passage from Gleick, James (2011-03-01). The Information: A History, a Theory, a Flood (Kindle Locations 1636-1637). Random House, Inc.. Kindle Edition.

Charles Babbage was born on Boxing Day 1791, near the end of the century that began with Newton. His home was on the south side of the River Thames in Walworth, Surrey, still a rural hamlet, though the London Bridge was scarcely a half hour's walk even for a small boy. He was the son of a banker, who was himself the son and grandson of goldsmiths. In the London of Babbage's childhood, the Machine Age made itself felt everywhere….

The boy also loved mathematics—an interest far removed from the mechanical arts, as it seemed. He taught himself in bits and pieces from such books as he could find. In 1810 he entered Trinity College, Cambridge—Isaac Newton's domain and still the moral center of mathematics in England. Babbage was immediately disappointed: he discovered that he already knew more of the modern subject than his tutors, and the further knowledge he sought was not to be found there, maybe not anywhere in England. He began to acquire foreign books—especially books from Napoleon's France, with which England was at war. From a specialty bookseller in London he got Lagrange's Théorie des fonctions analytiques and "the great work of Lacroix, on the Differential and Integral Calculus." He was right: at Cambridge mathematics was stagnating. A century earlier Newton had been only the second professor of mathematics the university ever had; all the subject's power and prestige came from his legacy. Now his great shadow lay across English mathematics as a curse. The most advanced students learned his brilliant and esoteric "fluxions" and the geometrical proofs of his Principia. In the hands of anyone but Newton, the old methods of geometry brought little but frustration. His peculiar formulations of the calculus did his heirs little good. They were increasingly isolated. The English professoriate "regarded any attempt at innovation as a sin against the memory of Newton," one nineteenth-century mathematician said. For the running river of modern mathematics a student had to look elsewhere, to the Continent, to "analysis" and the language of differentiation as invented by Newton's rival and nemesis, Gottfried Wilhelm Leibniz. Fundamentally, there was only one calculus. Newton and Leibniz knew how similar their work was—enough that each accused the other of plagiarism. But they had devised incompatible systems of notation—different languages—and in practice these surface differences mattered more than the underlying sameness. Symbols and operators were what a mathematician had to work with, after all. Babbage, unlike most students, made himself fluent in both—"the dots of Newton, the d's of Leibnitz"—and felt he had seen the light. "It is always difficult to think and reason in a new language."

Indeed, language itself struck him as a fit subject for philosophical study

—a subject into which he found himself sidetracked from time to time. Thinking about language, while thinking in language, leads to puzzles and paradoxes. Babbage tried for a while to invent, or construct, a universal language, a symbol system that would be free of local idiosyncrasies and imperfections. He was not the first to try. Leibniz himself had claimed to be on the verge of a characteristica universalis that would give humanity "a new kind of an instrument increasing the powers of reason far more than any optical instrument has ever aided the power of vision." As philosophers came face to face with the multiplicity of the world's dialects, they so often saw language not as a perfect vessel for truth but as a leaky sieve. Confusion about the meanings of words led to contradictions. Ambiguities and false metaphors were surely not inherent in the nature of things, but arose from a poor choice of signs. If only onecould find a proper mental technology, a true philosophical language! Its symbols, properly chosen, must be universal, transparent, and immutable, Babbage argued. Working systematically, he managed to create a grammar and began to write down a lexicon but ran aground on a problem of storage and retrieval—stopped "by the apparent impossibility of arranging signs in any consecutive order, so as to find, as in a dictionary, the meaning of each when wanted." Nevertheless he felt that language was a thing a person could invent. Ideally, language should be rationalized, made predictable and mechanical. The gears should mesh.

Still an undergraduate, he aimed at a new revival of English mathematics—a suitable cause for founding an advocacy group and launching a crusade. He joined with two other promising students, John Herschel and George Peacock, to form what they named the Analytical Society, "for the propagation of d's" and against "the heresy of dots," or as Babbage said, "the Dot-age of the University." (He was pleased with his own "wicked pun.") In their campaign to free the calculus from English dotage, Babbage lamented "the cloud of dispute and national acrimony, which has been thrown over its origin." Never mind if it seemed French. He declared, "We have now to re-import the exotic, with nearly a century of foreign improvement, and to render it once more indigenous among us." They were rebels against Newton in the heart of Newton-land. They met over breakfast every Sunday after chapel.

"Of course we were much ridiculed by the Dons," Babbage recalled. "It was darkly hinted that we were young infidels, and that no good would come of us." Yet their evangelism worked: the new methods spread from the bottom up, students learning faster than their teachers. "The brows of many a Cambridge moderator were elevated, half in ire, half in admiration, at the unusual answers which began to appear in examination papers," wrote Herschel. The dots of Newton faded from the scene, his fluxions replaced by the notation and language of Leibniz.

Meanwhile Babbage never lacked companions with whom he could quaff wine or play whist for six-penny points. With one set of friends he formed a Ghost Club, dedicated to collecting evidence for and against occult spirits. With another set he founded a club called the Extractors, meant to sort out issues of sanity and insanity according to a set of procedures:

1. Every member shall communicate his address to the Secretary once in six months.

2. If this communication is delayed beyond twelve months, it shall be taken for granted that his relatives had shut him up as insane.

3. Every effort legal and illegal shall be made to get him out of the madhouse [hence the name “Extractors”].

4. Every candidate for admission as a member shall produce six certificates. Three that he is sane and three others that he is insane.

But the Analytical Society was serious. It was with no irony, all earnestness, that these mathematical friends, Babbage and Herschel and Peacock, resolved to “do their best to leave the world a wiser place than they found it.” They rented rooms and read papers to one another and published their “Transactions.” And in those rooms, as Babbage nodded over a book of logarithms, one of them interrupted: “Well, Babbage, what are you dreaming about?”

“I am thinking that all these Tables might be calculated by machinery,” he replied.

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