

ART HISTORY TECHNICAL AESTHETICS

The Poetics of Vision: Albert Flocon, Gaston Bachelard, and the Evolution of Curvilinear Perspective

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The intersection of technical precision and philosophical inquiry finds its most profound expression in the collaborative and intellectual relationship between the engraver **Albert Flocon** and the philosopher **Gaston Bachelard**. This encounter, set against the backdrop of post-World War II Paris, represents a synthesis of the **Bauhaus** pedagogical tradition and the French school of **epistémology**. At the heart of this discourse lies a fundamental challenge to the hegemony of Renaissance linear perspective, proposing instead a **curvilinear perspective** that accounts for the physiological reality of human vision and the material resistance of the artist's medium.

The Bauhaus Foundation and the Migration of Form

Albert Flocon's technical DNA was forged in the workshops of the Bauhaus in Dessau. Under the tutelage of masters such as **Josef Albers**, **Oskar Schlemmer**, and **Wassily Kandinsky**, Flocon internalized the principles of **functionalism** and the geometric reduction of space. The Bauhaus approach was not merely aesthetic but structural; it demanded an understanding of how materials behave under stress and how space is perceived by a moving subject.

Following the rise of the Nazi regime and the subsequent closure of the Bauhaus, Flocon migrated to France, bringing with him a rigorous analytical framework. This framework evolved from the static, Euclidean geometry of the German school toward a more fluid, dynamic understanding of spatiality. His subsequent meeting with Gaston Bachelard—a philosopher who transitioned from the study of hard science to the poetics of space—provided the theoretical catalyst needed to transform technical engraving into a philosophical tool.

Theoretical Framework: The Material Imagination and the Hand

Bachelard's interest in Flocon centered on the concept of the "**Material Imagination**." Unlike the formal imagination, which deals with shapes and outlines, the material imagination delves into the substance of things. For Flocon, this substance was the copper plate; for Bachelard, it was the ontological resistance that the plate offered to the **burin** (the engraver's tool).

The Dynamics of Resistance

In his essay *The Hand of the Engraver* (La Main du graveur), Bachelard posits that the act of

engraving is an act of cognitive mapping. The hand does not merely follow the mind; the hand learns from the resistance of the metal. This relationship is defined by several key technical parameters:

- Pressure Modality: The varying force required to penetrate the copper surface, which dictates line depth and ink retention.
- Torsional Resistance: The manual rotation of the plate against the fixed burin, a technique characteristic of professional engraving that creates fluid, sweeping curves.
- Kinesthetic Feedback: The tactile sensation that informs the artist of the material's grain and density, allowing for real-time adjustments in the geometric projection.

Technical Breakdown: From Linear to Curvilinear Perspective

The core of Flocon's technical contribution, particularly in his seminal work *Perspective Curviligne* (co-authored with André Barre), is the rejection of the **single-point linear perspective** (Albertian perspective) in favor of a spherical model. Linear perspective assumes a flat picture plane and a stationary, one-eyed observer, which Flocon argued was a mathematical abstraction rather than a visual truth.

The Geometry of the Curved Image

Curvilinear perspective (or 5-point perspective) acknowledges that the visual field is essentially a sphere. When we look at a long, straight wall, the center of the wall is closer to the eye than the edges. In a truly representative system, straight lines that do not pass through the center of the visual field must be rendered as curves (arcs of an ellipse).

Feature	Linear Perspective (Euclidean)	Curvilinear Perspective (Spherical)
Picture Plane	Flat/Planar	Spherical or Cylindrical
Parallel Lines	Converge at a single vanishing point	Converge at two or more vanishing points as curves
Field of View	Optimized for < 60 degrees	Accommodates up to 180-360 degrees
Visual Distortion	Significant at the periphery (marginal aberration)	Distributed evenly across the visual field
Observer State	Static, monocular	Dynamic, binocular-influenced

The Mathematical Model of the Spherical Grid

Flocon's system utilizes a grid based on the **meridians** and **parallels** of a sphere projected onto a flat surface. This involves a complex mapping function where:

1. Vertical lines remain straight only if they pass through the central axis.
2. Horizontal lines curve upward or downward depending on their height relative to the horizon line.
3. Transversal depth is compressed according to a trigonometric scale (usually involving sine or cosine functions of the angle of view).

The Hand of the Engraver: A Procedural Workflow

The technical execution of a Floconian engraving involves a multi-stage workflow that integrates geometric planning with physical labor. This process was what Bachelard termed the "worker's dream."

Step 1: Preparation of the Matrix

The copper plate must be polished to a mirror finish. Any microscopic scratch will hold ink, resulting in "plate tone" or unwanted noise. The technical writer must note that the **hardness of the copper** (often softened by annealing) determines the longevity of the lines during the printing process.

Step 2: Geometric Under-drawing

Using a drypoint or a hard pencil, the artist maps the curvilinear grid. This is not a freehand sketch but a rigorous geometric construction. Flocon utilized specialized instruments, including curved rulers and protractors, to ensure the arcs followed the correct mathematical curvature for the intended focal length.

Step 3: The Attack of the Burin

The burin is held stationary in the palm of the hand, tucked against the thenar eminence. The power comes from the arm, while the **non-dominant hand** rotates the copper plate on a leather sandbag (coussin). This allows for the creation of perfectly smooth, non-jagged curves that are impossible to achieve through wrist movement alone.

Step 4: Ink Rheology and Wiping

The ink used in Flocon's work required a specific viscosity to ensure it stayed within the deep, curved channels of the curvilinear grid. The wiping process (using tarlatan and then the palm of the hand) must be precise to maintain the **contrast ratio** between the high-density lines and the white space of the paper, which defines the perceived spatial depth.

Comparison of Philosophical Perspectives

To understand the depth of the Flocon-Bachelard connection, one must compare the different ways they viewed the act of creation.

Dimension	Albert Flocon (The Practitioner)	Gaston Bachelard (The Philosopher)
View of Space	A mathematical challenge to be solved through geometry.	A poetic volume to be inhabited by the imagination.
View of the Tool	An extension of the hand for precise material removal.	A mediator between human will and the "reverie" of matter.
View of Vision	A physiological process requiring a new representational logic.	A mode of "surrationalism" that goes beyond mere sight.
Role of Geometry	A structural constraint.	A springboard for metaphysical exploration.

Case Study: "Châteaux en Espagne" (Castles in Spain)

In the collaboration *Châteaux en Espagne*, Flocon's engravings provide a visual manifestation of Bachelard's theories on the "Air and Dreams." The technical challenge was to represent structures that appeared both solid and ephemeral. Flocon achieved this through **cross-hatching techniques** that followed the curvilinear flow of the composition, creating a sense of atmospheric pressure and light refraction that linear perspective cannot replicate.

Analysis of these plates reveals a sophisticated use of **anamorphosis**. When viewed from a standard frontal position, the buildings seem slightly warped. However, when the viewer's eye moves closer to the plate, the curves align with the natural curvature of the retina, creating an immersive, almost proto-Virtual Reality (VR) experience. This effect is a direct result of Flocon's mastery of the **equirectangular projection**, a technique now commonly used in 360-degree digital photography.

Troubleshooting Common Methodological Errors in Curvilinear Representation

Practitioners attempting to replicate Flocon's curvilinear approach often encounter specific technical failures. Below are common issues and their geometric solutions:

- Error: "Kinking" at the Vanishing Point. This occurs when the transition from a straight central line to a curved peripheral line is too abrupt. Solution: Use a continuous derivative function (C1 or C2 continuity) to ensure the transition of the arc's radius is gradual.
- Error: Inconsistent Vanishing Points. In a 5-point system, all four cardinal directions plus the center must share a consistent focal length. Solution: Establish a "circle of vision" boundary; all curves must terminate at the intersection of this circle and the primary axes.
- Error: Excessive Marginal Compression. Objects at the very edge of the plate become unrecognizable. Solution: Apply a stereographic projection rather than an orthographic one to preserve the local shape (conformality) of objects at the periphery.

The Synthesis of Vision and Science

The legacy of Albert Flocon and Gaston Bachelard extends far beyond the niche of mid-century printmaking. Their work prefigured the modern understanding of **non-Euclidean spatial modeling** and the psychological impact of immersive environments. By combining the technical rigor of the Bauhaus with the deep inquiry of French philosophy, they moved the act of seeing from a passive reception of light to an active construction of the world.

For the technical writer or the contemporary artist, Flocon's work serves as a reminder that the tools we use (the burin, the software, the grid) are not neutral. They shape the way we

conceptualize space. Bachelard's "Hand of the Engraver" remains a vital metaphor for the **human-machine interface**, suggesting that true mastery is found in the dialogue between the creator's intent and the material's resistance. As we move into an era of digital twins and algorithmic spaces, the curvilinear foundations laid by Flocon provide a necessary roadmap for representing the complex, non-linear reality of the human experience.