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## **The Fourth Wake Memorial Lecture**

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# THE FOURTH WAKE MEMORIAL LECTURE

**16 September 1999**  
**Churchill College, Cambridge University**

## **William C. Wake: Intellectual and Artist**

Professor K. W. Allen  
Joining Technology Research Centre,  
Oxford Brookes University

Looking through the list of those who have previously delivered this Lecture, I recognise afresh the honour which it is to have been invited to present this the Fourth Wake Memorial Lecture. In response to that invitation, I suggested that I had no burning issue at the cutting edge of adhesion science to advance. It was then suggested that this year it would be appropriate to reflect on the broader picture of Bill as a "whole man". That challenge I am delighted to attempt to meet because I had, perhaps, a unique association with him in the day-to-day tasks of directing research students, planning and delivering extended courses of teaching on a degree course, and sometimes trying to solve or resolve problems. As well, we developed a close personal friendship so that we travelled the world together, visiting each others homes, and knowing each others families.

In many of our scientific tasks I, to use Bill's own inimitable phrase, learned through "sitting by Nelly" – though I hesitate to cast him in the role of "Nelly".

If we are to understand and appreciate his attainments we must begin from some account of the background and structure of his life and work – although this will inevitably imply repetition of some of the material from the brief appreciation which I gave in 1990 on the occasion of the first of these Memorial Lectures.

He was born in South London in 1916 of a very modest background in a period of recession, deflation and unemployment. He attended the Haberdashers' Aske's School and left in 1933, one of the worst years of the depression. He was fortunate to secure a post as a junior scientist in the Ballistics Division at Woolwich Arsenal. When, many years later, we were involved in some project supported by the

Arsenal, he would occasionally reminisce about times spent on the experimental ranges in the Thames Estuary. As was quite common at that time, he studied part-time at the Sir John Cass Institute for a degree.

Early in 1939, he succumbed to pulmonary tuberculosis – an all too common disease at that time – five years before the discovery of penicillin and fifteen before streptomycin. The only treatment available was lengthy bed-rest in a sanatorium. Fortunately, this was successful so that at the outbreak of war, in September, he was well enough to be discharged and to return to work. However, this left him with permanently impaired breathing and a susceptibility to pulmonary infections which prevented him from any energetic physical activity for the remainder of his life. Indeed it overshadowed his every action and dictated much of his life style for the next fifty years.

However, in spite of set-backs, in 1940 he gained a BSc degree in chemistry and later moved to the Cavendish Laboratory in Cambridge where the Division of which he was a member was evacuated. Here he inevitably came into contact with the more academic aspects of scholarship and research.

That same year also saw his marriage to Lilian (née Harding). In spite of the fact that, at that time, she was warned that he was unlikely to survive for more than a few months, she was to be his constant companion and support for almost half a century. She survived him for seven years and only died in October, 1997.

In 1943 he left the Scientific Civil Service and joined the Research Association of British Rubber Manufacturers working at its laboratories in Croydon. Initially his work here and his publications were primarily concerned with various aspects of the physical chemistry of rubber. At an early stage he also became involved with analytical techniques for rubbers and in 1958 published his first book, "*The Analysis of Rubber and Rubber-like Polymers*".

In 1954 he took a major part in the arrangements for the removal of the Research Association to Shawbury, where it took over the buildings of a former Poor Law Institution, and he moved to the village of Clive nearby. With a broadening of its remit it changed its title to Rubber and Plastics Research Association in 1960. He remained, steadily progressing in stature and status becoming successively Head of the Chemistry Division and then in 1962 Assistant Director (Research) – a title which

he once commented reminded him of that of his very first job – “laboratory attendant/boy”.

By 1955 the topics on which he was publishing began to include aspects of adhesion, at first those which involved rubbers and then more generally. By 1960 all his published work was in the field of adhesion and he was soon recognised as probably the primary authority on this topic in the country. Eventually he published two more books including the classic, “*Adhesion and the Formulation of Adhesives*”, which retains its value in spite of being nearly twenty years old. In addition, he edited several others and made major contributions to yet more, not to detail a steady flow of papers in the scientific literature.

In parallel with all his employment he developed another, totally different, interest. While he was at school, an enthusiastic chemistry master had aroused Bill’s interest in the history and philosophy of science. Since his ill-health prevented him from active participation in any form of sport, he began to expand on this interest and here we see the first example of a trait which was to be characteristic of all that he undertook. Although this was a spare-time more or less hobby, he was not content with any superficial or dilettante approach, but reached into the depths of knowledge and understanding of the topic.

In 1946 he sat the examination and presented the necessary dissertation for the award of an MSc in the history and philosophy of science. In the course of this, he became particularly interested in ancient Greek science and medicine and the various original documents which described and discussed them. These presented problems of authorship, and of who wrote which parts of collections of documents. Until this time these issues had been the preserve of commentators on the basis of literary and linguistic style. He recognised the potential for the application of statistical methods to this problem. After examining a number of possible indicators of authorship he found sentence length to be a significant one. This was particularly applicable to Greek prose, unlike English or other uninflected languages. In Greek the differences within the text of any one author are small but the differences between writers is large. For the first time here was a criterion which was susceptible to objective test. Wake’s application of this to the “*Corpus Hippocraticum*” (a group of works gathered under the name of the founder of the medical

school which came to bear his name) earned him a PhD from the University of London in 1951. To do this Wake had first to learn Greek and then to collect the data by counting and checking the texts. The scale of the labour involved in this was daunting to say the least. It was another decade before computers became available to alleviate the shear slog, so that he was wont, in speaking of his original work, to comment wryly that it was all done “BC” – before computers!

He continued with some linguistic work and is widely recognised as the key pioneer in the field. Indeed, serious consideration was given by one Scottish university to awarding him the degree of DD, a proposal which soon foundered on an internal conflict between the faculties of computer science and of divinity. Nevertheless, it illustrates the extent of his pioneering expertise in this area and the extent to which he was recognised as a major authority.

He took early retirement from RAPRA in 1969 and, thus, concluded just the first phase of his major scientific work, because he went on immediately both as a private consultant and as a Visiting Professor in the Chemistry Department at The City University, London. Here he quickly became a highly regarded and respected member of the staff. He brought a wide range of contacts throughout the adhesives industry and academia both in this country and abroad. Thus, he was able to play an important part both in securing research contracts and in supervising the research students who were carrying out the work which they supported. In addition, many of the students, both undergraduate and post-graduate, came to know him through his frequent visits to Finsbury Hall where he commonly lodged. He was soon a popular member of the group of residents on the fifth floor, who at that time were principally chemists. When the full term of his professorial appointment expired he was appointed first a Gresham Fellow and then later an Honorary Research Fellow. In spite of deteriorating health he retained this position until his final illness in December, 1989. When he was no longer well enough to come to City then City went to him – I came to know the route from my home to Clive quite well!

So, there were two strands of effort and achievement at the highest intellectual standard. As one of my colleagues said, on presenting him for the conferment of an honorary degree, it is given to few to achieve international distinction in one field of scholarship. He did so in two quite separate and distinct disciplines.

Turning from these two strands, we look at his leisure activities. Bill and Lilian celebrated their Silver Wedding Anniversary with a visit to Greece. While there Bill renewed an earlier interest in sketching and on return continued with this. In a way typical of him, he went to the local Technical College and attended classes in various aspects of drawing and painting. As a result he became an accomplished artist, regularly exhibiting at the annual exhibition of the Shrewsbury Art Group. A number of his friends were proud to have his pictures. The many who received his Christmas cards were delighted to keep them for they were always prints of his sketches; sometimes of local scenes, sometimes of scenes from their holidays abroad. No amateur dabbler but a serious student and practitioner of fine art. Similarly with his garden. The relevant science was studied so that fruit, flowers, and vegetables were all cultivated to a high standard.

He had a considerable interest in, and understanding of, German life and culture and spent a number of holidays in Bavaria. Again, his interest was supported by reading and study. He spoke very adequate German and was no mean authority on baroque architecture and Franconian wines, both of which originate in the South Eastern area of Germany.

Just about forty years ago, the scientist and author C.P. Snow focussed attention on the existence throughout the civilised world of "the two cultures" which had little or no communication between them. He was spending his working days with scientists and his leisure time with writers and literary colleagues. There lay between them a gulf of mutual incomprehension, a total lack of understanding and Snow was deeply concerned at the broad consequences of this. Had there been more men and women of Bill Wake's taste and stature Snow's thesis would have lacked its foundation, for his eminence stretched across most frontiers. As I hope I have shown, he was an intellectual in the deepest and widest sense.

One of our research students summed it all up when, after a trip to Bill's home, he commented, "The trouble is that whatever you talk about, he knows too bloody much about it!"

I could speak of his personal charisma and kindness, his keen humour, his deep intellectual generosity, his scrupulous integrity. But enough, I was charged to speak of the whole man as scholar and artist and that, I trust, I have accomplished.

If any summary be needed, I can do no better than repeat the quotation from Hamlet which was used at his funeral service:

“He was a man, take him for all in all,  
I shall not look upon his like again”

K.W. Allen  
12 September, 1999