From selling to ‘thinking’ the Machine : Pascal’s intellectual trajectory, sociological aspects.

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Abstract

Information on marketing, networking, patenting, and reflecting the famous machine for arithmetic (‘Pascaline’). – “*There was a hustler in Pascal*”; There was also a philosopher, writer of the *Pensees*.

PREFACE

When we think of the origins of computers we think of a handful of philosophers and a “third man”; because history, when conducted properly, always ends up revealing this other person, whoever they are, and the next.

However our understanding of these issues may one day look, it remains that :

If, our computers – these tools that we use, and take for granted – come from them then we must understand their thoughts;

and understand the people who came up with the devices that now fill our lives.

Pascal solved engineering problems before solving philosophical ones :

If this is so : What does it say about us?

There are two Pascals – one sold his Machine, the other ‘thought’ it;

two attitudes corresponding roughly to his early and later life (the latter period saw the emergence of their major philosophy work);

Between worldly dispositions and contemplative retreat : “*hustler*”, as we put, and uncompromising thinker.

In Pascal we find a strangely modern figure, and uncomfortable mirror.

We recognize in him the traits seen in others; minus the philosophy for some...

“My dear, dear brother,
I feel as much joy knowing you gay in solitude,
as I was pained when I knew you to be happy in the world.”
(Jacqueline Pascal, 1655)

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“The machine for arithmetics has effects that are closer to thought than
anything in animals; but it [“elle”] does nothing that would allow us to say
it has will ...”
(Pascal, *Pensees*)

Sociological aspects of the Pascaline can be found, past its inception, in the steps that follow (such inventions) which are patenting, marketing and selling.

Seller and thinker. Both are reconstituted here. And, some of the steps in the trajectory leading from one to the other...

I - Self-selling and marketing the Pascaline

*“Reader my friend [Dear reader],
by this notice [ad] you will know that I have created a small machine
of my own invention, that I should now introduce to the public.
With it only you will be able to perform all the operations of arithmetic,
without strain;
and thus will be able to rid / free yourself from the hard work weighing
on your mind. (...)
I can, without being presumptuous, hope that it will be pleasing to
you...”*

And, so the Pascaline was introduced to the world.

Pascal was plainly selling his Machine. He goes on, preemptively dealing with criticism, and potential competition possibly :

*“Some (lesser) scientists will tell you [the Machine could have been
better],
but believe me when I say that [it is otherwise], and I will show them
whenever it suits them, many other models [etc.]”*

Of this period, the commentator Michaut tells us : “his ardent [pursuit of] science was still driven by his love of glory” ...¹

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¹Michaut 1902 : 31.

II - Networking the Machine, Pascal and social capital

One of the truly odd episodes in the life of this philosopher :

Pascal had apparently recruited a professor at the College de France – a tremendously prestigious institution – for what must be called objectively marketing purposes.

To the prospective buyer the young man wrote : go see Professor such-and-such, and he'll give you a free demonstration! Here is his address.

“Those ... who would like to see [such a] the Machine will please contact the sieur Robertval, professor of mathematics at the College [Royal] de France, who will show them – succinctly and free of costs – the ease with which operations can be performed, will sell it to them, and teach them how to use it.

Said Robertval resides ... on Foing street, close to <such and such>. He can be found [there] every morning from <such and such>, and on Saturdays the entire afternoon”!

So ended² the Notice describing the Pascaline.

Being reminded at this point of 17th c. equivalent of Tupperware parties cannot be faulted...

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But, there was neither fate here, nor luck, nor a meeting of pure spirits; There was something that mathematicians or computer scientists usually do not like to have surmised of them : social conditions.

The son had used his family's connections, plainly.

The same Roberval³ had been a collaborator of his father :

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²In bold, in our copy.

³Gilles de Roberval (1602-1675), who appears as "Robertval" in various documents.

Pascal's father was also – this is probably not stressed enough – a "small-time" mathematician himself, author of one paper that is known to us :

To Fermat from 1636 co-written with the aforementioned distinguished maths prof.. (A lengthy letter.)

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These are no doubt the less glorious aspects of the history of science.

Not everyone is quite equal, here either.

The illuminated manuscript (i.e. books with illustrations of religious scenes) had become less common in the century of Pascal : but, these were the 'very small hours' of Pascal, and those of the early history of computing and by extension computer science...⁴

Rene Taton, this "fairly pro-Pascalian" historian, reported these events in his article on the invention of the mechanical calculator⁵, but not without some disappointment or a pinch of the heart, it feels ("*curious choice...*").

III - Easy and 'hard' problems

Pascal solved engineering problems before solving philosophical ones.

The first ones were the easy ones.

In her biography, Gilberte took note of the following

"This work [the Pascaline] had been very strainous for him, not intellectually or in terms of its implementation, which was quick, but to make all of these various matters clear to the workers."

These events go against contemporary notions of easy and 'hard' problems, associated respectively with the 'soft' and the so-called 'hard' sciences.

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⁴A play on *Grandes Heures* and *Belles heures*, two famous examples of such manuscripts.

⁵Taton 1963, esp. 147.

An important technology entrepreneur not too long ago had the hubris of writing a blog post detailing such views :

(Their case, being one of many, only matters so far as representative of certain moods existing within computer science and technology circles — though certainly not only them.)

The humanities were fads... Or, subject to too many of them to be worthy of study. [From which a reasonable person may deduce they solve complicated problems; as Descartes, this other philosopher-mathematician, implied.]

He did not recommend them in any case, and opined in his wisdom that various other sciences, among them computer science, were better choices.

This gentleman however made one notable exception : the history of science!;

The same now gives us the example of someone, Pascal, who clearly did not conceive of philosophical vs. technical or even technological problems in such terms.

*“There are two kinds of minds :
the geometrical one, and the beautiful [keen] one
The first moves forward slowly, harsh and uncompromising
but the latter has a flexibility such that
they may move around all of their favorite subjects
And, yet when both are combined how sweet love becomes!”*

From 'Discourse on the passions of Love' (a similar thought is found in the *Pensees*).

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Pascal would soon leave behind the 'easy' problems of his youth, and would thereafter turn to the (real) "hard" ones; we use the latter terminology in the same fashion, still, as some say "hard science". But, to mean philosophy, and the humanities and, anachronistically, the social sciences.

This former mathematician and engineer would now concentrate his energies on the most difficult problems only; constitutive of the *Pensees*.

IV - The 1649 patent

May of 1649 :

Pascal receives a patent (called a "privilege") for his Machine :

*"LOUIS, by the grace of God, king of France and of Navarre...
Our dearest and much-loved the sieur Pascal⁶ has shown us that
– just like his father le sieur Pascal⁷, [our servant of the State] –
he had particular aptitudes for the mathematical sciences, in which,
through his studies and observations, has invented multiple things,
and in particular a machine, by which ... additions, subtractions,
multiplications and divisions, and any other rule of arithmetic can be
performed [and better, and easier than means of calculation available
so far] ... in addition to being free of errors"*

Here again, Pascal's father's status and connections and reputation plays a role in the trajectory of the philosopher (for better and worse, depending on fluctuations).

V - What money can buy... Capital in the 17th century

Circa 1630/1631 :

Etienne Pascal sells his position, at the Court of aids, – as was possible in the day⁸ – and essentially starts living the life of a rentier capitalist (i.e. someone possessing a capital, sum of money / money-equivalents, such that big enough they receive an income from which they live);

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⁶Blaise is meant.

⁷Etienne.

⁸For this aspect of 17th c. life, see e.g. Munck 2001.

“vendit sa charge de deuxieme president a la cour des aides a son frere ... et la plus grande partie de ses biens, qu’il mit en rente sur l’hotel de ville de Paris” (as Marguerite reported in her memoirs)⁹

The Pascal family moves to Paris, and enjoys a leisurely life.

Let us say at least some things about what money could buy during this century (and nothing of the international passports and citizenships than can be considered their modern-day equivalents) :

“Especially in western and central Europe, money could provide access to all the trappings of elite status, including noble titles, landed estates, fiscal privileges, coats of arms, seigneurial rights (such as hunting rights, powers of justice and punishment, entitlement to labor services from tenants)”¹⁰

This was in fact how Etienne – Father of Pascal – had made some of his money, fortune :

But, the son would not follow in his father’s footsteps however.

A turn attributable to his growing health issues, (it’s hard to take the world for granted when you’re in that kind of pain), and what we advance to be a sense of delusion with the World, and materialistic pursuits, following the various commercial and legal experiences surrounding the invention of his Machine.

VI - A crisis of conscience

1654. Pascal has his famous “vision”: it had made such an impression on him that he wrote it down and carried the note with him henceforth, sewn into his jacket.

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⁹P. 419.

¹⁰Munck 2001 : 54.

“God ... not of philosophers ... Denial of the world ... I have separated myself ... Jesus Christ I have renounced, crucified, ... but so long as not forever. ... Total renunciation ... Total submission to Jesus Christ and my Director” [i.e. one giving directions]

The so-called “amulet” : a term coined by Condorcet to refer to the dream note that Pascal carried with himself. (A rather pejorative one considering the notions of magic or witchcraft attached to it.)

[The term “memorial”, adopted by others, is more neutral.]

1655. Pascal leaves for Port Royal.¹¹

A prince amongst his kind, (having received visits by the likes of Descartes in his teens still), he abandoned them; but with mathematics he also abandoned most his social status.

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Deep religious beliefs and convictions, or a fanatic, Pascal?

To put this event into context, we may remind of several analogous ones in the history of sciences :

That a mathematician like Dedekind, for instance, evoked a “voice unknown and mysterious” speaking to him... That Cavailles felt his work, (his thesis specifically), had “a life of its own”... That Wittgenstein kept journals on masturbating¹², in which he expressed anxieties about purity¹³...

[As for 21st c. computer scientists, they give so much of themselves away that it would too long to list all of their extraordinary ways.]

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¹¹Strowski 1908 : 1.

¹²Cf. Monk’s biography.

¹³Interestingly, and perhaps not surprisingly, we gather further about Wittgenstein : “[Augustine’s] writings were among the favorite books of Wittgenstein.” (Chadwick 2001 : 4). (NB. Augustine, who talked a lot about sex(uality)...)

VII - “The second Pascal” / Butterfly Pascal

Even Cousin – critical both of the contemporaneous state of the *Pensees* and some of Pascal’s legacy – found Pascal’s “love of poverty”, an expression he used, touching¹⁴.

The second Pascal was meant.

Hazard, a man of letters, similarly remembered Pascal as “the [one] man who had most intensively felt the tragic nature of existence”¹⁵.

There was not as much tragic in Pascal as human :

As he proposed himself, there was no reason to consider philosophers as something else, than human :

Plato and Aristotle laughed like everyone else; it was their lives that were their greatest philosophy (*Pensees* 331 B) :

“We only imagine Plato and Aristotle as pedants/pedagogues in robes. These were honest people [folks] who, like everyone else, laughed [in company] of their friends; and when they turned to [writing] their ‘Laws’ and ‘Politics’, they did it in that same [playful] spirit; it was the least philosophical and serious part of their lives; the most philosophical was to live simply and peacefully.”

And, it was only this Pascal who could have written about the shameful “I” :

“The Self is detestable etc. etc.” (trans. 1) /

“The [word] ‘me’ is detestable etc. etc.” (trans. 2)

A passage of the *Pensees* quoted in the *Logic* of Port-Royal together with the following recollections about Pascal (with whom the author were close, they did live after all in the same place) :

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¹⁴Cousin 1842 : 46 (“touching”, was Gilberte’s testimony on this topic

¹⁵*Crisis of European...* Ch. 5, part 3. (in this study originally published in 1935)

*“Pascal, who knew as much real rhetoric as anyone ever knew, ... held that an honest man should not name themselves or even make use of the words ”I” (”je”) and ”me” (”moi”).”*¹⁶

In his religion, Pascal found a fitting anthropology which is to say view of of human kind : *Pensees* 606 B :

“No other religion than ours [implied Christianity] has taught that Man is born in sin, no philosophy school [“secte”] has claimed it : thus none was true.”

VIII - Thinking the Machine

‘Thinking’ the Pascaline followed selling the Pascaline; just as the retired¹⁷ Pascal followed the worldly one; and, Port-Royal Paris...

In fragment 340 B, the Machine of Pascal makes an appearance :

“The machine for arithmetic has effects that are closer to thought than anything done by animals ; but it [“elle”] does nothing that resembles will, as [present] in animals.”

No more marketing. No more promises of “ease of use” (as in the ad, written by a younger Pascal). No more Roberval.

Here Pascal develops thoughts on almost-thinking machines, though yet devoid of own will. A 17th c. thinker!

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It’s useful to place this fragment together with the surrounding ones (if thematically only) :

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¹⁶In the old and new editions we have accessed, this passage is in chapter XX, VI. (In his Report, Cousin places this passage in “IIIrd part, ch. XIX” (Cousin 1842 : 45).)

¹⁷We use retired rather than solitary, as Pascal did have the company of the other believers-intellectuals at Port-Royal.

Fragment 339 B : Where do pleasures come from? The body (our hands, for instance)?

Answer : they must be immaterial.

When taken together these thoughts should make pleasures in machines possible; as, again, "il faut que ce soit quelque chose d'immatériel" i.e. the pleasures that are inside of us come from a non-material source.

Its goes even further :

"a Man without hands, feet, and [even] head (for experience tells us a head is more important than [the rest])" I can conceive, continues Pascal, *"But, a Man without thoughts I can't"*.

Directly followed by the passages on machines being – we can conclude – somewhere in-between animals and humans; and perhaps one day more.

Conclusion

Legal and commercial experiences, the education that adulthood brings sooner or later to everyone, exacerbated health problems :

Thus could the Pascal with a “love of poverty” emerge;

and, simultaneously the eternal one remembered by those, philosophers not excluded, who skip on his twenties, presumably on account of their scientific content. Half-right, half-wrong.

Pascal’s stay in Port-Royal further transformed an engineer able to build, into a philosopher able to think technological creations, including their own. (And, God!, the “infinite being”.)

With Augustine, just as with Michel Foucault, we could say that Pascal was someone who wrote to progress, and progressed as they wrote...

ADVIS

**Necessaire à ceux qui auront curiosité de voir la
Machine Arithmétique, et de s'en servir.**

Amy lecteur, cet advertissement servira pour te faire sçavoir que j'expose au public une petite Machine de mon invention, par le moyen de laquelle seule tu pourras, sans peine quelconque, faire toutes les operations de l'Arithmetique, et te soulager du travail qui t'a souventes fois fatigué l'esprit, lorsque tu as operé par le jetton ou par la plume : je puis, sans presumption, esperer qu'elle ne te deplaira pas, apres que MONSEIGNEUR LE CHANCELIER l'a honorée de son estime, et que, dans Paris, ceux qui sont les mieux versez aux mathematiques ne l'ont pas jugée indigne de leur approbation. Neantmoins, pour ne pas paroistre negligent à luy faire acquerir aussi la tienne, j'ay creu estre obligé de t'eclaircir sur toutes les difficultez que j'ay estimé capables de choquer ton sens lorsque tu prendras la peine de la considerer.

Je ne doute pas qu'apres l'avoir veuë, il ne tombe d'abord dans ta pensée que je devois avoir expliqué par escrit et sa construction, et son usage, et que, pour rendre ce discours intelligible, j'estois mesme obligé, suivant la methode des Geometres, de représenter par figures les dimensions, la disposition et

Enfin (cher LECTEUR), maintenant que j'estime l'avoir mise en estat d'estre veuë, et que mesme tu peux, si tu en as la curiosité, la voir et t'en servir, je te prie d'agreed la liberté que je prens d'esperer que la seule pensée à trouver une troisieme methode pour faire toutes les operations arithmetiques, totalement nouvelle et qui n'a rien de commun avec les deux methodes vulgaires de la plume et du jetton, recevra de toy quelque estime et qu'en approuvant le dessein que j'ay eu de te plaire en te soulageant, tu me sçauras gré du soin que j'ay pris pour faire que toutes les operations, qui par les precedentes methodes sont penibles, composées, longues et peu certaines, deviennent faciles, simples, promptes et asseurées.

Les Curieux qui desireront voir une telle Machine s'adresseront s'il leur plaist au sieur de *Roberval*, Professeur ordinaire de Mathematiques au College Royal de France, qui leur fera voir succinctement & gratuitement la facilité des Operations, en fera vendre, & en enseignera l'usage.

Le dit Sieur de Roberval demeure au College Maistre Gervais, ruë du Foing, proche les Mathurins¹. On le trouve tous les matins jusques à huict heures, & les samedis toute l'apres disnée.

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1. Les Mathurins étaient rue Saint-Jacques, attenant à l'hôtel de Cluny. Le collège de maître Gervais, dont les derniers vestiges disparurent lors de la création du boulevard Saint-Germain, avait été créé en 1370, par maître Gervais Chrétien, premier médecin ou physicien de Charles V, et destiné particulièrement à l'enseignement de la médecine et de l'astrologie (Voir Franklin, *Les anciennes Bibliothèques de Paris*, t. II, 1870, p. 225).