaneously mapping the present. Moreover, landscape designs mandate precision to be credible but are paradoxically unruly and indeterminate when actualized. These dual characters require representations that are both spatially precise and temporally open-ended. Graphically, this goal is achieved by combining exacting line-work with loose regions between the lines. This relationship is reflected in our tendency to visually perceive our environment through its edges and outlines, which is why we so readily identify with the line-based representations common in comics and animations. In landscape representation, even very thin lines continue to structure the vision, whilst enabling messiness to colonize the territories in between. From a distance, this looseness ideally presents a compelling vision that draws the viewer in. From up close, exacting lines deliver a second wave of precision, and with it, credibility.

2. Lean in, step back

Analogue representations exist on the drawing board at the same immutable scale for the duration of their creation. While the visualizer may be drawn into the minutia of the page, this inwards

7.2 Illustrative plan demonstrating precise line-work and loose textures, carefully composed framing, and long, dark shadows. The image was created by importing thin AutoCAD line-work into Photoshop, where the aerial image and texture fills were composited and deformed using Photoshop artistic effects.
By Paul McGehee

7.4 Design context plan combining watercolor and aerial photography in an image with depth and drama. The image was created by compositing GIS and AutoCAD line-work, aerial photo, and watercolor samples in Photoshop, where color masks were applied, and the contour lines inverted to white. By Yolanta Sui

7.5 Bird's eye view framed by the ocean horizon, whose tilt invokes an avionic viewpoint. The image was created by extruding city blocks from GIS data and topographic modeling in Rhino, followed by V-ray rendering and compositing with a view-matched Google Earth scene in Photoshop. By Richard Crockett

Journey is curtailed by the focal length of their eyes, which also approximates to the viewer's focal length. When creating digital drawings, infinitely precise vectors and tiny pixel grids exert a considerably stronger gravitational pull through the screen. Consequently, we tend to get drawn deeper into the substructure of the image, both by physically leaning forwards and by zooming in. Being absorbed into the machine risks adopting a myopic point of view and associated loss of context and scale, especially from the viewer's perspective. Since real-world scale is already one of the most difficult concepts for a designer to master, seduction by the infinite magnification of the virtual world undermines the already fragile spatial authenticity of illustrative visualizations. To counteract the lean in, it is necessary to periodically step back, view the work, and recalibrate one's sense of scale.

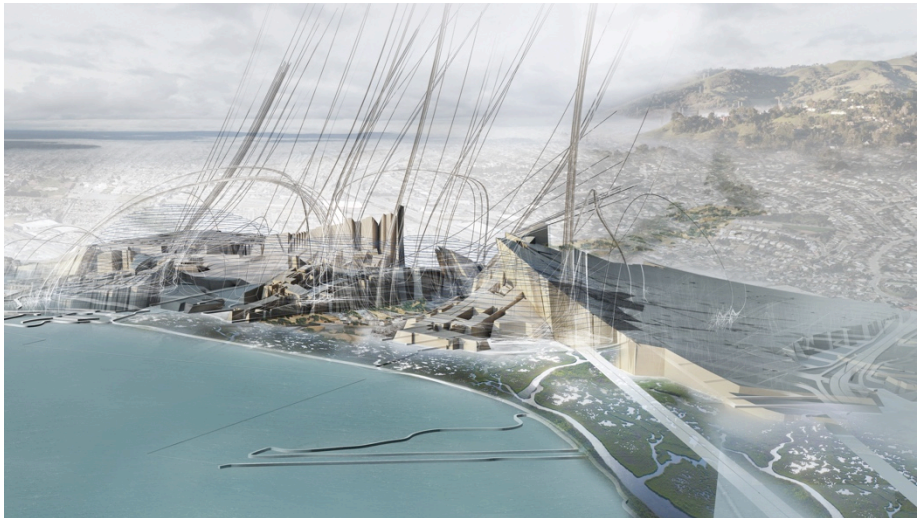
3. Event horizon

The horizon represents the key datum and perceptual limit within a landscape. As we move, new territories and events cross the threshold of our individual horizons and enter our field of perception. As representations of both the corporeal world and future projections, landscape design visualizations are also conditioned by their horizons. When included in bird's eye views, a horizon provides lift and flight; without this critical orienting datum, the viewer may be vulnerable to perceptual vertigo. For the Cartesian projection of illustrative plans, the horizon takes the form of the edges of the page. Here, the frame separates the field of representation from the background world. In analogue representation, the first act was to define the frame before drawing could commence. However, 1:1 scaled digital mapping allows this definitive act to be deferred indefinitely. This results in weak frames that ineffectively decipher the representation of a portion of

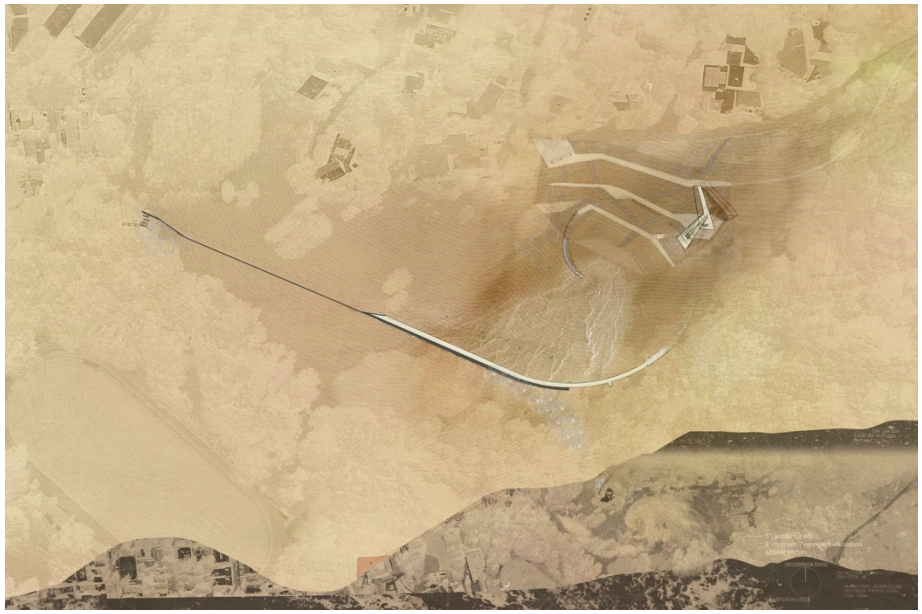
the world. Because designs are small and landscapes are apparently endless, the horizons of effective illustrative plans and bird's eye views are defined with great care. Only then can frames and horizons be graphically transcended.

4. Whitespace

To fill a 36-inch wide (A2 sized) page with ink requires 7,000 parallel lines hand drafted with a 0.13mm ink pen. As a direct consequence of the medium, retaining whitespace is a practical necessity. By contrast, digital technology delivers the capacity to fill an image with utmost ease and speed. Often this results in the whitespaces that are essential for ensuring sufficient contrast within an image being smothered. Whitespace is not an absence waiting to be filled in with textures and effects; rather, it provides structure, space, and hierarchy in drawing. As described by the Gestalt perceptual principle of closure, our perception bridges across whitespaces and completes implied structures. As fundamental elements in our perception and structuring of urban space, paths and buildings are particularly effective candidates for fulfilling this role within the image.



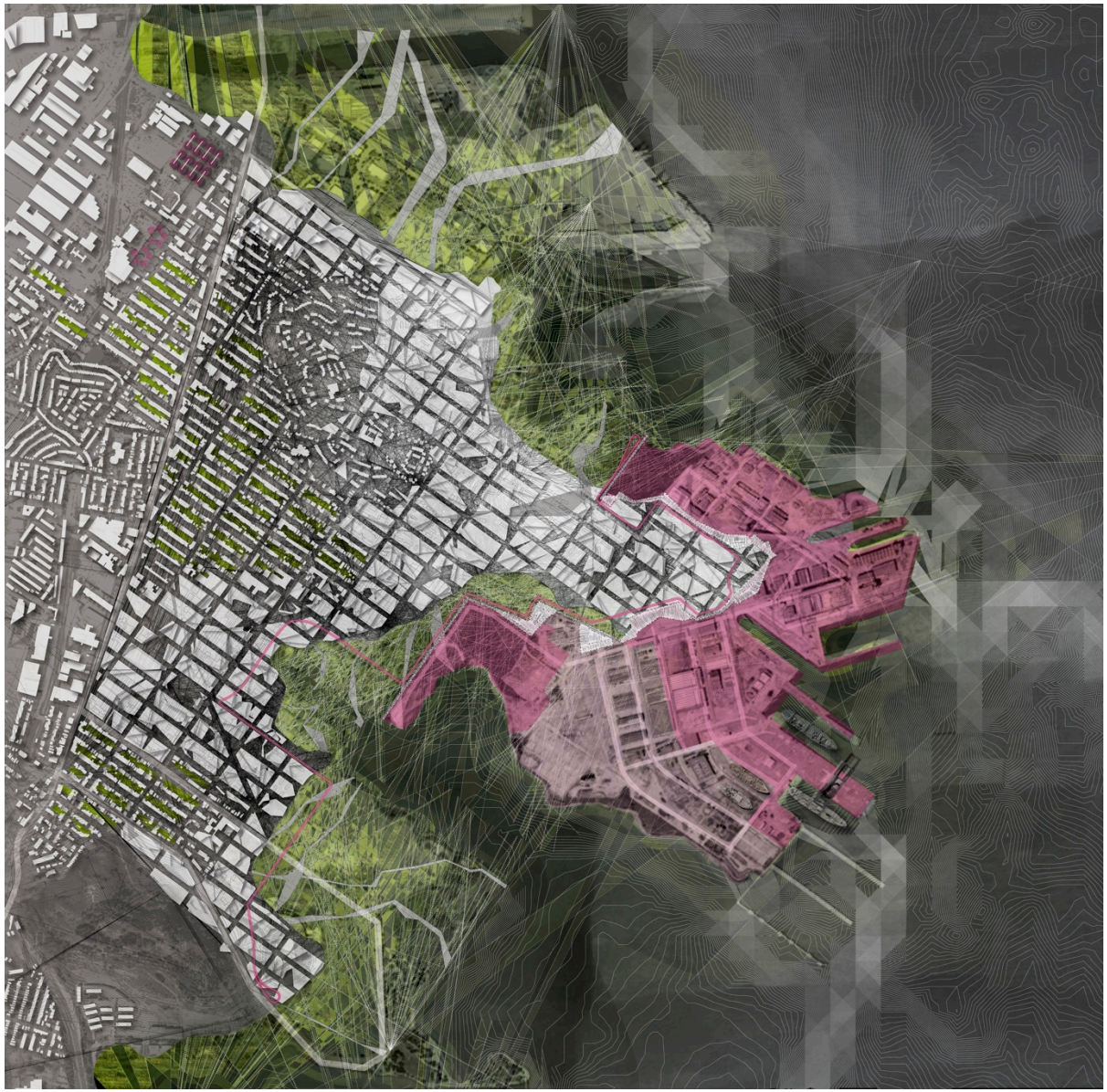
7.7 Bird's eye view illustrating data-scape expressed physically over an urban horizon. The image was created by 3D modeling GIS data through a Rhino Grasshopper script, and compositing with Google Earth imagery in Photoshop. By Kent Wilson, Jun Li and Alex Schofield



7.8 (not shown) Illustrative plan demonstrating white space constituted as elevated pathways underlain with deep shadows. The image was created by compositing GIS and AutoCAD line-work and aerial photo extracts in Photoshop. The path shadows were traced in Photoshop from observation of a sketch model placed in direct sunlight. By Michal Kapitulnik

7.9 (not shown) Illustrative plan illustrating the use of white paths to structure the image. The image was created by importing AutoCAD line-work into Photoshop, where texture fills were applied, and line-work was either inverted to white or turned off. Context background was darkened to highlight proposed design. By Tianyu Guan

7.6 Site plan illustrating the impact of considered framing and fragments of whitespace in an unbounded landscape. The image was created by importing GIS and AutoCAD line-work into Photoshop, where a solarized and sepia-toned aerial image was integrated, and contour lines dissolved into transparent white. By Erik Jensen



7.10 Urban plan with building blocks constituted as whitespace. The image was created by processing topographic and cultural GIS data through a Grasshopper script in Rhino, followed by post-processing in Illustrator and Photoshop where texture fills were applied.
By Kirsten Larson and Cindy Hartono

7.11 Illustrative plan comprised of watercolor, whitespace and strong shadows. The image was created by compositing AutoCAD line-work, a Rhino 3D topographic model, and watercolor samples in Photoshop. Design contours were generated off the Rhino model. By Yolanta Sui

7.12 Bird's eye view that is dramatically illuminated by positioning the sun near the horizon. The image was created by constructing a Rhino 3D model from AutoCAD line-work, view-matching the Rhino view to a scene captured in Google Earth terrain view, rendering in V-ray, and compositing the elements in Photoshop. By Richard Crockett

Notes

In addition to studio instructor Karl Kullmann, some illustrations in this chapter were composed in various studio offered by professors Linda Jewell, Alma du Solier, Marcel Wilson, Walter Hood, Kristina Hill, and Mark Anderson.

5. Face the sun

As with photography and painting, light is fundamental in design visualization. Where light is cast, shadows follow. Shadows formed by sunlight projected across the page instill the third dimension into otherwise flat illustrative plans. For already three-dimensional bird's eye views, shadows imbue the scene with the fourth dimension of time. As photographers know, the best light-time most often occurs at the ends of the day, when the sun is low on the horizon. Except for sites in the tropics, the sun also sits quite low on a plan's horizon-frame, creating shadows that are long, dark, and expressive.

For illustrative plans, sites in the northern hemisphere present an additional problem; sunlight from the south dilutes the three-dimensional impact of the shadows, which appear to fall off the page. To counteract this, north may be rotated away from the top of the plan. This is not as controversial as it may appear since north–up is a relatively recent cartographic standard. Indeed, to *disorient* quite literally means to rotate away from the east–up alignment towards the rising sun that characterized many pre-modern maps.

Landscape remains a challenging subject to represent due to its due to its complex, expansive nature and dynamic lifecycle. Consequently, landscape visualization does not enjoy a one-stop photo-realistic rendering technique as is widespread in architecture and industrial design. Instead, effective digital landscape design visualization necessitates a diverse range of non-linear and hybridized approaches that are often grounded in analogue traditions.