Abstract:

Is there a significant relation between the science and philosophy of Descartes, Newton and Leibnitz and the art of Bernini, Vermeer and Bach? Between the killing of Bruno, by a dogmatic church, and the killing of Bach, by an unqualified surgeon, we are witnessing the unfolding process of the partial disenchantment of the European mentality. Despite an apparent diversity, the baroque period is characterized by the profound unity of the process of transition from magic to rationality. Bruno dreamed without fear and without hope the fusion of magic, religion and science, while Bach “has practiced mathematics without knowing it”. Thus, the Baroque takes place between a cultural impossibility and a scientific promise. The Barockgeist of art has unleashed in science the ineffable spirit of plenitude, which is characteristic for the initial, innocent phase of the rational approach.
Emergence of Baroque

The result of the **clash**, triggered by the 95 Theses nailed by Martin Luther in 1517 to the door of *All Saint’s Church* in Wittenberg, **between**:

- **Renaissance** by its:
  - Humanism (ex.: Copernican revolution, …)
  - Technology (ex.: perspective, printing, war machines, …)
  - Esoteric approaches: Gnostic, Magic, Alchemic, Hermetic, Cabalistic … traditions (ex.: Florentine Academy)

- the scared & dogmatic **Catholicism**

- the reluctantly revolutionary **Protestantism**
Philosophy

• Rene Descartes (1596-1650): restart; dualism (*rex extensa* - *rex cogitans*) as distinction will become a *disjunction* in Enlightenment
  • Mathematic form of philosophy
  • Science is the true wisdom
  • Deep *unity* of truth => fundamental truth & logic = science

• Baruch Spinoza (1632-1677): deep *unity* of neutral monism (*rex extensa* & *rex cogitans* are *derivatives*)

• Leibnitz (1646-1716): law of continuity, pre-established harmony and *plenitude* (secretary to the Nuremberg alchemical society; academy of Berlin created on his advice)
Science

**Start**: Francis Bacon (1561-1626): *New Atlantis* portrays a land ruled by Rosicrucians;

**In between**:  
- *from* methodical speculation (Kepler),  
- *through* empirical confirmation (Brahe, Galileo),  
- *to* formal codification (Newton).

**End**: John Locke (1632-1704): mind is *tabula rasa* filled up by experience derived by perception.
Johannes Kepler (1571-1630)
Math & Computing (1)

- 1624: Henry Briggs (1561-1630) – *Arithmetica Logarithmica*
- Gottfried Wilhelm von Leibnitz:
  - *Disertatio de arte combinatoria* (1666)
  - *Nova Methodus pro Maximis et Minimis* (1684)
- Isaac Newton: *Method of Fluxions* (1671 – 1736)

*From discrete to continuum*
Math & Computing (2)

- 1623-24: Wilhelm Schickard; in two letters to Kepler “arithmeticum organum” or Rechenuhr (calculating clock)
- 1642: Blaise Pascal; Pascaline; “Pascal’s wager”; his religious writings are rigorous because of his scientific training
- 1672: Gottfried Wilhelm von Leibniz (stepped reckoner, sequential computing machine); binary representation; importance of mathematical method for logic and philosophy; integrative reason
El Greco

1541-1614

~1600

Dynamic & integrative image, spatial complexity, artificiality, affectation

instead of

classically proportioned images, calm balance, and spatial clarity of Renaissance
Caravaggio
1571-1610

1601

Robust material actions

Dramatic expressiveness

Nature faithfully copied, without idealization
Lorenzo Bernini
1598-1680

1651

Baconian attention to the natural expression, starting form an autobiographical description
Rembrandt van Rijn
1606-1669

1661

The art of describing the inner life
Jules Hardouin Mansard
1646–1708
~1678

Decorative continuity at any price.

Wholeness dominates details
Johannes Vermeer
Delft (1632-75):
The master of the *detailed wholeness*
Johann Sebastian Bach

1685-1750

The seeking of systemic completeness

**At the global level:**
The Well Tempered Clavier (1722)
2 x 24 pairs of prelude-fugue from C (Do) major to B (Si) minor

**At the local level:**
Example: the same motif scattered all over the possible “space”
After Baroque

Mozart & da Ponte in Don Giovanni:
- quantity without quality
- profane without sacred
- liberty without responsibility

Distinctions ↔ Dissociations
Integrative reason ↔ disintegrative reductionism
Conclusion

The BAROQUE enfolds between:
- a cultural impossibility
- a scientific promise.

The Barockgeist of art triggered in science the ineffable spirit of wholeness, which is characteristic for the initial, innocent steps of the rational approach.
Euler’s identity: $e^{i\pi} + 1 = 0$

the “baroque” unity of numbers and operations

Five foundational numbers:
0, 1, 
$\pi$, $e$, 
i

The main operations:
add, multiplication, exponentiation
Thank you

Questions & possible answers