
Theoretical Assumptions and Instrumental Strategies in Early Detection of Cancer

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Abstract

So-called "hypothesis-free" research strategies, relying on powerful instruments, have led to claim the "end of theory" as a new scientific age and brought considerable hope of identifying molecules with robust link to early-stage carcinogenesis and leading to specific clinical detection procedures. Unfortunately, the overall results have remained poor hitherto: almost no new biomarkers have been discovered following this method, while the translation from bench to bedside remains exceptional.

Following a twofold argument, I deny that molecular diagnostics is merely technology-driven:

- Poor epistemic constraint allows collaboration as well as competition among diagnostic strategies, thus controversies between antagonistic approaches. I focus on the 2003-2004 controversy about nascent clinical proteomics; it revealed antagonistic convictions as to defining a specific biological level that would display the frontier between health and disease, that is, as to the importance of genetic determinism in the vision of Man.

- Instead of questioning assumptions that led to the failure of most data-driven strategies, there is an overbid that still more sophisticated instruments will eventually enable the discovery of relevant molecular biomarkers (which existence is postulated).

These underlying assumptions are not a discursive artifact due either to a division of labor, either to fund-chasing rhetoric; they are rooted in deeper cultural representations.

Then, I argue that technological development is not independent from these assumptions. On the one hand, indeed, technological hype may impinge on the popularity of research strategies, while, on the other hand, such popularity may reciprocally introduce non-epistemological criteria in the evaluation of technology.

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