The flap of a butterfly's wing can be projected to affect the course of a subsequent hurricane, then certainly the life and actions of any human being can be somehow related to all future human events. Faced with the challenge of developing the links between ideas and inventions, the historian must decide on some criteria, however arbitrary, to distinguish between the level of potential influence precedent actions had on antecedent.

Although the book does contain some analyses of specific threads of inventiveness (for example, in the development of photography) Laura Snyder's *The Philosophical Breakfast Club* aims somewhat higher - at uncovering those individuals responsible for the paradigm shift between the deductive "natural philosophy" of intellectual dilatants and the profession of inductive scientist as we know it today. The book focuses on four members of an informal, early 19th century "Breakfast Club" - William Whewell, Charles Babbage, John Herschel and Richard Jones - who, while undergraduates at Trinity College, Cambridge set out to reform the practice of science at that fundamental level, and who remained lifetime friends despite periods of profound conflict and disappointment.

Without doubt, the period from the Enlightenment to the early twentieth century marks a major transition in intellectual practice - the emergence of scientific disciplines and the compartmentalization of science practice; the divorce of religion from science; the growth and maturity of government support for science; the democratization of science; an increasing dependence of science on mathematics; etc., etc. To what extent are the four main characters in this book responsible for that transition? The verdict is mixed.

Among the four, Whewell stands out as exemplifying all of the currents that transformed the practice of science during the 19th century. A house carpenter's son, he rose to the highest position of intellectual achievement - Don of Trinity College, Cambridge. It could easily be claimed that Whewell was the last of the breed of universal philosophers in the tradition of DaVinci and Newton - master mathematician, poet, chemist, artist, physicist, moral philosopher, geologist, engineer, etc. Snyder makes a good case for Whewell's responsibility for both the lexicon of modern science (he coined the word scientist, itself) and its philosophy - inductive science in the service of improving all humankind. It is hard to escape the conclusion
that Whewell's less-than-Olympic-stature among historical figures may be attributable to the difficulty of pronouncing his name (Who-ell).

The case is less strong for the other three members of the Club, although each was a towering intellect. Herschel, son of the astronomer who discovered Uranus, made major contributions to astronomy in his own right. A brilliant chemist as well, Herschel did much to advance the development of photography. The legacy of Charles Babbage, wealthy and mercurial, is inextricably linked to his Difference and Analytical Engines - mechanical computers that, alas, remained little more than drawing-board concepts during his lifetime. Did his ideas really influence the development of the modern digital computer? Not likely. Richard Jones, a Welchman of modest means, was a cleric who, among the four, may have contributed the most to moral development (well after his time) with his writings on political economy. However, even the author of *The Philosophical Breakfast Club*, admits that his impact during the 19th century was eclipsed by contrary social theories such as those of Ricardo and Marx.

If the case for some of the "Four" isn't quite so tight, that for some of the "secondary" characters in the story of the Breakfast Club may have even more of a claim for influence on the future. For example, while Babbage may have been the brains (and ultimate nemesis) behind the Differential and Analytical Engines, what little practical accomplishment he achieved was due in large part to his machinist Joseph Clement without whom not even a demonstration scale model would never have been built, and whose departure from the project spelled its doom. Similarly, it appears that Ada Lovelace holds priority for the development of mathematical computer programming. No fault of hers that she never had a physical machine to practice on.

Likewise, in the development of photography, Herschel's contribution would likely have been minor if he were not spurred on by others. The discoveries of a Scotswoman, Elizabeth Fulhame, prompted Herschel to continue his photographic experiments, and it was at the instigation of William H. F. Talbot (as well the spectacular photographic advances being made on the continent) that Hershel took up the new technology in earnest.

*The Philosophical Breakfast Club* is a very ambitious undertaking - the lifetime accomplishments of even one of the Club's four were prodigious. Laura Snyder is outstandingly successful in bringing the details of 19th-century intellectual development to life while holding all apiece in a cohesive pattern.

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