SPT2013
Technology in the Age of Information

ABSTRACTS

4 - 6 July 2013
The technological constitution of medicine’s future: Ontological and epistemological issues concerning ‘biomarkers’

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Since the completion of the Human Genome Project, the hope that genetic markers would enable a predictive and preventive medicine, geared towards one’s genetic constitution, has gradually been proven vain. The actual results harvested from genetic and genomic research have been disappointing compared to the promises and expectations raised. This has not discouraged biomedical researchers and policy makers, however, to keep pursuing the ideal of predictive, preventive and, in particular, personalized (PPP—) medicine. Their focus of attention has shifted, and now ‘biomarkers’ seem to have replaced ‘genes’ as the hope for the future of PPP—medicine.

This rise of interest in ‘biomarkers’ indicates a conceptual shift in biomedicine that is philosophically interesting for more than one reason. The most commonly used definition of a biomarker is “a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention” (1). Thus, a biomarker is a technologically and scientifically constituted entity, that is interpreted as a sign of real time bodily processes. A biomarkers is, then, a translator, opening up the domain of the body for discussion (and intervention). This is not a new phenomenon in medicine: cholesterol, blood pressure or PSA—levels are just some of the biomarkers ‘avant la lettre’ that have been around for
quite some time. What is new, however, is that biomarkers are now sought for mainly on
the molecular level (RNA, proteins), as well as the sheer increase in number of proposed
biomarkers (2).

In addition, even though the phenomenon in itself may not be new, both the status of
biomarkers and their role as a translator are philosophically opaque. First: What exactly is a
biomarker? How can it be recognized? How does technology constitute this phenomenon
and how does that determine the way it opens up the body for investigation and
intervention? And secondly: How do biomarkers distinguish between ‘normal’ and
‘abnormal’ biological processes? Which concept of normality/abnormality is presupposed?
And which concept of disease does it reinforce? And, taking the answers to the afore
mentioned questions into account, how plausible is it that biomarkers will help establish
PPP—medicine and if so, what would it look like?

In this presentation, I will first offer a brief overview of the way the search for biomarkers
now informs biomedical research and research policy. Subsequently, I will go into the
ontological and epistemological issues raised by the concept ‘biomarker’, using (among
others) the work of Canguilhem (3) to reflect on the concept of (ab—)normality implied
in most biomarker research. In conclusion, I will indicate how the philosophical questions
and doubts raised by biomarkers may impact the plausibility of the PPP—vision of the
future of medicine.

References

(1) Biomarkers Definition Working Group (2001), Biomarkers as Surrogate
69 (3), 89—95.

(2) Metzler, I. (2010), Biomarkers and their consequences for the biomedical


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