The Public Image of Chemistry

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ABSTRACTS

CHAPTER 1

THE ALCHEMIST IN FICTION: THE MASTER NARRATIVE

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In Western culture, as expressed in fiction and film, the master narrative concerning science and the pursuit of knowledge perpetuates the archetype of the alchemist/scientist as sinister, dangerous, and possibly mad. Like all myths this story may appear simplistic but its recurrence suggests that it embodies complex ideas and suppressed desires and fears that each generation must work through. This chapter explores some of the most influential examples of such characterization, links them to contemporary correlatives of the basic promises of alchemy and suggests reasons for the continuing power of such images.

CHAPTER 2

HISTORICAL ROOTS OF THE 'MAD SCIENTIST': CHEMISTS IN NINETEENTH-CENTURY LITERATURE

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This chapter traces the historical roots of the 'mad scientist', a concept that has powerfully shaped the public image of science up to today, by investigating the representations of chemists in nineteenth-century Western literature. I argue that the creation of this literary figure was the strongest of four critical literary responses to the emergence of modern science in general and of chemistry in particular. The role of chemistry in this story is crucial because early nineteenth-century chemistry both exemplified modern experimental laboratory research and induced, due to its rapid growth, a ramification, and fragmentation of knowledge that undermined former ideals of the unity of knowledge under the umbrella of metaphysics and religion. Because most writers considered contemporary chemistry an offspring of 'wrong alchemy', all four responses drew on the medieval literary figure of the 'mad alchemist' to portray chemists. Whereas early writers considered the quest for scientific knowledge to be altogether in vain, later writers pointed out the narrow-minded goals and views specifically of chemistry. A third response moved that criticism to a metaphysical and religious level, by relating chemistry to materialism, nihilism, atheism, and hubris. The fourth response, the 'mad scientist', elaborated on the hubris theme by attaching moral perversion to the 'mad alchemist'.

CHAPTER 3

CHEMISTS AND THEIR CRAFT IN FICTION FILM

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The chapter presents results from a quantitative analysis of some 200 fiction films. Chemistry is the iconic discipline of the 'mad scientist' reflecting the alchemical imagery that was prevalent until recently (and can still be identified) in the depiction of science in films. Other results show the ambivalence with which primarily the natural sciences are represented in popular movies.

CHAPTER 4

CHEMISTRY AND POWER IN RECENT AMERICAN FICTION

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Writers of fiction have always held up a mirror to the world around them. The perspective they typically present is not one gathered from polls of public opinion, nor is it culled from the way issues are presented in the media. Yet in retrospect, the personal attitudes and views expressed in good literary fiction frequently prove to offer a revealing snapshot of trends in thought and topics of debate in the writer's milieu. With this in mind, I shall explore some of the themes on chemistry and society developed in the fictional works of three modern American writers. I believe that these examples provide food for thought, and possibly a little encouragement, to those who despair at the tarnished image that chemistry commonly seems to have in broader public discourse today. For while all of the texts I consider examine some of the fears often expressed about the chemical industry, they show a willingness to engage with issues of risk (real and perceived), social benefits, changing patterns of consumer behavior, and responsibility that is not always present in more conventional modes of ecocriticism.

CHAPTER 5

POPULARIZING CHEMISTRY: HANDS-ON AND HANDS-OFF

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Hands-off people appreciate, enjoy, and support chemistry, recognizing it as a useful and illuminating activity; hands-on people practice or are going to practice chemistry. Popularizing aims to increase the number in the first group, and also to recruit for the second. Chemistry at present enjoys low esteem: to whom then, and how, should it be popularized; how was this done in its golden age in the nineteenth century; and how is popularizing related to the coming of professional science during that period? Looking at nineteenth-century examples may give us hints today about what has gone wrong, and how chemistry (which is clearly useful, and relevant to today's problems) might again be made exciting and respectable in our culture of suspicion.

CHAPTER 6

LIEBIG OR HOW TO POPULARIZE CHEMISTRY

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The popularization of chemistry was one of Liebig's major tasks. I examine why one of the most famous theoreticians and experimenters of organic chemistry came to this new and rather unusual project in the mid-nineteenth century, and how he managed to create a new image of chemistry: no longer the servant of pharmacists and physicians, it must be considered the most useful of all sciences and the most popular.

CHAPTER 7

FROM CHEMISTRY FOR THE PEOPLE TO THE WONDERS OF TECHNOLOGY: THE POPULARIZATION OF CHEMISTRY IN THE NETHERLANDS DURING THE NINETEENTH CENTURY

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This chapter analyzes phases in the production of popular Dutch chemistry books in terms of their audiences and the character of the texts. While the first popular chemistry books (1809-1815), which were directed to women, youngsters, and common people, contained moralistic and physico-theological contemplations, these were absent in books that between 1830 and 1844 diffused 'useful knowledge' among the working classes. The next period (1845-1864) was a hey-day, which also marked the end of the old style of popularization of chemistry. After 1865 the number of popular chemistry books dropped considerably, as a result of (a) the professionalization of chemistry; (b) the introduction of chemistry as a school subject; and (c) the separation between science and religion. Until 1900 chemical technology became almost the exclusive focus of popular chemistry texts.

CHAPTER 8

ABRAHAM CRESSY MORRISON IN THE AGORA: BRINGING CHEMISTRY TO THE PUBLIC

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This chapter looks at the visual and textual images of chemists in A. Cressy Morrison's *Man in a Chemical World*. It argues that Morrison was attempting to create a public image of an American chemist different from European chemists. Morrison and the illustrator Leon Söderston, working on behalf of the American Chemical Society, attempted to associate chemists and chemical industry with American prosperity by linking the 'man in the white lab coat' to religious and secular themes. This approach is analyzed using the concept of metonyms. Metonyms are a way of encapsulating complex ideas and associations within simple, often iconic, images in text and illustrations.

CHAPTER 9

THE VISUAL IMAGE OF CHEMISTRY: PERSPECTIVES FROM THE HISTORY OF ART AND SCIENCE

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In this chapter we investigate the most important visual stereotypes of chemistry as they occur in current portraits of chemists, depictions of chemical plants, and images of chemical glassware and apparatus. By studying the historical origin and development of these stereotypes within the broader context of the history of art and science, and by applying aesthetic and cultural theories, we explore what these images implicitly communicate about the chemical profession to the public. We conclude that chemists, along with commercial artists, have unknowingly created a visual image of chemistry that frequently conveys negative historical associations, ranging from imposture to kitsch. Other elements of this image, however, aestheticize chemistry in a positive manner by referring to classical ideals of beauty and borrowing from revered motifs of modern art.

CHAPTER 10

TAKING SCIENCE TO THE MARKETPLACE: EXAMPLES OF SCIENCE SERVICE'S PRESENTATION OF CHEMISTRY DURING THE 1930S

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During the 1930s, Science Service, a not-for-profit independent news organization, promulgated an approach to popularizing science which favored audience preferences over scientific agendas and attended to industry as well as academic research interests. Stories about chemistry and chemists harmonized well with Science Service's emphasis on research utility and relevance. This chapter describes examples from syndicated news reports, radio broadcasts, a newspaper series called 'Fabrics of the Future', and a department store exhibit on chemistry that traveled through the United States in 1939-40.

CHAPTER 11

THE IMAGE OF CHEMISTRY PRESENTED BY THE SCIENCE MUSEUM, LONDON IN THE TWENTIETH CENTURY: AN INTERNATIONAL PERSPECTIVE

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How has chemistry been presented at the Science Museum, London, during the twentieth century? After an overview of the history of the Science Museum and its chemistry galleries, four galleries are considered in depth (1906, 1926, 1977, and 1999). The importance of the curators' external constituency of chemists and chemical educators is emphasized. The image of chemistry at the Science Museum has concentrated on the general utility of chemistry and chemistry as a skilful craft. The presentation has been low-key rather than boosterist. A comparison is made with the chemistry galleries at the Deutsches Museum. Chemistry in the Deutsches Museum has put more emphasis on hands-on exhibits and the chemical industry. Science and technology museums have promoted chemistry in a quiet but successful way for many years, but their influence may have waned along with chemistry kits.

CHAPTER 12

ON THE SELF-IMAGE OF CHEMISTS, 1950-2000

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The field of chemistry is highly diverse. Yet, the aggregate picture of chemists, according to this study, shows them to constitute a highly homogeneous and even gregarious group, in terms of their self-image. They see themselves as creative, as benefactors of humankind, and as craftsmen upholding a tradition of intelligent hands and preserving, even in the time of Big Science, a relatively low-tech profile. The stereotypical public image as the sorcerer's apprentices who befoul the environment and who manufacture chemical weapons is way off target. Chemists find it a caricature, it only reinforces the good conscience within the chemical community. Other conservative forces are the common language of structural formulas, a widespread phobia about mathematics, and the very length of the apprenticeship to be served. Conversely, between the mid-twentieth century and the advent of the twenty-first century, chemists displayed an impressive adaptability in the face of swift changes, regarding the tools of the trade – which the NMR Revolution had contributed to upgrade –, the funding of their activity at a much higher level, the oil crises, and the Biological Turn that affected them during that period.