“TRANSPLANTING THE HUMAN MIND INTO INANIMATE MATTER”

LEIBNIZ’S RECKONING MACHINE SEEN FROM A MEDIA PERSPECTIVE

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Introduction: the classical narratives on Leibniz’s reckoning machine

1. Alternative narratives and stating the problematic of re-mediation

2. Beyond the drawing-as-mere-communication argument

3. Re-mediating long multiplication from paper to brass and wood

Conclusion: research threads, paper trails, and brass models
Introduction: the classical narratives on Leibniz’s reckoning machine

- 1672: arrival in Paris, first written ideas
- 1673: wooden model for the Royal Society
- 1675: brass model for the Académie des sciences
- 1677-1700: “Altere Maschine” in Hannover
- 1697-1712: “Jungere Maschine” between Hannover, Helmstedt, Zeitz
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- 1879: rediscovered in Göttingen
- 1897: Arthur Burkhardt (manufacturer of arithmometers) tried to “fix” it

“Original reconstructions” (*Originalgetreue Nachbauten*):

- ca. 1924: Brunsviga (arithmometer firm)
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“Original reconstructions” (*Originalgetreue Nachbauten*):

2005: Badur and Rottstedt
   “Und sie rechnet doch richtig!”

2008: Wolff
   (Bonn University)
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“Constructively altered reconstructions” (*Nachbauten mit konstruktiven Änderungen*):

2005: Stein and Kopp (Hannover University)

2008: Badur and Rottstedt (Bonn University)
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Introduction: the classical narratives on Leibniz’s reckoning machine


“Mutig, visionär und ungeheuer kreativ erfand er [Leibniz] Maschinen auf dem Papier.”

“Brave, visionary, and incredibly creative, Leibniz invented machines on paper.”
1. Alternative narratives and stating the problematic of re-mediation


- Reassess the material legacy of Leibniz’s calculating machine
- Discuss the writing of history through reconstruction
- Debunk the rhetorics of certain reconstructions
1. Alternative narratives and stating the problematic of re-mediation


- “Sociality of materiality”
- Debunk the conception of innovation as “hylomorphic”
- Reappraise the figure of the craftsman

Yet, still just a matter of communication…
1. Alternative narratives and stating the problematic of re-mediation

What does Leibniz’s reckoning machine owe to its *paper substrate*?

or

Conceiving of the 2D->3D “inverse” projection as a material translation from one medium to another, *i.e.*, as a re-mediation from paper to cogs&wheels, how was this machine shaped by a certain use of paper?
2. Beyond the drawing-as-mere-communication argument

LH XLII, 5, f° 1v.

f° 11r

f° 11v

f° 12v
2. Beyond the drawing-as-mere-communication argument

LH XLII, 5, f° 23r.

f° 31r
2. Beyond the drawing-as-mere-communication argument

Biblioteca Nazionale Centrale Firenze, Fondo Galileiano Gal. 243, f° 24r.

Vincenzo Viviani’s exploded view of a telescope
2. Beyond the drawing-as-mere-communication argument

Christian Wagner’s drawing of the stepped drum in a letter to Leibniz
2. Beyond the drawing-as-mere-communication argument

LH XLII, 5, f° 27r.
2. Beyond the drawing-as-mere-communication argument

LH XLII, 5, ff° 11rv.
2. Beyond the drawing-as-mere-communication argument

LH XLII, 5, f° 11r, detail.
2. Beyond the drawing-as-mere-communication argument

Das letzte Original, p. 198 (left) and p. 234 (right).
3. Re-mediating long multiplication from paper to brass and wood

LH XLII, 5, f° 4r.

ff° 6v-7r

f° 4v

f° 7v
3. Re-mediating long multiplication from paper to brass and wood
3. Re-mediating long multiplication from paper to brass and wood

$748 \times 13 = 9724$
3. Re-mediating long multiplication from paper to brass and wood

\[
\begin{array}{c}
23958233 \\
\times \\
5830 \\
\hline
000000000 ( = 23,958,233 \times 0) \\
71874699 ( = 23,958,233 \times 30) \\
191665864 ( = 23,958,233 \times 800) \\
+ 119791165 ( = 23,958,233 \times 5,000) \\
\hline
139676498390 ( = 139,676,498,390 )
\end{array}
\]
3. Re-mediating long multiplication from paper to brass and wood

Abacus

Napier’s bones
3. Re-mediating long multiplication from paper to brass and wood

What is lost-in-translation and how Leibniz eschews it all

“La machine dont nous donnons icy la description exteriere, fait voir que l’esprit humain peut trouver le moyen de se transplanter de telle facon dans une matiere inanimee qu’il luy donne le pouvoir, de faire bien plus qu’il n’auroit fait lui-meme : pour convaincre sensiblement ceux qui ont de la difficulte a concevoir comment le Createur puisse loger une apparence d’esprit un peu plus generale dans les corps des bestes qoyque fourni de tant d’organes.” (LH XLII, 5, II, f° 33r.)
Conclusion: research threads, paper trails, and brass models

1. Further the material study of Leibniz’s working papers (drawings and ekphrasis, isomorphism with long multiplication)

2. Same perspective on the many reconstructions, re-mediations, and modelisations

3. Study Leibniz’s working papers for other machines (crypto, dyadic, planimeter)