of the lives of ordinary people: they rarely leave their words for posterity, and can be glimpsed only through the writings of their social superiors. Many more words have been written about Napoleon than about his foot soldiers. Indeed, it would take the imaginative power of a Tolstoy to reach back and reanimate the human computers labouring in the calculating offices of the eighteenth and nineteenth centuries. Despite Grier's industry, many still remain anonymous.

But Grier triumphantly achieves his aim when discussing the twentieth-century human computer, as many are alive to tell their tales. Take, for example, the life of Gertrude Blanch. Born Gittel Kaimowitz in Poland, and educated well, she fled the pogroms with her family. In the United States, Gertrude struggled for years to find employment that matched her mathematical ability. But a chance meeting in 1937 with the director of the Mathematical Tables Project, Arnold Lowan, who shared her background, presented her with an opportunity that she gladly grasped. By 1940, the project was the largest scientific computing organization in the United States, and Blanch was one of its organizers. Grier traces in detail how Blanch's later career was blighted by the FBI's suspicions that she was a communist sympathizer.

Blanch's story is told with Grier's characteristic verve. But why did she, and her fellow human computers, disappear from history? Partly it was a familiar case of science erasing the traces of its human creation. But also the human computers suffered from the need to provide their successor with a suitable genealogy. At the seminal Moore School summer classes, where the team that built the ENIAC (the Electronic Numerical Integrator and Computer) spoke of new stored-program computers, listeners "heard a somewhat fanciful history of calculating devices that ignored the contributions of [human] computers". This "was an attempt to build a distinguished lineage for the electronic computing machine, a pedigree that ignored the influence of commerce and the hard labour of human computers."

Left undisturbed, victors write history. ■

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Theatre

Artistic differences

Phallacy
written by Carl Djerassi
Performed at the New End Theatre, London, until 14 May 2005

Robin Clark

Phallacy is an intriguing play, well acted, fast moving and embracing a host of questions and human situations that are rarely touched upon in modern theatre. It was written by the distinguished synthetic chemist Carl Djerassi, who is best known for his role in the creation of the contraceptive pill. In recent years, Djerassi has turned his attention to writing scientifically based plays, including *Calculus* and (with Roald Hoffmann) *Oxygen*. *Phallacy* derives not only from his interests in science, but also from those as an art collector, and raises questions that arise at the interface of the arts and the sciences.

The play is based on the actual case of a revered life-sized bronze of a young man held in the Kunsthistorisches Museum, Vienna. It had been considered for several centuries to be a Roman original, its image even appearing on an Austrian postage stamp. However, scientific analysis in 1986 — specifically, thermoluminescence studies — revealed it to be a Renaissance cast. In Djerassi's play, this result opens the door to questions about how an object is devalued in such circumstances (really a question to do with market forces) and, more importantly, to a clash between professional reputations in the arts and the sciences.

The key players in this clash are a leading art historian, Regina Leitner-Opfermann (convincingly played by Karen Archer), and a professor of chemistry, Rex Stolzfuss (played equally well by Jack Klaff), who had been invited to date the statue scientifically. She has written a 345-page book on the statue, describing every art-historical aspect of it in great detail. But her book lacks reference to any scientific analysis that might have a bearing on whether or not the statue dates to the correct period; the word 'thermoluminescence' doesn't even appear in the index.

The art historian — supposedly in search of 'artistic truth' — is a 'true believer', and can see her work and reputation being undermined by the chemist, who is concerned with the facts, the scientific truth of the situation. He is in no doubt as to the correctness of his conclusions, which point to the statue being a sixteenth-century cast of hollowed bronze, which has a different trace metal content from that of Roman bronze and contains a far higher percentage of nickel.

R. WORKMAN

Supporting cast: Hamish Clark (left) and Lucy Liemann play figures on either side of a debate about the origins of a bronze in the play *Phallacy*.

The play is presented as a clash between incompatible cultures. I see instead a clash of the reputations of people working in different disciplines between which there has been insufficient communication. There is no 'artistic truth' or 'scientific truth' as such, but a presumed universal truth that requires for its establishment much more communication between the arts and sciences than is currently the case. It is certainly the scientists who are making the running here: many do read arts literature, whereas it is rare for art historians to read scientific literature, even that bearing upon art and artefacts.

Djerassi neatly highlights the importance of, and urgent need for, the scientific investigation of works of art. Such studies have recently called into question a host of heavily entrenched opinions that lack scientific credibility — notably concerning the Turin Shroud, the Vinland Map and certain Vermeer paintings.

A speculative sub-plot as to the likely provenance of the statue adds colour and entertainment value to the play without really impinging upon the main plot and debate. Such sub-plots are less appropriate in documentary-type productions of real cases of art evaluation, such as Nova Productions' *The Viking Deception*, which was recently shown on US television and in which I was interviewed about the analysis of the ink used on the Vinland Map. Much unnecessary space was devoted to the question of who might have drawn the Vinland Map, given that it wasn't the Vikings.

The supporting cast of *Phallacy* were excellent, notably the art historian's assistant Emma Finger (played by Lucy Liemann) and the professor's assistant Otto Ellenbogen (Hamish Clark). They all contributed to an appealing and thought-provoking new production. ■

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