A scientist looks at his discipline: Résumé of a Recent Paper in *Angewandte Chemie*

Murray Miles, Department of Philosophy, Brock University

This short, but well-documented paper (just over 7 pages of analysis, followed by some 3 pages of supporting "Notes" and 22 endnote references to the literature) passed double peer review before being withdrawn from the journal's website. In it, an award-winning scientist pays tribute to his mentor by offering a personal reflection on the progress of his discipline in the 30 years since his mentor published a similar opinion piece. The author re-applies a schema of eight positive and/or negative influences that he had already employed in a book-length publication over a decade ago. The article thus brings up to date his earlier account of the "state of the art" (p. 2), examining positive as well as negative impacts of a wide range of recent developments. Much of the analysis is discipline-specific and too technical to be intelligible to the layperson, while factors like "universities as corporations" (p. 3), "transference of skills" (p. 5), and "preferential treatment" (p. 4) of groups are easily understandable and relevant to other disciplines within and outside the hard sciences. The latter will therefore be the focus of this résumé.

In addressing "Transference of skills," the author cites the antiquated 'guild' metaphor ("masters" and "apprentices") employed by the prominent theoretician of the sciences, Michael Polanyi (father of the U of T Nobel Prize winner, John). Polanyi makes "unconditional submission of the apprentice to his/her master" the first of two key requisites of effective skills transfer. Preferring to speak of the mentor–mentoree relationship, the author gives examples of discipline-specific skills that have been lost in recent years, lamenting the fact that professors no longer have time to mentor students in the laboratory the way he himself was mentored years ago. This, he believes, is in part because professors are under pressure from the "corporate" university to place the pursuit of funding opportunities ahead of instructional activities. He notes in passing how reluctant today's students are to undertake the sort of hard work envisaged in Polanyi's first requirement. He also adverts to the reluctance of universities to support professors who demand it. In a personal Note, he remarks on inadequacies he has observed in some TA's, to whose lot it falls to 'replace' professors in the laboratory.

On the subject of "the corporate university," the author paints a chilling picture of today's university as "focused on revenue rather than education and research" (p. 6). As examples of the profit motive he cites the "drive" (ibid.) for grants to offset overhead costs, the recruitment of foreign students who pay higher tuition fees, the "alarming" (p. 8) trend to replace tenured professors with cheaper contract faculty, and the emergence of an "administrative 'elite'" (p. 6) that governs the university like a fiefdom, without transparency or effective participation of rank-and-file members of the professoriate (termed "workers"). While the aptness of the analogy with medieval "feudalism" is debatable, the other trends described are all well supported by known facts, with the possible exception of the claim that internationalization has been detrimental to academic standards.

In the brief paragraph and Note devoted to "Diversity of work force," the author contrasts two models of social justice that are frequently described in terms of "equality of opportunity" and "equality of outcomes" (i.e. proportional representation of groups). He advocates adherence to the former model in matters of "hiring practices, promotion, funding, and recognition" (p. 4), describing the latter as "counter-productive" (ibid.) in the sciences and discriminatory towards those who do not identify as group members. In a Note, he gives a few examples of recent developments that suggest that considerations of "Equity, Diversity, and Inclusion" may even (now, or at some future time) "override ... [academic] qualifications" (p. 8). Since the issue is considered important by partisans of *both* models, re-publication of the paper could only serve as a stimulus to constructive debate.

The foregoing gives only a rough idea of the full range of topics dealt with in this brief paper. They extend from the bad habits scientists have acquired from reading articles on the internet to improvements in technology that encourage researchers to take shortcuts; from lax standards at journals to fraud produced by pressures to succeed (particularly on the part of scientists in China), from the deleterious effects of competition for resources to the insularity of chemists (who should be forging working relationships with biologists). On these topics the author is outspoken in his concern for the future of his discipline and in his defence of 'good' science within a well-administered university where due attention is paid to teaching and suitable protocols exist for peer review and publication of scientific findings. If he is mistaken or misleading in any way, the only way that this can come to light is in the frontal clash between his and divergent views.