SARTONIANA

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Sarton Chair of History of Science
Ghent University

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Introduction

Robert Rubens

Volume 26 of Sartoniana again contains a number of contributions around the philosophy and history of sciences. In accordance with the legacy of George Sarton the humanistic, exact and biological sciences are represented.

Robert Bud, the Keeper of Science and Medicine at the Science Museum in London, one of the most outstanding institutions, devoted to the history of science was the chairholder during the year 2012-13. In the first lecture he develops the idea of 'brands'. Based upon that model he discusses the history of penicillin with its societal and practical questions for the governments of UK and US. The second example is biotechnology. The biotechnology history and insights will continue with the larger question of 'applied' science. The second lecture will use the framework on the field of fermentation and biotechnology.

Anne Marie Musschoot is a researcher in the history of literature. In this field an important shift has occurred. Previously all research was concentrated on the world of the writer. His external influences would determine the content and structure of the written word. In the changed new research it is more the reception by the reader and his or hers acceptance of the message contained in the literary work which is analysed.

Jennifer Plat reviews in a philosophical paper the different possibilities to construct and tell a history of sociology. Although she states that there are already very much data, she acquiesces that no general history of sociology is available. Written by an author having done an enormous amount of research towards the aim of funding a common history, it contains an appeal to the academic sociologists.

Maurice Mussen gives an overview of the history of ‘kinesitherapy’. He still prefers the French originated name of Georgii for the discipline instead of the now classical internationally accepted ‘physiotherapy’. It should be stated that in Belgium the ‘kinesitherapist’ has the same professional compentence as a physiotherapist in Anglo-Saxon countries. It should never be confounded with the degree in kinesiology. He also discusses the long walk towards building an university department in Gent and an academic training in Flanders.

Finally the chapter of Randall Lesaffer about ‘ius belli’ includes a history of the meaning and significance of war, even the rationale of war previously accepted; More recently we see a development first of rules of war and later a legal framework against war on an international basis.

Sarton Chair Lectures

Laudatio Robert Bud

Erick Vandamme

I am really privileged to introduce to you today Professor Robert Bud, recipient of the Georges Sarton-chair for this academic year 2012-2013. Prof. Bud obtained his B.Sc. degree at Manchester University in the UK. He then moved to the USA to obtain in 1980 his Ph.D. at the University of Pennsylvania, in the field of "History & Sociology of Science". Since then he has held several senior positions at the Science Museum in London, UK, where he is now Principal Curator – Keeper of Science and Medicine. He has several academic affiliations, but I can only mention a few: since 2002, he is an Associate Research Scholar, Dept. of History and Philosophy of Science at Cambridge University, UK; since 2003, he is Honorary Senior Research Fellow at the Dept. of Science and Technology at University College, London and also at the Dept. of History, Classics and Archaeology at Birkbeck College. He is Honorary Professorial Fellow at the Dept. of History, Queen Mary University of London. He is also a Fellow of the Royal Historical Society of the UK and he is active in numerous Steering Committees and Editorial Boards. He is a prolific writer of articles, comments, and reviews in the broad field of history and philosophy of science and technology and he is the author and/or editor of 9 books, including a few bestsellers. Prof. Bud is in high demand as a keynote speaker at international biotech-conferences, where he delivers lectures with intriguing ànd exciting titles such as: "Superbugs and superdrugs", or "Biotechnology: past prophesies for the next revolution". He can be seen as the developer of the area of biotechnology in its 19th & 20th century social context.

His publications can be divided in two types: scholarly ones and those intended for a larger audience; indeed Prof. Bud writes and reviews for

many major UK national newspapers and magazines and he appears regularly on British TV and radio. As a historian of science ànd curator of a prestigious collection at the Science Museum in London, Prof. R. Bud has been exploring science and technology in general within the public sphere for over 30 years.

Dear Robert, your distinctive "avant-la-lettre"-approach to biotechnology was to consider the engineering ànd technological aspects as much as the molecular biology aspects within a historical and social context: the interface of science, technology, society and practice is a common theme throughout all your research and writings; it reflects Louis Pasteur's famous saying about the interpretation of applied sciences: "Il n'y a pas des sciences appliquées; il n'y a que des applications des sciences".

Another theme in all your writings is the interest and excitement – as well as the fear – accompanying the combination of life with technology, as you have extensively discussed – already in 1993 – in your bestseller book: "The Uses of Life: a History of Biotechnology".

The famous English critic and author John Ruskin (1819-1900), who stressed the essential link between nature, arts and society, stated already in 1865: "All books can be divided into 2 classes: the books of the hour, and the books of all times"; your book "The Uses of Life" has indeed become a book of all times! It took dedication, inspiration and transpiration; another English author Samuel Johnson (1709-1784) mentioned already in 1775: "A man will turn over half a library to make one book".

The context of most of your books, publications and other papers is quite different from the ivory tower – that "Private World of Science" –, where most specialists are actually living in. "Your" uses of life are co-determined by the media, the press, science policy, politics, and by the public opinion, not to forget …museum exhibits, and stock exchanges! You have adopted a broadly based social, scientific and technological approach from which we can learn about the various roots that eventually led to the formation of industrial microbiology and its wedding with recombinant DNA technology to deliver what is called now industrial biotechnology.

For some, "Biotechnology is biology making money"; those of you believing in this statement, should always remember our famous Ghent University alumnus Leo Baekeland's (1863-1944) saying in 1916:

"Commit your blunders on a small scale and make your profits on a large scale". However, as we all realize today, biotechnology is an interdisciplinary field of life, biosciences, technology and engineering, interwoven with social and ethical aspects! Intercultural studies and interdisciplinary discussions are more than ever at the basis of its progress and applications!

Already in 1959, the eminent English chemist ànd novelist Charles Percy Snow (1905-1980) coined the famous phrasing: "The Two Cultures", to describe what he experienced as an ever widening gap between science and technology and the arts and humanities, and also between scientists and the public. Biochemist and Nobel laureate Max Perutz (1914-2002) stated it more bluntly as follows: "It is actually an old tradition; the people in the humanities and arts have been regarded as carriers of civilization, and the scientists and engineers have been regarded as plumbers … with two left hands! On the contrary, science is part of culture: culture isn't only art and music and literature; it is also understanding and admiring what the world and what life in all its forms is made of, and how it functions and how it evolves!". Evolutionary biologist, engineer ànd author Lewis Wolpert (1929°) of University College, London, explains it as follows in his 1988-book, entitled "A Passion for Science": "Is there anything more to successful science than common sense, and the pursuit of logical internal consistency and correspondence with the external world? My own view is that – what I do as a scientist – really differs very little in essence from the work of a historian: a search for explanation and connection, the process of validation and verification of ideas!"

All these foregoing statements describe very well the vision, the drive and attitude of Prof. Robert Bud, all along the course of his endeavours and contributions as a scientist and as a historian in the field of applied and industrial biotechnology. His studies, writings and activities have contributed a lot to bridge the gap between "these two cultures"!

The G. Sarton-committee of Ghent University was and is convinced that Prof. Bud is a perfect, almost the ideal candidate for the honorary degree we are bestowing upon him today.

Dear Robert, your wife – also a historian – has been a fervent supporter and moral power behind the scenes of your work over all these years and she deserves our honours as well!

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[1] Bennett, J.W., Heller, F. and Case, C.L. Bio-tech-nol-o-gy, n.: The many definitions of biotechnology. SIM-News, 1997, 47, (5), 240-243

[2] Bud, R. The uses of life: a History of Biotechnology. Cambridge University Press, 1993

[3] Eisberg, N. Science as art? Chemistry & Industry, 2010, 8 Febr., p. 4

[4] Noble D. The Music of Life: Biology beyond the genome. Oxford University press, 2006

[5] Snow, P.C. The Two Cultures. Cambridge University Press, 1959

[6] Wolpert, L. and Richards, A. A passion for Science. Oxford University Press, 1988

Remaking ideas about science in public: the cases of penicillin, biotechnology, and applied science in the twentieth century

Robert Bud

Introduction

I feel particularly honoured to be here today because I grew up with George Sarton. When I was a graduate student in Philadelphia, several older and much respected professors as Robert Merton and I B Cohen had been his direct students and protégés, or as Robert Merton once described himself, unruly apprentices.[1] My own supervisor worked with Merton in turn on a biographical interpretation. So even if I never encountered his physical presence, history of science, as I learned it, still involved grappling with his ghost.

George Sarton was a man for whom the history of science was important. Even beyond its fascination, the interesting stories and the entertainment, the subject mattered profoundly. As a man deeply entrenched in the culture of the nineteenth century Sarton was committed to plotting the 'evolution of human greatness'.[2] In the period of his youth, before the First World War, this equated to progress, but such hopes in established steps in the ladder were dashed by a conflict with whose consequences he never came to terms. Sarton's biographers Merton and Thackray have suggested that

1 Robert K Merton., 'George Sarton: Episodic Recollections by an Unruly Apprentice', *Isis*, 76 (1985), 470-486

2 A.. Thackray and R. K. Merton, 'On Discipline Building: The Paradoxes of George Sarton', *Isis*, 63 (1972), 473-495, on p. 477 quoted from May Sarton

his tragedy was that he would never be able fully to communicate with his younger post-war colleagues. Indeed it could be argued that western culture has still not grappled with the lack of positive direction which that War now almost exactly a century ago taught us. Yet that makes the role of history of science as a means of making sense of our world and of the central role of what we mean by knowledge even more important.

I am an historian of science but I am also a curator in one of the world's great Museums. That institutional location brings a responsibility to address large audiences as well as, on other occasions, my peers. The opportunity to address our many publics is won only by the trust that I and my colleagues will deal with their problems and challenges and, above all, in some way, make sense of science as they experience it. So this paper will offer both a way of addressing the history of science in the public sphere, and an argument that this is an appropriate form of historiography to address profound questions raised by science today.

Science as threat

Biotechnology, genetically modified organisms, nuclear power, genes, wonderdrugs and science itself are widely discussed. With the waning of the Cold War and at a time of deep distrust of science and scientists from the early 1980s, Britain's House of Lords urged a two-way communication with an engaged and informed lay community.[3] An expression of this changing strategy has been the changing vocabulary from 'public understanding of science' to 'public engagement with science'. We need therefore to understand how talk about science, which is so widespread in society, operates.

From the stand-point of academe, science is often promoted as the benchmark for what we can legitimately claim to know. Thus, we only know a medicine works if it has been subjected to randomised controlled trials, to ascertain whether someone is having accidents systematically or randomly a psychologist is needed, a computer technician rather than a knock

[3] Select Committee on Science and Technology Third Report 23 February 2000, 'Science and Society'.

provides the solution to a problem with our pc and the nonsense of racial theories has been demonstrated by geneticists.

Such language, however, runs counter to much citizen behaviour and popular experience. Some people 'know' that they are always cured by particular herbs, others 'know' that certain acquaintances 'always' have accidents, and that to get a computer to work you just have to knock it just 'there'. Family cures for colds can range from sweating to alcohol. Some of such folk knowledge deals with such day-to-day issues. In other instances it may be more sinister. For some of our visitors, it is conventional to believe that some human races are 'inferior', Whether day-to-day or more significant, such folk knowledge is familiar to us all.

The cognitive scientist George Lakoff, in his classic study of categories, *Women, Fire and Dangerous Things*, points out the power of folk theories which allow us to survive.[4] He suggests popular associations of anger link it with heat, insanity and a burden. Not just the role but also the category of 'mother' is among the most important in most societies. Yet, what is a 'mother' in the age of nuclear and mitochondrial transplant? What constitutes 'life' and the taking of life in the era of the 'morning-after pill' and the scientific category of blastoma are issues which are real and political across Europe and America. The apparent contradiction between the objection of many people to eating 'genes' and their happiness in consuming tomatoes has often been noticed.[5] What we are seeing here is the cultural conflict between many traditional or popular notions and 'know-how' on the one hand and, on the other, scientific authority and technologically created possibilities. Some are trivial but when important categories of thought are at stake, then these contradictions become significant for the entire society.

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4 George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind* (Chicago: University of Chicago Press, 1987).

5 W. Wagner, N. Kronberger, and F. Seifert, 'Collective Symbolic Coping with New Technology: Knowledge, Images and Public Discourse', *British Journal of Social Psychology*, 41 (2002), 323-343; J. A. Jordan, 'The Heirloom Tomato as Cultural Object: Investigating Taste and Space', *Sociologia Ruralis*, 47 (2007), 20-41.

Past, Present and Future

For a long time the scientific response to such conundra was to win: to seek to correct error and to overturn superstition. This ambition can be traced back certainly to the Enlightenment, when Spinoza contrasted his rigorous analysis of 'Nature' with conceptions held by those he dismissed as vulgi – 'Common People'.[6] In the nineteenth century, the Science Museum at which I work was established explicitly to increase public understanding of scientific truths and scientific culture. More recently, the British geneticist Sir Walter Bodmer was inspired to an interest in improving the 'Public Understanding of Science' by debating against erroneous popular presumptions of genetic bases for racial IQ differences.[7]

The disconnect between past wrong, and present correct, categories may be both justified and necessary, but insofar as it is heard, it feeds into a deeply felt disorientation. As long ago as 1961 the great German/American philosopher Hannah Arendt reflected on the disconnect between *Past and Future.* 'When the thread of tradition finally broke, the gap between past and future ceased to be a condition peculiar only to the activity of thought and restricted as an experience to those few who made thinking their primary business. It became a tangible reality and perplexity for all; that is, it became a fact of political relevance.'[8] This 'tangible reality' has long been explained by, and often blamed on, technical and science change. In the British news as I write this are issues about wind-farms destroying the traditional look of countryside and the policy on abortions and religious views of 'life'.

This problem described vividly by Arendt half a century ago, had been generic in Western society since the nineteenth century, but particularly since the First World War. The experience of unimaginable slaughter amongst formerly friendly peoples upended assumptions of civilization. In his well-known lecture 'Daedalus', physiologist JBS Haldane, formerly an army officer, recalled the appearance of enormous guns in a battle of 1915 'One would rather choose those huge substantive oily black masses which

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6 Steven B. Smith: *Spinoza, Liberalism, and the Question of Jewish Identity.* (New Haven: Yale University Press, 1997).

7 W. Bodmer, 'Public Understanding of Science: The BA, the Royal Society and COPUS', *Notes and Records of the Royal Society*, 64 (2010), S151-S161.

8 H. Arendt, *Between Past and Future: Eight Exercises in Political Thought* (Viking Press, 1961), 14.

are so much more conspicuous, and suppose that the men are in reality their servants, and playing an inglorious, subordinate, and fatal part in the combat.'[9] Hierarchies of knowledge too were threatened by new technology. As early as 1929 the cheery former war correspondent Floyd Gibbons was hired by the American General Electric Company to give a human face to the radical changes experienced by the public. His broadcasts are remarkably illuminating. Imagine that world of the 1920s when to be old was to be wise and then think of the implications of radio. As Gibbons said in his second broadcast in 1929: 'Just think of the great brains that have worked on the radio. Yet schoolboys know the whole story. It's us older folks who are a bit dumb and old-fashioned on the subject'. Elsewhere he reflected on the way that whereas in the recent past the cultural distance of a nearby town had been experienced through the apparently-fast 45 minute train-ride, 'Now whether we are in Australia, or the South Pole, we are less then a fraction of a second from Broadway, or from London, Washington, Paris, or Vienna. We can name our own geography!'[10] In an era which had inherited the concept of positive knowledge when such a category as geography was not to be tampered with, here it was being turned from objective to subjective.

Of course the intervention of science has not always been so cheerfully received. Gibbons had in part been hired because in the wake of World War 1, and the use of poison gas, science was not popular with many. More recently, scientists' assumption that they are the guardians of the truth has also resulted in deep distrust of science. This year we are commemorating the 50th anniversary of Rachel Carson's *Silent Spring.* Since her time distrust in science and its sponsors have been mounting throughout western nations, and at the end of the 20th century nowhere was this greater than in Britain, the country of 'les rosbifs'; Through use of contaminated animal feed, cattle died of a strain of Creutzfeld Jacob disease, CJD which could, *in extremis,* be caught by people from infected beef. Reassurance from the authorities caused mirth and anxiety rather than respect.

The unease about relations between lay and scientific concepts, then, are profound, and not the result of the lack of concern or talk about science. It

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9 J.B.S. Haldane, *Daedalus or Science and the Future* (New York: Dutton, 1924), p. 2.

10 Floyd Gibbons, 'First article', B126 f016, Floyd Gibbons Papers, MS 200, Special Collections, Raymond H. Fogler Library, University of Maine, Orono, Maine.

cannot be resolved by a simple replacement of one by the other, nor, I would suggest by emphasing the distinction between them.

The Brand

Instead of a search for clarity and 'clear and distinct ideas' one sees the coexistence and layering of different meanings. Let me give you a familiar example, the idea of energy. In the narrow community of the speakers of physics, as a result of prolonged efforts in the nineteenth century, this term has the clear and precise meaning of a physical system's capacity to perform 'work'. The word had however been appropriated by the British polymath, Thomas Young, from a much older usage, ultimately of Greek origin, which continued in popular circulation. It can still describe a personal quality and indeed be used in several languages to describe the action of the Chinese concept of Chi. In popular usage, the connotations provided by the scientific meaning can reinforce the authority of the traditional, even though – to the scientist – they are entirely different. One meaning is therefore not 'right' and the other 'wrong'. Moreover, in popular culture these meanings are not nicely distinguished as in a dictionary. Rather they operate like the 'conceptually-stretched' political language described by the political scientist Geoffrey Roberts. 'It has to serve', he writes, 'as the vocabulary of political science, and as the language of political rhetoric. The aims of the first are served by precision, of the second by obfuscation and generality.'[11] This description is legitimate but we need to understand the function of such conceptual stretching, before condemning it.

To the historian of science drawing upon these traditions, the perspective can cause dizziness and disorientation. Remarkably, until recently, there has been little reflection by either sociologists or historians on the nature of popular talk about science. There has been one important exception: the study of the discourse around risk. Whether biotechnology or nuclear power, the public's evident anxiety expressed through political action has been too important to dismiss or ignore. It has been perhaps on this account that some of the most interesting work on public engagement has been

[11] G. K. Roberts, 'Comparative Politics Today*', *Government and Opposition,* 7 (1972), 38-55.

conducted. For instance in studying likely public attitudes to nuclear fusion, an Anglo-Spanish team have investigated the effect of association with what they call the nuclear 'brand.'[12] So even though they rely on the common-sense interpretation of the word 'brand', they point towards its rich explanatory potential.

My concern here is not principally in the evaluation of public response to risk. However I too, rather than inventing an esoteric calculus to explore this layering, suggest we too can appropriate the sophisticated description and process with which we are all familiar, 'branding'. Although this word draws its origins from the burning of an owner's mark into the skin of an animal, today we can be much more sophisticated in our understanding of brands which need not indeed 'belong' to anyone. When the VW beetle came to be popular in the United States it was as an 'alternative' young people's car which had not at all been intended by the Volkswagen company.[13] Equally we might notice that countries, say France, can operate as strong brands with familiar features and associations.

The Dutch writer on marketing Van der Vorst has summarised a brands as a multilevel network of concepts.[14] Ideally such qualities as those that characterise the Apple computer brand go easily together, he points out liberation, self-enhancement, young-minded, easy-access and friendliness mark it out. Others brands may be more of a marketers nightmare than dream. Look at my own country in which images of genteel tea and ritualised fox hunting have to go with riots and disorder. The opening ceremony of the recent Olympic games could only draw upon the imagery of the surreal Monty Python to make any sense of the brand, yet with its multiple layers, many of the local public at least felt it represented their country. So if you do feel it is 'disgusting' to think of science and scientific categories as

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12 For a reflection on the nuclear label as a brand see T. Horlick-Jones, A. Prades, and J. Espluga, 'Investigating the Degree of 'Stigma' Associated with Nuclear Energy Technologies: A Cross-cultural Examination of the Case of Fusion Power', *Public Understanding of Science*, 21 (2010), 514-533. For a use in the description of science as a whole see M. C. A. van der Sanden, Review of *Investigating Science Communication in the Information Age*. Edited by R. Holliman, E. Whitelegg, E. Scanlon, S. Smidt, and J. Thomas. Oxford: Oxford University Press, 2009, in *Journal of the American Society for Information Science and Technology*, *61*(2009), 1508-1511 on 1510.

13 Wally Olins, *Wally Olins on Brand* (London: Thames & Hudson, 2003).

14 R.R.R. van der Vorst, *Branding: A Systems Theoretic Perspective*, PhD dissertation, University of Nijmegen, 2004, pp158-159. See also Giep Franzen and Margot Brouwman, *The Mental World of Brands—Mind, Memory and Brand Success* (Henley on Thames, Oxon: World Advertising Research Centre, 2001).

brands please do feel that this disgust is actually itself an interesting sensation which can provoke further thought. Certainly I hope that the value of its use can go beyond its shock value and its use beyond any ambition to épater la bourgeoisie.

This interest in brands is adapted from the work of the French sociologist Jean Baudrillard who saw in them the language of consumption. He saw in the brand a condensation of the instrumental with the symbolic.[15] Baudrillard in turn was deeply influenced by the French business writer Pierre Martineau who in 1957 published a seminal study of consumption. This provided the illuminating exploration of the meaning of instant coffee and the subtle differences in meaning that this drink had acquired from ground coffee. Perhaps some of you may recall the rather vile taste of the powder-based drink, long before the modern granules, Martineau could however explain 'When people become articulate about coffee, they go way beyond any drab drink which is on the table three times a day like a glass of water.' Instant coffee was considered 'economical,' and it was also 'suited to young people, rushing to get to work, progressive. This means they are youthful, busy, hardworking, up to date, smart, clever enough to use modern innovations.'[16] Martineau's brilliant interpretation of how a vile powder could be translated into a cultural fashion item highlights the way brands can help define the relationship of present to the past.

Armed with this particular interpretation of the concept of 'brand', I shall now explore how it facilitates our understanding of three scientific categories. This is an historical study, and it could reasonably be said that the brands I shall consider, no longer have their historic connotations. By studying them we can nonetheless understand how the instrumental and symbolic meanings have served to provide ways of relating present and the future to the past. Each has indeed been associated with describing the current or future age. The three case studies I am taking are, in order of generality, 'penicillin', 'biotechnology' and 'applied science'. Each is more general than the last and also more complex.

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15 Jean Baudrillard, *Le système des objets* (Paris: Gallimard, 1968).

16 Pierre Martineau, *Motivation in Advertising: Motives That Make People Buy* (New York: McGraw-Hill, 1957), 54. For more on penicillin as a brand see Robert Bud, 'From Germophobia to the Carefree Life', in *Medicating Modern America. Prescription Drugs in History*, ed. by Andrea Tone and Elizabeth Siegel Watkins (New York: New York University Press, 2007), pp. 17-41.

Penicillin

My first example is penicillin. This is the name of one of the family of compounds which have a beta-lactam core and inhibit the formation of cell-walls in gram-positive bacteria. I could go on with its scientific description, but it is also a brand and the moment at which penicillin became a brand can be dated. It was 27 August 1942. Few patients had yet been treated either in Britain or America, and supplies were very small. That day, the *Times* newspaper in London announced: a wonder drug that would cure infection without side effects had been developed by a British team.[17] Four days later, the public was told in a letter from St Mary's Hospital in London that the `garland of honour' for the discovery was due to Alexander Fleming who worked at the hospital. Other newspapers soon followed suite. Behind the scenes, the press campaign had been coordinated by Churchill's doctor and head of the St Mary's Hospital Medical School where Alexander Fleming worked. He saw the huge benefits of his impoverished school that could be earned through boosting the prestige of penicillin. For the country at a time of bad news, before the victories in North Africa and at Stalingrad, this news was a needed morale booster. The penicillin brand had been created as a conscious act of propaganda.

The story of Fleming and his accidental discovery of penicillin, however partial and inaccurate from a scientific point of view, would become part of the brand itself. Streets and statues all over the world are named after Fleming. In Madrid outside the municipal building a statue to him has an inscription which, translated, reads 'To Dr Fleming with the gratitude of bullfighters'.[18] In Athens the biomedical research centre is in 'Fleming street'; In the United States too key institutions, particularly the traditionally small and low status pharmaceutical companies promoted the standing of penicillin. The story as it became familiar in the US was expressed in a book entitled *Yellow Magic* published to coincide with the launch of penicillin on the general market in March 1945 by the American pharmaceutical industry. Alfred Newton Richards, the czar of penicillin production, was consulted on the manuscript. He described it as the sort of writing he

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17 'Penicillium', *The Times*, 27 August 1942.

18 N. McIntyre, 'Medical Statues—Irish and Others.' *Irish Journal of Medical Science* 171 (2002): 225-230.

detested most.[19] Its contents also portrayed a version of events that reflected the advance of $10,500 given by the industry to the author.[20]

Not only was the brand promoted as a wonder drug with remarkable properties, it also helped define identities. For Vannevar Bush it defined the benefits of science: His key report to the President, *Science: The Endless Frontier* attributed with providing a key stimulus to the development of the first federal funding agency specifically for basic research, the National Science Foundation, begins:

> We all know how much the new drug, penicillin, has meant to our grievously wounded men on the grim battlefields of this war – the countless lives it has saved – the incalculable suffering which its use has prevented. Science and the great practical genius of this nation has made this achievement possible.[21]

This use of the brand in association with science was typical. Two years later the Director of America's National Institutes of Health called for an increase in his budget with the reminder: `I do not myself feel justified in taking the responsibility for postponing anything in medical research. If Sir Alexander Fleming had delayed 1 year in starting his research on penicillin, you can add up for yourselves the number of lives that would have been lost.'[22] Historically, the answer would have been none however if the question is seen in terms of delay in launching the brand the answer was clear.

It can of course be objected that for all the brand-awareness shown by the British and American governments, penicillin was never patented. The short explanation is that British patent law did not permit the patenting of a medicine itself, only the methods of production. As important, the British Medical Research Council had been strongly objecting to any links between patents and medicines for a decade, following the American patenting of irradiating milk to enhance its vitamin content. The argument

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19 A. N. Richards to A. Baird Hastings, 8 January 1945, Richard Papers Box 24 FF17, University of Pennsylvania.

20 Susan M. Lindee, *Technology for a 'miracle': Pfizer Inc's Production of Penicillin in Brooklyn, 1941-1945* (Brooklyn, N.Y.: Brooklyn Historical Society, 1990), pp. 179-80.

21 Vannevar Bush, *Science: The Endless Frontier: A Report to the President* (United States Government Printing Office, Washington: 1945).

22 Labor FSA Appropriations Hearings 1947, House, 79th congress, 2nd sess, p. 180.

of the Research Council was that in biology and medicine, products were too close to pure science to allow for patenting. However in the post-war years, such was the outrage over American profits from a 'British discovery' that the law was quickly changed. As for the US government it could not patent publically funded discoveries within the country and to take out British patents would have been politically most damaging. US companies did attempt to trade mark the word penicillin in South American countries first, but the British government successfully contested these efforts. So the lack of both trade mark and patents actually indicates the political importance of the brand.

To scientists, governments and the pharmaceutical industry, the brand both instrumentally and symbolically was of greatest benefit. To doctors however, the benefits were ambiguous. On the one hand it gave unprecedented power to heal infections. Here is an example of a story from an American family magazine in 1954:

> A SCREAM from her baby waked a mother in the middle of the night. She found her small son pawing his ear and shrieking in agony. He had had a cold for several days but no fever. Now, however, he felt hot. In terror the young mother phoned her pediatrician. Within half an hour the doctor was there and examining the baby's ear. `Germs from your baby's cold have infected his middle ear', he said. `It's full of fluid and gas which are pressing against his ear drum. Lucky you called me at once. I hope that antibiotic treatment will relieve the pressure by morning. A few hours can often make all the difference; so don't worry.' He gave the baby an injection of penicillin and also a pain-killing drug,[23]

Indeed for many years over 95% of young children below the age of two, in America and in Europe, received penicillin to treat middle ear infection, reassuring all parents, if affecting only a minority of children.

At the same time penicillin with its powerful assumed benefits could be seen as a replacement for doctors, who were needed if at all only as keys to needed prescriptions. In a famous study during the 1950s, the sociologists Coleman, Katz and Menzel of Columbia University reported the comment of one doctor: 'Nowadays you give a shot of penicillin for pneumonia and

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[23] Louise Fox Connell, `What We Now Know about Young Ears', *Parents Magazine* 29 (March 1954): 40-41.

cure the patient, but that's no credit to the doctor; all credit goes to the drug. An old doctor wouldn't have had so many patients; he would sit at the patient's bedside until the fever broke.'[24] The well-known authority on brands, the psychoanalyst Ernest Dichter advised the California Medical Association on the image of doctors in 1950. He suggested that America was going through a revolution as profound as in the reformation in Europe.[25] No longer would lay people defer to experts. He warned his client of the obsolescence of the doctor who assumed he could define the terms of engagement with medicines. Dichter was a pioneer of the idea of a brand helping a user to develop their own identity.

Working with a pharmaceutical association he would show to a focus group of doctors, flashcards of patients talking about antibiotics. He recorded the irritated responses of the professionals to the sight of laypeople deciding for themselves which medicines they needed.[26]

He was however not the only observer of a widespread phenomenon. A 1958 U.S. survey by an economist concluded:

> Ninety per cent of the respondents thought that 'doctors today know a lot more about treating sicknesses than they did thirty years ago,' while an even greater majority thought that 'the medicines we have today are much better than they were thirty years ago.' These views, coupled with the salience to the patient of his physician's technical competence, serve as at least circumstantial evidence in support of the hypothesis that the esteem in which doctors are now held is based to a large degree on pragmatic considerations.[27]

Lay empowerment by knowledge of penicillin went beyond their ability to seek cures. No longer did they need to worry about 'germs' as did their parents. This changing attitude to germs is an important part of the way penicillin has helped shape our attitude to past, present and future. It sustained a carefree attitude to life very different from the need to be

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24 J. S. Coleman, E. Katz, and H. Menzel, *Medical Innovation: A Diffusion Study* (Indianapolis: Bobbs-Merrill, 1966), p. 12.

25 Institute for Motivational Analysis, 'A Psychological Study of the Doctor-Patient Relationship', submitted to California Medical Association, May 1950, p. 6.

26 Institute for Motivational Analysis, *A Research Study on Pharmaceutical Advertising* (New York: Pharmaceutical Advertising Club, 1955), p. 25.

27 Jack Feldman, 'What Americans Think about Their Medical Care' in American Statistical Association, *Proceedings of the Social Statistics Section 1958* (Washington, D.C.: American Statistical Association, 1959), pp. 102-05.

responsible which was characteristic of pre-war life. Then responsibility to avoid illness was closely associated with an awareness of germs. Getting ill had therefore a matter of shame. Here I am not referring to such indicators of sinful activity as syphilis, that was too obviously shameful, but to such other infectious diseases as pneumonia or TB. We have great amount of evidence of the shame people felt when having exposed themselves to drafts, to wet, or to the wrong food they became ill. It had been their fault. In a 1989 Boston study of attitudes, about half the respondents born 1924-1931 agreed or disagreed only slightly with the statement, 'When I get sick, I am to blame'. Of the set born in the next fifteen years, and brought up therefore in the antibiotic age, the proportion feeling such guilt had fallen by half.[28]

We have considerable evidence from early post-war sociologists of medicine of the excitement felt by patients for the penicillin and other antibiotics which converted what had been a moral problem into a technical one. The brand, and indeed the phrase 'antibiotic age', helped make sense of a new era in medical consumerism, attitudes to germs and professionals and the perceived disconnection between past and present.

When by the 1990s anxiety over antibiotic resistance was replacing enthusiasm for treatment as a spur for research, investigators learned about the continuing enthusiasm of the patient.. A retired general practitioner, Dr Len Ratoff, wrote on the BMJ website: 'Butler and colleagues are to be congratulated on illuminating one of the most important reasons for GPs' apparently irrational behaviour in their inappropriate prescribing of antibiotics. i.e. their need not to endanger the doctor-patient relationship. My thirty years in general practice endorses this view.'[29] Sociologist Nicola Britten has suggested that the situation is more complex than over-eager patients pressurising doctors. The patient role can be so formalised that even patients who would rather have time and care expect medication, and

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[28] This research used the Health and Personal Styles, 1989 data set [made accessible in 1997, original paper records and electronic data file]. These data were collected and donated by Dr. Margie Lachman and Dr. Jackie James and are made available through the archive of the Henry A. Murray Research Center of the Radcliffe Institute for Advanced Study, Harvard University, Cambridge, Massachusetts [Producer and Distributor]. The study was based upon questionnaires issued to 150 men and women accessed through a variety of economically diverse treatment centers operated by a health membership organization in the greater Boston area.

[29] Len Ratoff, `Antibiotics are Seen as Having Magical Powers', *bmj.com* 9 September 1998. http://bmj.bmjjournals.com/cgi/eletters/317/7159/637#734 accessed 1 December 2004.

the doctor feeling the patient's expectation rather than hopes provides it.[30] Here the symbolic value of the brand and the way it has defined the identities of both patient and doctor completely overwhelms its instrumental value.

So penicillin was not just a technical solution to the problem of infection by certain gram-positive bacteria. Rather it has defined the modern age, explaining our sense of separation from the past and taking away the guilt of illness from patients and parents alike. I hope therefore I have persuaded you that in the case of penicillin at least the concept of brand might be apt. There is an interesting pay-off for thinking in this way? I would suggest that it is in the quality and consequence of the brand that we can understand the overuse of the material. This was recognised very early by Alexander Fleming himself who warned in 1945 that penicillin should not be available directly for purchase by patients for fear of accumulating resistance. What he did not anticipate was that even when controlled by professional doctors, the brand's qualities would continue to be important. Of course in many countries outside Europe there is no such control and the drug is used even more as a consumer product. So the brand is today instrumentally part of the connection not just between past and present, but also between present and future.

Biotechnology

While penicillin might still, arguably, be the greatest product of biotechnology, is it legitimate to think of biotechnology itself as a brand? This is a rather different case not just because it is a changing cluster of techniques and not a product but also because it has had a long existence.

Since the early 20th century the vision of a new industrial revolution based on the exploitation of living processes, particularly those in micro-organisms, has been expressed by the term biotechnology.[31] The word itself was coined in 1917 and used to title a 1919 book by the Hungarian engineer Karl Ereky who had created a huge intensive pig rearing farm outside Budapest.

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30 Nicola Britten, 'Lay Views of Medicines and Their Influence on Prescribing: A Study in General Practice', PhD diss., London University, 1996.

31 The treatment of biotechnology here is based on my book, Robert Bud, *The Uses of Life: A History of Biotechnology* (Cambridge: Cambridge University Press, 1993).

In went waste products and out came fat, meat and leather. Between were, what he called, 'Biotechnologische Arbeitsmaschinen', the pigs.[32] Ereky went beyond pig-farming. He argued that in the past chemistry had been combined with technology, to create a new industry, now biology would be combined with engineering to compensate for urbanisation of the peasant. It would be the basis of a new industrial revolution. This vision, quickly transferred to micro rather than macro organisms was popular among enthusiastic biologists, chemists and engineers.

Before the early 1930s when more Middle Eastern oil was discovered and drilling techniques improved it seemed to many that oil would soon run out while agricultural produce was in surplus. By fermenting cheap agricultural produce, the problems of both the farmers and the chemical industry would be resolved. It was this vision that inspired the American scientists who learned how to make organic acids from cheap starch fermenting first *penicillium* and then *aspergillus* in deep fermentation and then applied their expertise to making cheap penicillin. Yet they were little-heeded prophets, and while catchy names such as 'biotechnology' itself, or in the United States, Chemurgy, were coined, neither were widely used in the 1930s.

The endeavour to create a brand out of biotechnology before the Second World War is interesting and worthy of further study. In America the term 'test-tube babies' was used to entitle a popular book in 1934 and the concept had been used in *Brave New World* published in 1932 by the well-known writer Aldous Huxley. His brother Julian, distinguished zoologist and well-known radio personality used the very word biotechnology in public fora. The term did not however catch on at a time of political turmoil, widespread propaganda and intense competition to get new words and new concepts into the public arena.

For several decades after the Second World War the same was true. A journal named *Biotechnology and Bioengineering* was launched in 1962 to no public notice. Certainly new medical and biological breakthroughs such as heart transplantation were widely praised and even raised public anxieties about ethical implications. In 1968, President Johnston announced in a speech meant to celebrate two hundred years of the *Encyclopaedia Britan-*

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[32] Karl Ereky, *Biotechnologie der Fleisch-, Fett- und Milcherzeugung im landwirtschaftlichen Großbetriebe* (Berlin: Paul Parey, 1919).

nica 'some geniuses at Stanford have created life in a test tube';[33] There was an undercurrent of public anxiety about and interest in the new biomedical innovations. Certainly, the word was known within industry but it was no brand amongst the lay public. So when the German trade association DECHEMA published a report on the potential of fermentation technologies under the title of Biotechnologie in 1975 this raised little public interest.

During the 1970s however with the emergence of recombinant DNA technology, anxieties about the risks and enthusiasm for the benefits of a new industry mounted in the United States. 'Playing God' and crossing species seemed disgusting to many and dangerous to others. In the United States, a widespread revulsion grew against the disconnection with past cultures implied by the new science of genetic engineering. At Asilomar in Califonia in 1975 molecular biologists gathered to decide upon a moratorium until regulations were in place. It is striking for Europeans to recall that even when the National Institutes of Health had put rules in place, Teddy Kennedy, brother to two murdered martyrs of the Democratic Party, led a campaign for much stronger statutory control. In one year alone, 1976/77. sixteen bills for the control of genetic engineering were discussed on Capitol Hill.[34]

Against the emerging rhetoric of deep disgust, scientists and entrepreneurs, led by Nobel Prize winner Joshua Lederberg, sought to head off what they saw as unjustified fetters on their work and developed a counter-narrative. This was expressed in a rhetoric of prospects for human therapeutic proteins produced through recombinant DNA technology as glowing as the threats were gloomy. Lederberg himself had been looking forward to this prospect since the early 1960s when he had coined his term 'euphenics. Rather than curing the problems of the genotype (eugenics) Lederberg had suggested that missing proteins produced by bacteria with human genes, could be administered to patients to cure the problems of the 'phenotype'. His word was forgotten but the implications were not. The potential bene-

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[33] Arthur Kornberg describes the excitement engendered by his work including the speech by Lyndon Johnston in his *For the Love of Enzymes: The Odyssey of a Biochemist* (Harvard University Press, 1991), pp. 200-206.

[34] This enumeration is taken from Diana B. Dutton and Nancy E. Pfund, `Genetic Engineering: Science and Social Responsibility', in *Worse than the Disease. Pitfalls of Medical Progress*, ed. Diana B. Dutton (Cambridge: Cambridge University Press, 1988), pp. 174-225.

fits to diabetics who could now get human rather than animal insulin, cancer victims who would be treated with recombinant-produced interferon and small people who would be given growth hormone were already becoming real. This rhetoric was used in Congressional hearings, courtrooms in which bans on research were proposed and the press. Among policy makers, lawyers and Washington insiders, the potential of applied molecular biology was becoming known. Scientists too became familiar with the greater earnings that a corporate life could bring. A few small scientist-led companies such as Biogen and Genentech were established in the 1970s.

These prospects were consciously put together to form a brand by a stockbroker based in Washington DC where he was exposed to the politics as well as the economics, Nelson Schneider. Money was looking for a new home and reformed tax laws had just favoured entrepreneurial investments. On 17 September 1979 he launched a short paper he had written for the financial community, 'DNA – the Genetic Revolution' to an enthusiastic response. In December that year his company, E F Hutton took out a trademark on the word biotechnology to entitle any 'Magazine Reporting Scientific and Financial Developments in the Field of Genetics'. Wall Street took to biotechnology and when Genentech shares were offered to the public the next year, their shared launched at $35 rose to $89, marking the fastest rise of any stock in the history of the New York Stock Exchange.

It was not just Wall Street and American entrepreneurs who believed in the potential of biotechnology. There had been parallel debates in Europe, though there the European Commission, states and learned societies had taken the lead in countering public anxieties with prospects of benefit. The visions they promoted did not, in the first instance, deal specifically with genetic modification but they did emphasise the transformational potential of a wedding of biology and technology and provided resources for a decade of European promotion. The Commission had established a forecasting group, known as FAST and in 1979 this identified three levels of change, immediately work patterns, in the longer term the growth of the information society within ten to fifteen years and then would follow the Biosociety.

European policy makers carefully used a wide definition which enabled them to draw both on industrial enthusiasm awakened by the DECHEMA

report into biotechnology and on the brand awareness created in the United States. The difference in the concepts connoted in the two places was not reflected upon widely. The lack of clarity about what was meant by biotechnology was however quite evident. By 1988 biotechnology had been established. When 1700 adult consumers in the Netherlands, more than half were familiar with the term even if most were not exactly sure what it meant.[35]

In the subsequent three decades the content of biotechnology has changed, and the particular targets developed. However the rhetoric of a next industrial revolution based on the adaptation of living organisms whether plants, microbia or humans themselves was preserved. A recent check on Google found that the combination of 'biotechnology' AND 'next industrial revolution' through up 634,000 results. Magazines, newspapers, and television promoted the vision. Given the ambivalent associations of the industrial revolution associated with environmental degradation and personal poverty one the one hand and on the other riches for the society and for entrepreneurs, widespread ambivalence may not be surprising. Now, the genetically modified soy bean, a product not even found in Europe traditionally even unmodified, became the symbol of the threat to traditional values, foods and agricultural ways posed by biotechnology.

At first industry concerned about negative attitudes to genetic modified organisms in agriculture and food sought to trivialise the changes through a strategy of 'banalisation'. The revolutionary and transformational qualities of the brand were denied and instead it was proposed merely as the extension of brewing and baking. The attempts of governments and the financial press to promote understanding of the revolutionary potential of biotechnology undermined this strategy. Moreover, to the public the assertions of powerful and widely distrusted institutions about the banality of biotechnology were no more credible than their claims of safety.

Each country and culture has had a different way of dealing with the uncertain benefits and risks of biotechnology. It was to describe an observed variation that my predecessor as Sarton Professor, Sheila Jasanoff, has coined the term 'civic epistemology' to mean, 'ways of knowing

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35 Anneke M. Hamstra and Marijke H. Feenstra, *Consument en Biotechnologie. Kennis en meninvorming van consumenten over biotechnologie*, Report no. 85 (The Hague: Instituut voor consumentenonderzoek, 1989).

in common: socially shared assumptions. comparable between societies'.[36] Certainly in recent years there has been an increasing sophistication in recognising the complex reality of biotechnology perceptions and conceptions outside the laboratory. To reiterate, these were not mere diluted versions of what was happening inside, but rather, like all brands, emerging instrumental and symbolic systems. Again, like all brands, one's attitude to biotechnology tells you yourself and others about you. The issues of trust in institutions, and attitudes to money and society are deeply engaged.

So if biotechnology in turn can be considered a contested brand, what about a yet broader category of which it is, in turn, a sub-brand, 'applied science'. This is perhaps the most surprising case. For in a way it has gone in the reverse direction, once a brand it has generally and widely weakened. So far I have told stories which are generally international, certainly Europe-wide with only small differences in detail. At this moment, however, I have to recount a story which is specifically associated with the English language. The objective is not to prompt further interest in a foreign language but rather to stimulate reflection on the parallels and interactions with other cultures and lands. Here I will take you on a quick journey through two-hundred years of history keeping an eye out for 'applied science'. With any one of the qualities that seemed important at any particular time you may well disagree today. You may however also see traces of those characteristics in popular assumptions about applied science.

Applied Science

The period with which I will begin is the ferment of the years of the French Revolution, the Napoleonic wars and their immediate aftermath.. In English the term 'applied science' was coined just after the end of these wars, in 1817, by the great romantic poet Samuel Taylor Coleridge for use in his *Encyclopaedia Metropolitana.*[37] Coleridge is a man of the English public sphere par excellence. His poetry such as 'The Rhyme of the

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[36] Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States* (Oxford: Oxford University Press, 2011), p. 256.

[37] For more on the origins of the term 'applied science' see my paper, 'A phrase in search of a meaning', *Isis 3* (2012), 537-545.

Ancient Mariner' is part of the education of most English children. He was also a romantic philosopher who had studied at Göttingen in the 1790s. It was probably from that experience that he was familiar with the German phrase 'angewandte Wissenschaft' which was most widely used by Kantian scholars in Southern Germany. Coleridge's usage in the great *Encyclopaedia Metropolitana* ensured the phrase would enter into the English language however; his was not the dominant influence. Instead that came from a French engineer and self-publicist Charles Dupin who had grown up during the wars and had coined the phrase 'science appliquée aux arts industrielles'.

This Polytechnique-trained engineer had visited Britain shortly after the end of the wars which had cut off detailed news of British developments. He was amazed by the industry and technology he saw and convinced himself and others that this transformation had been made possible by the teaching of science to workers. For Dupin and his friend and colleague, Arago, the steam engine was a miracle of applied science, and James Watt its inventor was clearly a man of science. Dupin led the 1819 conversion of the Conservatoire Royale des Arts et Métiers from a craft school to a science teaching establishment with three distinguished professors (including himself).

Dupin was a tireless writer and propagandist. In 1839 the *Times* newspaper in London dedicated an editorial to satirising this promoter of his brand of education. 'The current of his wandering eloquence is too strong for him, he cannot restrain it, but must talk, talk, talk. He has an itch for quarto pages and must print, print, print';[38] Dupin was infectious too, even in England. In English, however, his phraseology seemed ugly and very quickly was converted into 'applied science.' In the late 1840s we see therefore a hybrid of the terms coined by Coleridge and Dupin. A doctor who was chairman of the Literary and Philosophical Society in the Northern English port town of Hull expressed his regrets about the direction of public interest in 1848, and utilitarian mentality of the times, 'This he considered to be the true reason of the prevailing neglect of pure intellectual culture, as such, and for its own sake and of the reception and unnatural stimulus given to the study of the applied sciences.'[39]

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38 'Characters of M. Laffitte and M. Charles Dupin', *The Times*, 12 October 1839.
39 'Hull Literary and Philosophical Society', *Hull Packet* 24 November 1848.

As chairman of the French delegation to the Great Exhibition in 1851 Dupin met with his British counterpart the chemist Lyon Playfair a dozen times in the autumn of 1851. In a translation of his term, the new School of Mines in London promoted by Playfair was named Government School of Mines and of Science applied to the Arts. Even the clerk who drafted the announcement of the school's title erroneously wrote applied science and had to correct his mistake. Thus attached to technical education as a supplement to practical training 'applied science' became a much used phrase in the 1870s. As the British sought to ways to respond to the German challenge applied science was as one newspaper said, 'on everyone's lips.' We can see therefore how even in the mid-19th century 'applied science' had become a brand. It was both a threat to traditional industries, and a vaccine against decline. Late in the twentieth century the warnings of Lyon Playfair would be rediscovered and his speeches recited. It is an ironic twist in history that homage was also done to his interpretation when German Fachhochschulen which the British had much admired changed their names to 'Universities of applied science' at the end of the twentieth century.

At the end of the nineteenth century and on into the twentieth, the connotations of the term in English changed as the topics of debate evolved. Concern shifted from technical education to industrial research, and the connotation of the term changed too. Increasingly the brand carried the connotation of Coleridge's epistemological hierarchy of knowledge, technical education and research. To some people, including many scientists, there was, of course, not pure and applied science but just science. On the other hand there were those writers for whom pure science and the search for knowledge as curiosity was good but the search for personal gain, at, probably, the expense of employment, was bad. Outside great industrial laboratories, military research was the other place with which applied science was associated. Again in an age of widespread pacifism that was suspect. Important journalists broadcasting for the BBC and writing for such widely read newspapers as the *Daily Mirror* complained about a lack of values.[40] Even more influential were the well-known writers C.S. Lewis and J. R. R. Tolkien inventors of the mythic worlds of Narnia and Mordor respectively. They might have been popular with children but their ambi-

[40] On the BBC broadcaster Gerald Heard, See A. Falby, *Between the Pigeonholes Gerald Heard, 1889-1971* (Newcastle, 2008) and on Richard Jennings who wrote for the *Daily Mirror see* J. Pilger, *Hidden Agendas* (London: 1998), p. 437.

tions were adult. Writing at the time of the Second World War, and selling hundreds of millions of books worldwide, they condemned science without values and often associated that with applied science. To them science and the machine civilization needed to be spurned in favour of society with values, tradition and respect.[41]

These men might have been seen as reactionary and of the past had it not been for the shock of the dropping of the atomic bomb. By late 1945 while there was relief that the war had ended, to many, in particular in the USA which had developed the bomb, science had committed a crime. At Harvard University, the President and former Manhattan Project leader, Conant, diagnosed a need for a better public understanding of science, including for instance the understanding of the difference between basic and applied research. In his book *On Understanding Science* Conant contested the belief, seen to be socialist, that pure and applied science were tightly connected and that science grew out of practical concerns. He saw that as a 'pernicious ideal for the future'.[42]

The institution of science was therefore distanced from the atomic bomb and from socialism by emphasising the distinction between pure and applied science and the autonomy of pure science and of the scientific community. The international Science and Freedom conference held in still-ruined Hamburg in 1953, with the signs of errors' punishment all around, explored these concepts. The proceedings edited by the sociologist Ed Shils later editor of *Minerva* emphasised the link between the freedom of the scientific community from the state and the nature of free societies. In particular a theme that was raised again and again was secrecy.[43] Samuel Allison, Director of the Institute for Nuclear Studies at Chicago University, was particularly irritated that in some American universities, you could 'find physicists working behind closed doors. In the fright that followed the entry of the Chinese into the Korean war, certain universities and technical institutes accepted projects in applied physics of a military character, and

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41 Robert Bud, 'Life, DNA and the Model.' *The British Journal for the History of Science* online Firstview (2011): 1-24.

42 James Bryant Conant,. *On Understanding Science.* Terry Lectures. Oxford: (Oxford: Oxford University Press, 1947) 107.

43 International Conference on Science and Freedom, and Congress for Cultural Freedom. Science and Freedom: The Proceedings of a Conference Convened by the Congress for Cultural Freedom and Held in Hamburg on July 23rd-26th, 1953. London: Published for the Congress for Cultural Freedom by Martin Secker & Warburg, 1955.

these are continuing.'[44] Pure science should not be secret, even if applied science was necessarily secret. Applied science was secret: secret science was applied.

Rather as in the case of biotechnology, the brand of applied science was contaminated by its association with institutions such as industry and defense that were not trusted. An interesting example of such considerations playing a practical role could be observed in 1967. The British government was seeking to civilianise its huge research centre dedicated to protection against biological warfare, the Microbiological Research Establishment MRE. Most of the research conducted there was published and in its work on continuous fermentation it was a world leader working closely with the Institute of applied microbiology in the Czechoslovak Academy of Sciences. There was a question about institutional grouping it would join, and the Medical Research Council (MRC) was suggested as a home. A report was sent by the Government Science Advisor Solly Zuckerman to the Minister of Defence about his conversation with the head of the MRC:

> [his] general line is that it is not the policy of the MRC to dabble in affairs which are not designed to improve health, and that they are also in general averse to secret work, following on a principle enunciated years ago by Sir Henry Dale, If they were to agree to participate at an increasing rate in the affairs of MRE, they would not only be going against one of their principles, but might also be damaging their 'image' in countries overseas which assume that they have nothing to do with matters relating to defence and, in particular, with subjects like microbiological and chemical warfare.[45]

Here we see how the qualities of pure research with which the MRC Secretary had come to associate his organisation were seen to be incompatible with the style of applied research characteristic of the Microbiological Research Establishment.

Applied science may have seemed to be lesser than pure science, but it was also a distinctive quality of modernity. Even when C S Lewis was satirising and indeed condemning applied science, he was doing so as the epitome of a kind of modernity he detested and despised. In that sense, applied science

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[44] Samuel K Allison, 'Loyalty, Security and scientific research in the United States', in *Science and Freedom:* pp 78-86 on p. 83.

[45] Solly Zuckerman to Denis Healey, 7 November 1967, CAB168/27, National Archives, UK.

has been presented as what has been called the 'representative anecdote' of the modern age.[46] In that sense it represents too a distinctive part of the ambiguous relationship between past and present. It is so characteristic of the present that it may seem to have no past.

Real as they may seem, such categories as pure and applied science have been repeatedly subject to change. During the 1990s, for instance, a group of science studies analysts proposed that science was now changing again. The lines between pure and applied science and between science and the public were becoming blurred. They coined the term Mode 2 to describe this new kind of activity.[47] In France the anthropologist of Science, Bruno Latour has promoted the term *technoscience* to denote the new relationship.[48] Thus applied science, which has seemed such an established part of our culture is already beginning to fade.

A feature distinctive to applied science amongst this set, is that it could be said that through most of its life it has existed only as a brand. Nonetheless, in 1962 the brand spawned a technical term when the phrase was adopted by the British academic Chris Freeman who drafted the so-called 'Frascati' report on the measurement of scientific and technical activity.[49] There 'applied research' was given the technical meaning of original investigation directed towards a specific practical aim or objective.

Bakhtin and the Brand

Note that none of these qualities of the 'brand' of applied science are themselves definitive. Typically, the technical or local meaning was used alongside the brand name. In trying to understand the strange character of such ideas carrying several layers of meaning, we may be helped by the Russian

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46 Kenneth Burke, *A Grammar of Motives* (Berkeley: Univ of California Press, 1969, first published 1945).

47 Michael Gibbons et al, *The New Production of Knowledge*. (London:Sage, 1994).

48 Don Ihde, and Evan Selinger, *Chasing Technoscience: Matrix for Materiality* (Indiana University Press, 2003).

49 Organisation for Economic Co-operation and Development. Directorate for Scientific Affairs. creator, Christopher Freeman, and A. J Young, *The Research and Development Effort in Western Europe, North America and the Soviet Union an Experimental International Comparison of Research Expenditures and Manpower in 1962* (Paris: Organisation for Economic Co-operation and Development,, 1965); Christopher Freeman, 'The Evaluation of Science', *New Scientist*, 1966, pp. 660-662; B. Godin, *Measurement and Statistics on Science and Technology?: 1920 to the Present,* (London: Routledge, 2005).

writer Michal Bakhtin who coined such words as heteroglossia and polyphony to describe the multiple languages he observed in the work of such brilliant translators of popular discourse as Rabelais and Dickens.

Bakhtin sees the nineteenth-century novel as moving with delicate agility parodying, translating and skating across different language usages. He points illuminatingly to the radical shift between forms of address in a passage from Dickens' *Little Dorrit:*

> [The conference] had reached this point when Mr. Merdle came home from his daily occupation of causing the British name to be more and more respected in all parts of the civilized globe capable of appreciation of worldwide commercial enterprise and gigantic combinations of skill and capital. For, though nobody knew with the least precision what Mr. Merdle's business was, except that it was to coin money, these were the terms in which everybody defined it on all ceremonious occasions….[50]

Dickens was satirising pomposity, but the shifting ways in which different connotations of words are used in public bear an eerie resemblance to this heteroglossia. On a daily basis the unsuspecting public is exposed to news, calls for support and threats of disaster based in texts which combine usages.

In each of the brands this heteroglossia has evolved to provide some sort of serviceable tool for the average person to link past, present and future. That however does not mean either historical accuracy, long term functionality or, therefore, perfection.

Conclusion

Each of these brands therefore has had a particular temporal reference. Penicillin emerged in 1942 and for sixty years or so had a quality which only now is it losing, as it is rebranded as a useful but not a wonder-drug. Biotechnology became a brand in 1979. Its status today may be still worth studying. As for applied science, the phrase has been associated with a

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[50] M, Bakhtin, 'Discourse in the Novel', *The dialogic imagination (note 65),* 303. The extract is taken from Charles Dickens, *Little Dorrit* (London: 1857), 293. The misprint of 'wholewide' in the Bakhtin edition has been silently corrected to Dickens' original 'worldwide'.

number of different brands, most recently the secret, opaque and untrustworthy.

Each of these brands has contributed to the shared public sphere and the cultural categories by which the relationship of past and present has been negotiated. Fifty years ago the Bielefeld school of Begriffsgeschichte identified the period of the late-eighteenth century as a fundamental watershed in the concepts of conceptual life in German political culture. This paper has suggested that while the discontinuities feel extreme, there is a history to the sensation of discontinuity. It has been the contention of this paper that talk about science in the public sphere can be analysed in terms of brands whose function has been to negotiate between past and present, if only to highlight the specificity of the present.

I would suggest that the implications go further. In the past we have written the history of popular science in terms of the translation of academic concepts into the public sphere. Now, we can increasingly understand the history of academic science in terms of public concerns. Indeed the historian of biotechnology in the Berkeley area, Eric Vettel, has linked the counter culture of northern California to changing emphases on the relationship between science and practice, the priorities of university administrations, and academic recruitment practices, He sees in this complex the local formations of concepts and practices, which I have called a brand, which had so much global impact. This is not to argue for the perverse dominance of brand over logic, but rather that just as scientists live in a real material world, they, and their institutions, also partake in the culture of their neighbours.

Such brands have been part of the mental furniture with which many people in western societies have been accustomed to think about science. They are also historical products. Engaging with these aspects of science within the culture of the broader society is also part of the role of the historian of science as much as the investigation of the apparently autonomous community. Unpicking the variety of historical products on offer in the media is a worthy role for the historian. By so doing the historian is addressing a problem which was introduced at the beginning of this paper, the linkage between past, present and indeed future in modern society.

This may seem a very different ambition from that of Sarton a century ago. We can however hope to improve brands by adding historical insight. This

is not to overturn such categories but it can modify them. Through knowledge and the disconcerting reality of objects, the museum curator can inspire individuals to go beyond the common assumption. That aspiration towards enlightenment through history would indeed have been familiar to Sarton.

Believing in Fermentation: science with practice as the origins of biotechnology

Robert Bud

Introduction

Does the history of biotechnology equal the history of modern genetics? So simply put, this question may seem odd, but such an approach to biotechnology's past has been fashionable.[1] That is quite understandable. It is now half a century since that period, during the mid-1960s that the public started hearing through television, newspapers and magazine about the issues around molecular biology as offering huge opportunities but posing also ethical challenges. As early as1962, at the Ciba Symposium on the *Future of Man* Nobel-Prize winner Joshua Lederberg was already showing his awareness of great public concerns about new technology.[2]

A few years later, as he began a series of articles in America's widely read and respected *Fortune* Magazine published in 1966, the veteran and respected journalist Lawrence Lessing warned: "Within the next few years, man is likely to take the first epic steps toward modifying directly his own hereditary structure."[3] The campaign to alert the public launched by scientists as well as such informed journalists was both deep and wide-

1 http://www.lifesciencesfoundation.org/index.html accessed 3 November 2012. It is fair to note that lower down in this particular site a number of timelines relating to different topics including microbiology and shown.

2 The talk was published as Joshua Lederberg, "The Biological Future of Man" in *Man and his Future* edited by Gordon Wolstenholme (London: Ciba Foundation, 1963 second edition 1967), pp. 263-273. This is however different from the text as presented, kindly made available by the CIBA foundation (now Novartis Foundation).

3 Lawrence Lessing, *D. N. A.: At the Core of Life Itself* (New York: Macmillan (N.Y.), 1968), 1.

spread.[4] Lessing himself was for instance briefed by Lederberg from whom he received both documents and ideas.[5] Author and advisor were each informed by was a very particular agenda. A generation earlier the academic discipline of physics had known sin – in the words of Robert Oppenheimer, – through undiscussed applications whose implications terrified the world. The biologists were determined not to repeat their colleagues' experience. In the era of the Vietnam war and desegregation, journalists turned away from their optimism that science would be allowed to live autonomously, perhaps assumed in earlier years.[6] The unacceptable experience of eugenics in the recent Second World War had already provided a further warning of the risks they might anticipate. So, the great advances that followed also reflected the new understanding of DNA as the carrier of heredity and their promoters warned of the ethical, legal, and social issues that would arise. Within a decade what had been potential became actual and by the late 1970s companies had arisen to exploit new techniques. Challenging issues had therefore arisen very specifically from the risks of new specifically scientific knowledge and techiques. So at one level we can see how concerns about biotechnology were grown on the soil of contested science.

Just as technology is different from science, we should of course expect that our understanding of its past should also be fundamentally quite other from the history of science. Nonetheless, what people talk about as history has its own importance. That historiography, with its distinctive emphasis on the history-changing role of the discovery of the structure of DNA was itself part of what I have called "the brand".

In my Sarton lecture, I suggested that the familiar concept of the "brand" can help us make sense of the complex hybrid of ideas, images and symbolic meanings associated with science in the public sphere, As I emphasised then the use of the word 'brand' is specifically not intended either to shock or to impugn. Rather it reflects the way in which varieties of meaning are incorporated, creating an historical character rather than a

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4 The campaign was summarised at the time in J. Stone,"Knowledge, Survival, and the Duties of Science." *Am. UL Rev.* 23 (1973): 231261. See also Rober Bud, *The Uses of Life: A History of Biotechnology* (Cambridge: Cambridge University Press, 1993).

5 See Lederberg to Lessing 4 March 1966, <http://profiles.nlm.nih.gov/BB/A/N/L/E/>

6 See L. P. Lessing, "The Three Ages of Science Writing." *Chemical and Engineering News* 63 (May 6, 1963): 88-92. The author was of course the man who three years later would write the series of articles on DNA for *Fortune*.

logically clear definition. German historians looking at the history of concepts have reflected on the ways even such philosophical notions as 'progress' acquire layers of meaning. Narrative and metaphor can sometimes prove the most appropriate means of communicating these.[7] Such brands exist everywhere in the public sphere. They underlie newspaper reports and television broadcasts. They are not the product of any single intelligence or agency, and indeed may contain inconsistencies. They however serve to give meaning to the news and to the world for millions of lay citizens.

So, I will reflect briefly on the significance ascribed to genetics as the biotechnology brand emerged around 1980. I shall reflect too on alternative and earlier visions of biotechnology which underpinned an alternative brand described by the very same word. My argument will be that there was an established vision of biotechnology which was the outcome of repeated injunctions to the chemical industry during the 19th and 20th centuries to draw upon its skill in combining science with practice to use fermentation to make useful products. This had, however, in general been restricted to the community of microbiologists and biological engineers. I shall reflect, finally, on the synthesis of the two brands in recent years.

The new biotechnology

The sudden emergence of public use of the term biotechnology" in 1979 was an important historical phenomenon. This transformation was seen early in the 1980s, to be the consequence of a new relationship between science and industry. It is, I think correctly, said that a single particular event can be associated with that phenomenon. The stock-broker Nelson Schneider wrote a briefing paper for clients that August 1979 on the huge potential of recombinant DNA technology and hosted a hugely successful meeting which has been widely seen as the critical moment in commercial awareness of a new sector.[8] Possibly he had picked it up at a British

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7 Melvin Richter. *The History of Political and Social Conceptsa Critical Introduction*. New York: Oxford University Press, 1995.

8 See for example, Robert Teitleman, Gene Dreams: Wall Street, Academia and the Rise of Biotechnology (New York: Basic Books, 1989), p. 26.

meeting he had just attended but he certainly believed that he himself had coined the term.

Others in the new industry of applied genetics, characterised by scientist-led entrepreneurial research corporations desperately wishing to distinguish themselves from existing pharmaceutical and chemical companies agreed that they were involved in something historically unprecedented. Very fast, biotechnology came to be associated with the intellectual ambitions and competencies of the leaders of those new corporations. Wall Street had succeeded spectacularly in the field of electronics, associated now with "information technology". It was widely hoped that a similar identity and prosperity would follow from bio-technology. Indeed the two categories came to be bound together by many stock market advisors as "technology" stocks.[9] Thus the term "biotechnology" was launched in the early 1980s as a true commercial brand.

The distinction from the much more prosaic large pharmaceutical companies was commercially important. There was also a personal factor. Many of the leaders of the new industry had been professors or trained in molecular biology particularly in Cambridge, Massachusetts, and Stanford and their ambition was to exploit the new breakthroughs in molecular genetics. New patterns of commercial go-getting were established among scientists such that it seemed the nature of science itself had been transformed. The science-studies community is, for instance, increasingly using the phrase techno-science to describe the nature of science today.[10] The distinctive historiography that appeared at that moment was similarly sensitive to the distinctions from existing industries and styles.

However biotechnology was not allowed to remain under the control of stockbrokers and entrepreneurs. At the same time as it was promoted layers of meaning were self-consciously created in a process of debate informed and shaped by the experience of debate over atomic power. From the time of Nelson Schneider, biotechnology was frequently talked of as a "new industrial revolution". That useful if rough tool Google N-gram, based on

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9 See for instance Edward Trapunski's "The Secrets of Investing in Technology Stocks".

10 See Barnes, B. "Elusive Memories of Technoscience." *Perspectives on Science* 13, no. 2 (2005): 142-165. Pickstone, John. "On Knowing, Acting, and the Location of Technoscience: A Response to Barry Barnes." *Perspectives on Science* 13, no. 2 (June 1, 2005): 267-278.

the use of particular phrases in all the works digitised by Google, shows how abruptly use of "biotechnological revolution" took off at that time.

The term itself draws upon a mass of associations with which people have thought about fundamental discontinuities in historical experience. After all modern capitalism, the factory, and industrial society are all associated with the first industrial revolution two hundred years ago. The metaphor has evoked therefore not just new investment opportunities but a more profound transformation in the relationship between knowledge, mankind, and nature.

The cultural challenges anticipated by such men as Lessing and Lederberg were real. The precedent of opposition to atomic power had created pressure groups already prone to feel that genetic modification of natural species to create organisms that had never existed, would be dangerous for workers, consumers and ecosystems. The most important representatives of this view in the United States were the journalist Jeremy Rifkin and senator Edward Kennedy, the last surviving Kennedy brother. The implications of their views were strict regulation and indeed prohibition. On the other side were those who suggested that unprecedented cures were available and particularly for genetic diseases in which patients had proved unable to produce essential proteins through their own metabolism. Insofar as extreme possibilities were raised by the sceptics, so the proponents, led by Joshua Lederberg, gave prominence to distant benefits and the distinctive innovativeness of the new academically based entrepreneurs, initially to contest excessive regulation. It could be argued that the brand has been characterised by these two countervailing qualities. We should not be surprised that a brand borne of of culture shattering hopes and transcendental fears should be so challenging.

In the mid-1980s the American Congress's Office of Technology Assessment attempted to characterise the "new biotechnology" and identified it with a series of practices such as recombinant DNA. Here I have suggested by contrast, that in addition it be seen as having a distinctive existence in the public sphere

Biotechnology beforehand

In contrast to the sense of revolutionary novelty, associated with the new brand, we may reflect that the word biotechnology was also associated with a century and more of hope for the potential of fermentation science and technology. This is interesting not just on account of its significance to biotechnology, but, more widely, because of its wider significance to the shared understanding of the relationship between science and practice. Since the 1960s students of science and policy have been aware of the inadequacy of the simple model of science discovering and industry applying. The American academic leader Donald Stokes has reviewed the relationship between science and practice with a specific eye to the work of Pasteur.[11] Rather than thinking of a single spectrum from the most theoretical to the most practical, he has suggested a two dimensional space in which intention as well as the nature of the work was important. He located the work of Pasteur within the quadrant characterised by basic science but practical intent.

Stokes' model helps us appreciate the significance of the ambition of a new industrial revolution based on microbiology emerging at the beginning of the twentieth century. Unlike other sciences such as chemistry or physics, the tension lay not between a pure microbiology and its application. As Bruno Latour showed many years ago Pasteur himself drew upon much practice in hygiene. When in 1871, he emphasised that the distinction between the theoretical and applied sciences was a fiction, there were only sciences and their applications he was denying the concept of the pure science separate from the practical world.[12] For microbiology, however, there would continue to be an enduring divide between its medical and industrial contexts. In the writing of history as in the practice at the time, the medical context has dominated. With the greater benefit of hindsight, it is easier to see the historicity of the pattern of predicting a new industrial revolution based on life. Yet the history of industrial microbiology is worthy of much further study. The historian Nicholas Rasmussen has suggested that in the years between the first and second world wars, the

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[11] Stokes, D E. *Pasteur's Quadrant: Basic Science and Technological Innovation*. Washington DC: Brookings Institution Press, 1997.

[12] L. Pasteur, "Pourquoi la France n'a pas trouve d'hommes supériours au moment du péril" in a pamphlet entitled "Quelques Réflexions sur la science en France" (Paris 1871), reprinted in in *Oeuvres*, ed. P. Vallery-Radot, Paris, 1922-39, vol. vii, pp. 214-219.

practice of academics working together with industry in the United States became widespread.[13]

Practice does not in itself establish either a pattern or a vision. For most academics, consultancy and commercial work was a minor part of their time. When it came to them acquiring intellectual property on behalf of their institutions great anxiety arose. Academics had long done so in a private capacity, but was it right for universities to do so. Even in the United States most private universities thought not, though state universities, their budget cut radically in the depression decided they would accept such sources of funds. Biological and medical patents were particularly problematic. In many European countries it was not possible to take out a patent on medicine. In Britain at least the issues went further. When, in the mid-1920s, the Wisconsin Alumni Research Foundation, itself established separate from the university, took out first US and then British patents on the production of vitamin enriched milk and the production of vitamin A by irradiation, the British Medical Research Council was infuriated. Not only did it believe that its own Edward Mellanby had discovered vitamins A and D but also vitamin enriched milk was seen as a prevention of rickets the disease of the urban poor. In a review of patent law early in the 1930s the Medical Research Council adamantly opposed patenting in the biological sciences. So just because there was commercial work conducted in the biological sciences there was no consensus that this was the way forward.[14]

On the other hand, from the late nineteenth century, there were people for whom industrial applications of microbiology would not just be incorporated in existing industrial structures, but indeed move beyond them. To appreciate the significance of this we must remember the size and importance of the brewing industry. At the beginning of the 20th century the value of the beer industry in Germany was second only to machinery building as an industry, greater than that of the country's metallurgy or coal mining.[15] As in a movie we can watch within a very few years Pasteur's theories of microbiology being incorporated by brewers and other practitioners of

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13 Nicholas Rasmussen, "Biotechnology before the 'Biotech Revolution' Life scientists, chemists and product development 1930s-40s America" In C. Reinhardt (ed.), *Chemical Sciences in the 20th Century* (New York: John Wiley & Sons, 2008), 201-227.

14 Robert Bud, 'Upheaval in the Moral Economy of Science? Patenting, teamwork and the World War II Experience of Penicillin', *History and Technology*, 24 (2008), 173-190.

15 Mikulas? Teich, *Bier, Wissenschaft Und Wirtschaft in Deutschland 1800-1914: Ein Beitrag Zur Deutschen Industrialisierungsgeschichte* (Vienna: Bohlau, 2000), 7.

zymotechnics who could now boast a rigorous scientific basis to their industry. This could be done brilliantly as by Carl Hansen in Copenhagen. Working at the Carlsberg company he showed that brews were spoiled by wild yeasts and not bacteria as Pasteur had assumed. Some practitioners became specialist consultants in zymotechnics. Thus Jørgensen in Copenhagen combined consultancy with teaching and his student Orla Jensen would become the first professor of biochemical technics and living until 1949 had a life crossing several generations.

Great culture collections were built up in Prague, Delft and Berlin. Brewing and fermentation research establishments such as the Carlsberg Institute in Copenhagen, the Pasteur institute itself, and the Institut für Gärungsgewerbe in Berlin began to develop a new specialism and an ambition. Thus Copenhagen's Carl Hansen wrote an introduction to the translation of Franz Lafar's two volume tomes published in English in 1898 as *Technical Mycology: The Utilization of Micro-organisms in the Arts and Manufactures*.[16] Hansen's programme was developed in Delbrück's Berlin laboratory which explored the difficulties of scaling up laboratory single cell cultures to the different conditions of the manufacturing plant. I am particularly fond of a quip by the director of the Berlin laboratory, Max Delbrück who highlighted the work of "Technologen" such as Balling in identifying the role of yeast before Pasteur and proudly announced to the German brewing congress in 1884: "With the sword of science and the armour of practice German beer will encircle the world".[17]

This era culminated in much-boasted achievements of the First World War. In Britain, the Pasteur-Institute trained Weizmann working with the brewing equipment manufacturer Richard Seligmann who had introduced the Plate Heat Exchanger developed a method for fermenting the starch in potatoes and grain to acetone for munitions manufacture. Weizmann identified the microbe while Seligmann could provide sterilisable aluminium

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16 E. C. Hansen, `Introduction' to Franz Lafar, *Technical Mycology: The Utilization of Micro-organisms in the Arts and Manufactures*, trans. T. C. Salter (London: Griffin, 1898), p. vii.

17 `Mit Der Schwerte der Wissenschaft, die Panzer der Praxis, Deutsche Bier will das Welt erringen', in Max Delbrück, `Über Hefe und Gärung in der Bierbrauerei', *Bayerische Bierbrauer* 19 (1884), p. 312. For Delbrück's respect for the Technologen, see H. Dellweg, `Die Geschicht der Fermentation – Ein Beitrag zur Hundertjahrfeier des Instituts für Gärungsgewerbe und Biotechnologie zu Berlin', in *100 Jahre Institute für Gärungsgewerbe und Biotechnologie zu Berlin 1874-1974. Festschrift* (Berlin, Institut für Gärungsgewerbe und Biotechnologie, 1974), pp. 17-41.

fermenters and the concrete forms which held some of these fermenters still stand. In Germany, Connstein and Lűdecke produced glycerol, lactic acid and yeast for animal food.

These developments happened at the same time as chemical engineering was developing as a concept and a profession. The Englishman George Davis pioneered its teaching in Manchester England from the 1880s, though the profession takes its inspiration more from developments at MIT thirty years later. The great German chemical companies such as Bayer, BASF and Hoechst date from the same time. Equally the great oil companies date from that time. BP, Shell, the Standard Oil Companies all date from the late nineteenth century or the early years of the twentieth century. In retrospect we know that oil, its processing and conversion into chemicals would become the most important development in the chemical industry in the mid-twentieth century. That however was certainly not clear early in the century. For instance while oil was obviously a potential source of aromatic compounds, it was not clear that it would be the cheapest source of aliphatics in which crude oil is poor.

I would suggest that it was partly as a result of the success of the petrochemical industry, that biotechnology did not become an important issue until a new era of biology coincided with the oil crises of 1973 and 1979 and the forced reorientation of the chemical industry. On account of that overwhelming success of petrochemicals and the oil industry, the prominence of the late nineteenth century visionaries and their successors in the twentieth century have also been largely forgotten. Moreover several of the key people associated with the vision and the practice of biotechnology were, briefly, Nazis, whose memory was intentionally forgotten. Yet if we are to understand the brand which emerged in the late twentieth century, the discussions, prophesies and visions among a small number of people do need to be understood.

The man who coined the word “biotechnology” was both practical and a visionary, but he would die condemned for active collaboration with the Nazi occupation of Hungary. Karl Ereky was the builder of a huge pig raising and processing unit in the outskirts of Budapest during the last years of the First World War. In 1919, he wrote a book explaining his vision of what he called Biotechnologie – a usage which I suggest lay at the root of

the use of the term Biotechnology. To him the incorporation of organisms within technology would succeed the use of chemicals.

He had begun with the pig which he saw as the prototypical *Biotechnologische Arbeitsmaschine.* Efficient utilisation of such units was the solution to the urbanising ambitions of the peasant and he was horrified by the Bolsheviks counter-proposals of promoting peasant ownership of their own land and the breakup of the great estates. However his idealism led to his ruin. Ereky would be briefly minister of food in one of the shortlived right wing governments that followed the fall of the communist state at the end of the First World War. Later, in a still-independent Hungary, he would write a history of money "from the Pharaohs to Hitler" and he was imprisoned by the re-empowered communist authorities after the Second World War. Only in the year 2000 was his 1952 death officially confirmed.[18]

Ereky's vision for pigs was applied to micro-organisms by the great German botanist Paul Lindner based at the strategic centre of industrial microbiology, the Institut fűr Gärungsgewerbe in Berlin. In German as a result the term Biotechnologie if not popular or widely used was known in the 1920s and entered in the great Lexikons of Meyer and Knaur. However it is also true that before the Second World War the word did not catch on, but the vision was pursued, particularly in Czechoslovakia and the United States.

In Czechoslovakia, another man destined to be left obscure after his death on account of his Nazi associations, Konrad Bernhauer would be, in the 1930s, probably the most important promoter of fermentation-based chemistry. His textbook *Gärungschemisches Praktikum* of 1936 brought together the knowledge of fermentation from many writers. It assembled for instance the understanding of the time in deep fermentation of aerobic moulds from European and US authors. It would be a classic which was translated during the Second World War in America and circulated as a typescript of which several copies still remain.[19] In wartime he would be

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18 M.G. Fári and U.P. Kralovánszky, 'The founding father of biotechnology: Károly (Karl) Ereky', *International Journal of Horticultural Science* 12 (2006): 9-12. The author is grateful for the opportunity to discuss Ereky with the Hungarian historian Gabor Pallo, and with the late Norman Pirie who was handed correspondence with Ereky by a Cambridge colleague in 1939.

19 Konrad Bernhauer, *"Gärungschemisches praktikum." Practical chemistry of fermentation.* Trans. Bernard Freyd. (Washington D.C.: Work projects administration, 1942). The Worldcat website reports copies at the Universities of Washington in Seattle and California at Davis.

the leading German researcher into penicillin production. For even during the 1930s he had also been a Sudeten nationalist and joined the SS immediately after the German occupation of Prague in March 1939. He became leader of the lecturer's union and in practice the Nazi Party's representative in the newly integrated German university and Charles University. His SS files show he was promoted to Stűrmbannführer and Czech researchers have shown that he was responsible for deaths of Jewish colleagues and the ardent destruction of the Charles University.[20]

Fleeing to the west at the end of the war, in the post-war years Bernhauer would come to be an important teacher of such key German scholars as Hanswerner Dellweg, himself Director of the Institut fűr Gärungsgewerbe. In a later interview Dellweg was unstinting in his praise for his mentor. The journalist wrote, "It was during his industrial engagement, that Prof. Dellweg became acquainted with biotechnology. Head of the industrial laboratory in Aschaffenburg was Prof. Bernhauer, who introduced Prof. Dellweg into a new industrial field, which he later called Biotechnology."[21] Indeed in a telephone conversation at about the same time, Dellweg said much the same to me. Not only his German post-war colleagues appreciated him. As an elderly man, he was an invited member of the International Council of the Economic and Applied Microbiology Section of the International Association of Microbiological Societies.[22] Despite this eminence both before and after the War his only obituary would be in the little known proceedings of the Vienna brewing research station.

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[20] Heydrich to Reichsführer-Personalhauptamt, 13 September 1941. Bundesarchiv, 6400/0029/11 SSO, Bernhauer Konrad. For Bernhauer's position see Alena Miskova and Peter Svobodny, "Hermann Hubert Knaus (1892-1970) Mediziner. Die Jahre 1938-1945 an der Medizinischen Fakultät der Deutschen Universität in Prag" In: Monika Gettler and Alena Miskova, eds. *Prager Professoren 1938-1948* (Essen: Klartext; 2001), p. 429-441; Alena Miskova, "Die Deutsche Universität Prag im Vergleich mit anderen Deutschen Universitäten in der Kriegszeit". In: Hans Lemburg, ed. *Universitäten in nationaler Konkurrenz. Veröffentlichungen des Collegium Carolinum*, Volume 86. Oldenbourg; Oldenbourg Wissenschaftsverlag: 2003, p. 167-193 (180-181). See also Simon, Gerd, ed. "Wissenschaftspolitik im Nationalsozialismus und die Universitat Prag" (Tübingen: Gesellschaft für interdisziplinare Forschung). On Bernhauer's earlier career as a chemist in Prague see Jiří Pešek und Tomáš Nigrin, "Die Chemie an der Prager Deutschen Universität 1882-1945", in *Zehn Jahre Universitätspartnerschaft Univerzita Karlova v Praze – Universität zu Köln, Kolloquium zur Universitäts- und Fachgeschichte,* edited by Walter Pape (Kőln: Universitäts- und Stadtbibliothek Köln, 2011), 51-70, see especially pp 60-62.

[21] "A man at the cradle of Bioprocess Engineering", *Bioprocess Engineering* 1(1986), 2.

[22] N. E. Gibbons (ed.), *Recent Progress in Microbiology. Symposia Held at the VIII International Congress for Microbiology. Montreal 1962* (Toronto: University of Toronto Press, 1963), p 717.

Both Bernhauer and Ereky had been well-known before the war. Their association with the Nazi party on the one hand and their association with countries behind the iron curtain on the other made that prewar work and their reputations largely invisible after the war and particularly after their deaths. As a result of this enforced obscurity after the Second World War of two of the leading prewar promoters of industrial uses of biology, we have inherited a difficult to comprehend history of the European and indeed global legacy. We do of course have the memory of a few of the visionaries. Undoubtedly, the intellectual leaders in the study of the metabolism of fermentation were the group at Delft under Kluyver where the mathematics of deep fermentation was developed. Kluyver had gave his inaugural lecture on the relationship of microbiology and industry, and certainly he was well aware of the practical significance of his subject but that was not his main interest. More extrovert were two American groups which have both been remembered, particularly because of their significance to the wartime development of penicillin.

Both were set off by the dislocation of supplies during the First World War and both began at the United States Department of Agriculture. Employing about 400 chemists, about 60% of all the chemists in the Federal government, it is perhaps not suprising that that was the source of the new industry. The dairy chemist James Currie discovered how citric acid could be produced by *Aspergillus niger*.[23] Persuading the small New York pharmaceutical firm of Pfizer to support him, he transferred to the company and developed the so-called SUCIAC process for converting sugar to citric acid in shallow pans.

In 1929 they moved to deep fermentation, drawing upon a patent of Konrad Bernhauer.[24] The company led by Currie's assistant Jasper Kane became expert at working with first small and then large stirred tank fermenters. Pfizer with its obsession for sterility and detailed experience would become a key centre for the fermentation of moulds. During the Second World War it would of course be the first major producer of penicillin.

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[23] James N. Currie, "The Citric Acid Fermentation of *Aspergillus Niger*', *Journal of Biological Chemistry* 31 (1917), 14-37.

[24] US patent 1,849, 53, "Production of gluconic acid", Application filed 26 November 1927, assigned to Charles Pfizer.

The United States Department of Agriculture with its large staff of chemists was also the natural agency to which the American government turned when the dislocation of supplies of German chemicals threatened the dye industry. A small research group was established in the Washington area to look into the sourcing of intermediates for the dye industry from agricultural sources. After the war the "Color" Laboratory turned to the production of organic acids for the new food industry through Aspergillus and penicillia. They were very conscious of their own historical lineage and pointed to an 1867 article on the production of gallic acid from tannin as their own point of origin.[25] In 1929 an article in *Industrial and Engineering Chemistry* by two of the chemists expressed a vision which would endure to the end of the century,

> Microbiological chemistry is the chemistry of the future. Most of Nature's growth processes are catalytic, by the action of enzymes! When the chemist or engineer attempts to duplicate them, he takes acres of ground, tons of machinery, the productive labor of hundreds of men to imitate what Nature as done in the stem of the plant or the leaf of. the tree; and too frequently he makes a bad job of it/ When Nature wishes to synthesize a product she takes a few elements from the soil, calls on the sun and air for aid, and the work is done.

Not only did they see this in abstract but also as a commercial prospect. "Let industry and our universities furnish the answer. The field is crammed with problems of practical and theoretical interest, but someone must take them up. Of' course there is money in it eventually, but remember this—the dollar rolls more willingly along the road constructed and made smooth by the hands of scientists."

These statements must be read as the aspirations of young men and not the response of society, which in general ignored them. As their work on the production of organic acids by deep fermentation was reaching success they were thrown out of their Washington laboratory and the team disbanded. The space was needed for a more important purpose, the building of the Pentagon. New regional laboratories were promised and

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[25] Lewis B. Lockwood, and Andrew J. Moyer, "The production of chemicals by filamentous fungi." *The Botanical Review* 4 (1938):140-164. Moyer was the scientist who three years later would develop the deep fermentation of penicillin. The authors referred here to Philippe van Tighem, "Sur la fermentation gallique", *Comptes Rendues de l'Académie des Sciences* 65 (1867), 1091-94.

one of the team was sent to the Eastern Regional Research Laboratory in Pennsylvania which would be famous for the development of instant mashed potato. Others were sent to a new Northern Regional Research Laboratory in Peoria which opened late in 1940 with just four staff.[26] They of course would be visited the following year by Florey and Heatley from England bearing penicillin. In Britain there had been no centre comparable to any of the teams identified here. Instead, as is well known, the Peoria team and then Pfizer group would lead the development of the mass production of antibiotics.

The key lessons they handed to other pharmaceutical groups were shared with the Japanese after the war by Jackson Foster, a leading Merck microbiologist. He was sent to Japan to help the pharmaceutical industry of this new ally against the Soviet Union to get back on its feet. The Foster message was simple "organization, cooperation, and action." [27] Engineers not bacteriologists would provide the critical expertise and he was scathing of the Japanese Penicillin Research Association which had no room for engineers. He insisted that the association form special committees for fermentation and for separation engineers.

Before the war, beyond these small teams there had also been a campaign led by William J. Hale the research director of Dow, the large American chemical company. Under the slogan of Chemurgy he sought to promote the use of chemicals made from cheap agricultural produce, particularly alcohol. What we today call gasohol, he called agricrude and prophesied hopefully, "The development of an agricrude alcohol industry will end all unemployment, provide unlimited extension of mechanical power and end all international trade in organic chemical material (farm produce).'[28] Even Hale's energetic writing could however not get his campaign on to the public stage. Nonetheless, the result of this history is that while the success of penicillin achieved world-fame for the manufacture of medicines, the broader ambitions both of the Americans and of the Europeans tended to be forgotten.

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[26] 'Kenneth Bryan Raper', Autobiographical Memoir dated July 1986. National Academy of Sciences Deceased Members Record Group, National Academy of Sciences Archives.

[27] Jackson Foster, `Preface', *Journal of Antibiotics* 1 (1947): 1.

[28] Quoted in Christy Borth, Pioneers of Plenty: The Story of Chemurgy (Indianapolis: Bobbs Merrill, 1939), p. 84.

For the best part of two decades after the Second World War, the work of people in the fermentation industries was focused upon the manufacture of antibiotics and on mass-producing bacteria both as a potential weapon and to identify defences against such weapons. This was a campaign led by industrial and defence laboratories. Thus in Prague and at Porton Down in Britain there was a close link between the practical issues mass production of weapons and the development of theories of deep fermentation. Men such as Malek and Fencl in Prague and in Britain, John Postgate, John Pirt, Derek Ellwood and Dennis Herbert came together to manage the risks of cold war turning to biological warfare and to share understanding of continuous fermentation. Their locations ensured they would get considerable funds, however it did not maximise their academic visibility and minimised their public visibility

The term "biotechnology" was reborn, through the work of the Swede Carl-Gőren Hedén who persuaded his friend Elmer Gaden to use it in the title of his new journal, and also through the influence of Bernhauer who having fled to the West at the end of the war built up a new institute in Stuttgart. In the 1960s with fears of global protein shortage the expertise developed in drugs and biological warfare was broadened to the cultivation of single cell protein. So in Britain much of the expertise that led to the huge single cell protein projects at BP, ICI and indeed to quorn (the only survivor of this generation) had come out of Porton Down. The oil crisis made the production of alcohol from surplus agricultural material also seem attractive. This intensity of opportunity on the one hand and, on the other, the rapidly increasing prices of oil meant that in the 1970s the chemical industry was attracted to the opportunities highlighted for them a general earlier by William J. Hale. That was why the DECHEMA Report on Biotechnologie was commissioned and written. Shortly after, the European Federation of Biotechnology was launched. The people involved were similarly committed to the use of fermentation to the manufacture of useful products.

Why did this long tradition of close collaboration between microbiologists and engineers become obscured? My suggestion is that, while economic prospects fluctuated and the European history in particular was obscured through the fog of war and ideology, within the profession of biochemical engineering and indeed within the chemical industry the brand was well

known. In these circles, biotechnology so construed was in the 1960s a stable and respected category. However, emerging and flourishing in an era of big business in which the address was to managers not investors, the general press showed little interest. You could say, although there were exceptions, that most practitioners would have felt it neither needed to be understood in broader society nor was it. By contrast, the conception of the brand held by by the molecular biologists was meant to reach out. It was ahistorical, without a precedent in its claim, and many of the protagonists were completely ignorant of the existing use of the word. In other words, the word moved between worlds, but the brand did not.

The odd consequence was that in 1980 the single word biotechnology was associated with two rather different brands. At the popular level it might seem that the public one crushed the traditional, long established one. Certainly the Dechema report seems now very dated in its conception as well as its contents. On the other hand, the emerging integration of chemical and biotechnology industries might suggest that the two images of biotechnology have hybridised.

Of course these brands are dynamic and indeed it is the responsibility of the curator to negotiate between the complex frameworks and assumptions brought by our visitors and the complex worlds outside the Museum. In recent years, distances between the new biotechnology industry and the existing pharmaceutical and chemical industries have narrowed dramatically. Major corporations have come to see the utilisation of recombinant DNA as part of their core business. Of the earliest companies, Genentech now belongs to Roche and Cetus was sold to Chiron which is now part of Novartis. Britain's Celltech founded as a spin-off of the Medical Research Council's Laboratory of Molecular Biology is now part of Belgium's UCB. Equally, the chemical companies have evolved. UCB has become an entirely pharmaceutical company, and the great British combine ICI split and Astra-Zeneca is the descendant of its fast growing pharmaceutical side. Meanwhile, after a series of mergers, the century-old chemical company Monsanto became exclusively an agricultural-biotechnology company.

At the same time new a range of new relationships were also explored, alliances between biotech companies, alliances between drug and pharmaceutical companies and with star scientists. The development of new relationships between science and practice anticipated thirty years ago is

still in progress. Look for instance at the evolution of a journal launched in 1984 as *Gene Analysis Techniques* by Elsevier. In 1991, it became *Genetic Analysis: Biomolecular Engineering* which announced that its emphasis would be on "Recent developments in gene cloning and nucleic acid analysis".[29] Today it is known as *New Biotechnology* and is published on behalf of the European Federation of Biotechnology with a much wider remit. The introduction to the reworked journal in 1998 announced that it would deal with the subject as seen as representing, "many of the applied aspects of life sciences research, in particular the use and modification of organisms and their products, all the way from laboratory breakthroughs to industrial development and commercial exploitation."[30]

Conclusion

What 'biotechnology' has often been an elusive challenge. A definition was attempted by OECD, currently it reads 'the application of science and technology to living organisms as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services.'[31]. I think you will agree this is a very thin representation of what we mean by biotechnology. My suggestion has been that we think of it as a variety of brands, which have changed over time, have competed and are today being hybridised This process of hybridisation has, so far as I have seen, escaped the notice of sociologists and others who have been rather more impressed by the emergence of the distinctive and novel sector of the small venture-capital funded biotechnology company.[32] It is, nonetheless, worth reflecting on how two brands which were formerly separate if loosely linked, have over the last few years, become one.

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29 "Aims and Scope", *Genetic Analysis Techniques and Applications* 8 (1991), np.

30 Michael J. Taussig, "New Biotechnology and the European Federation of Biotechnology", *New Biotechnology 25(2008), 1-2*

31 http://stats.oecd.org/glossary/detail.asp?ID=219

32 See for instance Steven Shapin, *The Scientific Life: a Moral History of a Late Modern Vocation.* (Chicago: Chicago University Press, 2008)

Sarton Medal Lectures

Laudatio Anne Marie Musschoot

Yves T'Sjoen

Allow me to begin this tribute with a proposition that can easily be misconstrued. On the occasion of the presentation of the Sarton Medal 2012 to Professor Musschoot, the candidate who our faculty suggested to the Sarton Committee in December 2011, the following proposition is, at first glance, probably not even endorsed by the colleague who is soon to be presented with the medal. For decades, from her earliest mandate as (N)FWO researcher in the 60s to her retirement in 2007, Professor Musschoot *did school* at Ghent University. This expression refers to both a working method, research policy and catalyst role. Allow me to explain. If *doing school* means that Professor Musschoot has permitted students and researchers to work in her particular field of research or within her own specialism, and generated *clones* of herself as a result, then this statement should come with a few caveats. No, for me, the verb *to do school* has, in the case of Mieke Musschoot, a different connotation. During her academic career at this institution, Professor Musschoot was the leading and inspiring researcher who opened doors and windows for her wide student audience and PhD students alike. In this case, *doing school* and *opening up* belong to one and the same semantic field. Musschoot's scientific research has, to this day, been a source where many a researcher in modern literary Dutch studies have quenched their thirst. Her publications, which are the product of sound philological efforts and which invariably offer a clearly worded and revealing insight into the literary production of a period or of writers and journals, contain a wealth of ideas for continued research. These studies do not claim to be exclusive, or exhaustive, for that matter. They steer clear from the use of the jargon of literary theory which often

makes the research findings appear weightier than is desired or strictly necessary. On the contrary, Professor Musschoot's scientific contributions open up horizons, offer new perspectives, allow the texts and contexts to be seen in a broad cultural and social context. Her line of reasoning is systemically comprehensible and invites the reader to delve deeper. The aim of Musschoot's texts is to explore virgin, or peripherally explored, territory, or to offer a new perspective on what has been insufficiently, and hence superficially, studied. When I use the didactic concept *do school*, then it is the latter interpretation that I have in mind, particularly the catalytic and inspiring effect of the scientific research which Mieke offered in her typically clear wording.

Ladies and gentlemen, the Sarton Committee has asked me, further to the faculty's nomination of Professor Musschoot, to bring a laudatio. I would, with this in mind, like to remind you of what I penned down shortly after Mieke Musschoot retired. On 7 September 2007, the then Department of Dutch Literature and General Literary Theory at Ghent University, in conjunction with the Royal Academy of Dutch Language and Literature, organised a conference to mark the early retirement of senior full Professor Anne Marie Musschoot. Under the versatile title 'Unity in diversity', colleagues from different universities in the Dutch language area presented 'views on literature and literary theory'. In both areas, in the specialist field of modern Dutch literature and in that of general and theoretical literary theory, Musschoot has been active for many years. Her impressive list of scientific publications on texts and authors from the late 19th and 20th literature of the Netherlands and Flanders is as extensive as it is superior. In her study of Flemish fin-the-siècle and interbellum literature, she has, with many interesting publications, turned to the journal *Van Nu en Straks* and the literary work of Karel van de Woestijne, Cyriel Buysse and Maurice Gilliams as her main areas of attention. Moreover, literary scholar Musschoot has published in leading national and international journals, and participated in the academic debate on new and recurring trends in both general and literary theory. In a moment, during her address, you will be treated to a private unique, scientifically-informed approach to paradigm changes – alleged or not – in the study of literature. But that is for later.

For 40 years, Musschoot has sought to bring together both scientific areas, namely modern Dutch literature and general and theoretical literary

science. Musschoot's research policy was not only trained on the theory and study of Dutch fin-de-siècle and interbellum literature, also in her academic teaching, which she offered to generations of students at the Ghent Alma Mater for decades, she stood out on account of her erudite knowledge and clear argumentation with which she presented her own interpretations. Many are the alumni in whom Musschoot instilled a passion for literature and literary theory. All the alumni who studied Dutch at our university remember her calm and empathic ways in the lecture room, her convincing manner of arguing and documenting and, not least, the way she chose her words carefully when addressing the students. I am not exaggerating when I say that Musschoot, during her academic career, was always a much-valued researcher and lecturer. The present generation of Dutch literature scholars, some of whom are attached to the Dutch Section of the Department of Literary Studies, while others work at other university colleges and universities, is clearly indebted to the insights, and especially the love, for the subject she taught researchers and generations of students. I personally experienced the enthusiasm and openness with which Musschoot involved me and my colleagues in research as a tonic.

Esteemed guests, the confines of this laudatio do not allow me to bring a detailed account of her scientific career, let alone list all her valuable publications which have helped modern Dutch literary studies and literature theory forward, have led to new insights and fresh research results. Research into the literary legacy of Van de Woestijne, Buysse and Gilliams – and I am pleased to add Jan van Nijlen and Richard Minne – and of the work of post-war authors, such as Hella Haasse, Ivo Michiels and, in general, of post-modern literature encourages further study. Musschoot's research focus is not simply hermeneutic. I myself have learned a great deal from the text-oriented, or work-immanent, reading method and the careful way in which she analysed and interpreted prose and particularly poetry. Equally valuable for this research focus is the attention to textual scholarship. Musschoot's scholarly text editions of the collected works of Buysse and the poetry of Van de Woestijne are well-known, and so is her intense involvement, both scientifically and institutionally, in the publication of the edition of the collected works of Louis Paul Boon. All studies and editions exude an unconditional love for literature and, as already mentioned, an open approach to texts. "Texts must be read with an open

mind," is a phrase which I have applied as a creed since my student days with Mieke and also try to pass on to my own students. You will find out in a moment during the presentation that not only the text-based approach was, and indeed still is, an area of attention.

The hundreds of MA dissertations and dozens of theses in which Mieke was involved as supervisor or evaluator, are, in varying degrees, based on revealing insights and surprising findings which she offered or on which she made research possible. If *doing school* were to imply that she got students and researchers to do the work in her field according to her theoretical insights, then this definition does not apply on account of it being too narrowly conceived. If, on the other hand, by *doing school* is meant offering topics, allowing researchers to be themselves and develop their own perspective on a research topic, then the proposition with which I began the laudatio is clearly appropriate.

I have come to the end of my speech. In accordance with the Sarton Committee's request to crown an "authority in the field of history in a particular scientific discipline", the Department of Literature and the Faculty of Arts and Philosophy has ruled that Professor Musschoot matches this profile. For years, she has been the driving force behind the literary-historical project History of Dutch Literature funded by the Nederlandse Taalunie. As is known, colleague Musschoot has undertaken historical research into Dutch late-19th and 20th-century literature. Her appointment as main editor of the new literary history, which is nearing completion in 2013 (or 2014), is a reflection of Musschoot's authority in the field of Dutch literature. The nomination by the faculty and the recognition by the very esteemed Sarton Committee are tokens of appreciation. As proximus of my teacher, I do not only subscribe to the official expressions of appreciation. Indeed, I want to use a criterion which, while it is not immediately considered to be part of the scientific discourse, forms an inherent part of it, for me at least, anyway. Professor Musschoot has managed to work together with researchers and students in the said involved and constructive manner, and was always open to other people's perspectives. From that point of view, too, I like being the pupil of my master. It seems appropriate to conclude this laudatio with a line of poetry. The verse is from Lucebert, the poet of light, and was taken from the famous poem 'School der Poëzie' [School of Poetry] in *apocrief / de*

analphabetische naam. In the final line of the poem, a connotation resonates with *doing school* which I associated with Mieke Musschoot's career. The quote says something about Musschoot's private view of the phenomenon of centrifugal or centripetal schooling, which is a school with oppressive tunnel vision. Poetry can, in this instance, be readily replaced by humanities: "hoon nog de[ze] veel te schone poëzieschool" ["taunt yet [the/that] far too clean poetry school"].

The detour of the past

On literature, history and literary history

Anne Marie Musschoot

'Literary history can be so much more than Olympic discourse with great minds,' writes Frits van Oostrom in his overview of fourteenth century literature – his second contribution to the new History of Dutch Literature (Van Oostrom 2013: 402). He writes this in reference to literature with a small l, poetry 'with no other pretension', but still full of spirit and life. He is the first to have focused on these crumbs or pebbles of poetry, the grit that 'was ground down by the great millstones over the course of the centuries.' The literary landscape Van Oostrom describes is not inhabited solely by the 'giants of the forest', his searchlight also focuses on the teeming fungi and small plants of the forest floor. This broadening of the horizons, in the tradition of the French 'École des Annales', has been established longer within the study of Dutch medieval literature. History, and therefore also literary history, does not simply reconstruct (and represent) the succession of influential events and people, such as rulers and wars, but also attempts to build a picture of daily life for ordinary people, reflecting all its customs and variations. For literary history in particular, this widening of the horizons implies study of not only the most valuable, canonical or 'great' texts but also numerous texts of everyday life. Van Oostrom also notes that there is a great deal to be gleaned from the popular literature of the Middle Ages. He himself has collected every crumb and scrap he could find, to be liberally added to the gold nuggets of the classic surviving texts in this generously written new overview.

What is the origin or cause of this shift? Or, what methodological development lies at the source of this new direction, the 'cultural turn' that has taken place over the course of the last three decades? And what, then, is the origin or cause of the new insights that lead to new methods? I will of course not be able to give a simple or complete answer to these questions, but I ask that you consider them over the course of this short lecture.

Let me go straight to the key question. As academics, we observe changes and continuously pose new and different questions of our own. In other words, we see that our discipline is evolving and therefore has its own history, which we are part of. Sometimes, every now and then or very occasionally, these changes, developments and new perceptions lead to a revolution. So these revolutions occur not only in the context of politics and society but also within the sciences. The best-known example of a scientific revolution is of course the Copernican Revolution of the 16th and 17th centuries, after the Polish astronomer Copernicus proposed replacing the Ptolemaic, geocentric model with a simpler heliocentric model that placed the sun at the centre, based on his observations of the movements of the planets. The consequences were great, particularly in the long term. The insight came quite suddenly, but 'recognition' was a long time coming, since there is a difference between scientific knowledge on the one hand and the experience or perception of the scientist on the other. Recognition of this sudden insight followed in the work of Italian Galileo Galilei in the 17th century, but his writings were placed on the Church's index of forbidden books – a ban that was not lifted until the 19th century.

It is not only perception itself that is important for new insights to be achieved, but also the related 'Gestalt switch.' This concept is familiar from Gestalt psychology, which demonstrates the possibility of suddenly seeing something completely different, based on the same visual information. The drawing of a hare that all at once become a duck is famous, and there are many more examples of deceptive or double perceptions. But the most interesting part of this for us is the fact that our perception is changeable and guided by existing knowledge. In the 17th century, when the heliocentric model was not yet generally accepted, scientists observed exactly the same thing, but gave opposing explanations: at sunset one saw the sun disappear, and therefore move, whilst the other saw the earth turn away from the sun. Today we would say they were using different 'search-

lights'. Signs of this confusion (and error) can actually still be seen in our inaccurate language – when we say we are watching the sun sink into the sea, we imply that the sun is moving rather than us.

So what is the significance of this major scientific revolution in terms of our questions? We can take from this 1. that perception is crucial but also 2. that a Gestalt switch regarding this perception can take place suddenly, so that we see something different to what we saw before and 3. that our perception is affected by existing theory passed on through study and knowledge or searchlight theory. This important term, searchlight theory, was coined by Karl Popper, who fundamentally influenced today's view of science during the 1950s. When he proposed that all knowledge has a temporary or hypothetical character and therefore replaced the verification concept applied in the 'hard' sciences with the falsification concept, he made a much freer view of scientific statements possible. Here we can limit ourselves to concluding that Popper rejects the regularity of prediction, including in the case of science, thereby introducing a new standard view for many, if not all, sciences – scientists strive for truth without believing they will ever establish *the* truth. The relativity of all claims to truth, as formulated fifty years ago by Thomas Kuhn in *The Structure of Scientific Revolutions* (1962), has become the leading approach today. It is further supported by the insights of the American philosopher Richard Rorty, one of the most provocative and influential thinkers of our time. His so-called ironic view of culture and history implies that scientists and philosophers are aware of the 'historical contingency' or coincidence of all thought patterns. Human nature is no longer seen as ahistorical – there is no supra-historical purpose to our thought and perception, history is not governed by any rigid laws and there are no historically necessary developments. Our knowledge and the systems through which we record it continue to exist as long as they are not disproved. Kuhn described the complete set of values and beliefs used by scientists at a particular time as a paradigm. He terms major changes to these a 'paradigm shift'.

These paradigm shifts also take place in the humanities, sometimes with equally significant and slow consequences. An example to start with is as follows. The alpha and beta sciences were separated at the turn of the 19th and 20th centuries, when Wilhelm Dilthey determined that there was a difference between the methods used: those of explanation and under-

standing (‘erklären’ in comparison with ‘verstehen’). Kuhn’s insights have now brought these closer together, since even in the ‘hard’ sciences our observation of reality apparently depends on our perception and is therefore not 100% objective. Conversely, in the humanities and social sciences, since the 1960s we have seen a trend towards prescribing to scientific, experimental methods, which reject the classic, subjective interpretation not accepted by science. Searching for differences between the methods of the alpha and beta sciences is no longer on the agenda today, the questions are not considered relevant since all methods are subject to the same contingency. But this development too has been gaining ground gradually and is not yet universally accepted.

Another question is whether the changes we have observed in the humanities and have described as a ‘cultural turn’ can be viewed as a paradigm shift within the humanities. The answer to this question is no, at least if we limit ourselves to Kuhn’s definition of the term paradigm – there is no broad methodological consensus in the humanities, no set of values and views applicable to all academics in the field. For example, within literary theory alone there are an almost infinite number of methods and this number is still rising – we see an ever-increasing fragmentation and diversification of methodologies. A recent issue of the literary theory yearbook ‘Cahier voor Literatuurwetenschap’ was symptomatically titled ‘*Hermeneutiek in veelvoud*’ (*Diversity in Hermeneutics*) and one of the editors, Lars Bernaerts, introduced the fairly recently explored field of cognitive literary theory as follows: ‘Sailing under the flag of cognitive literary theory today [...] are not just a handful of ships, but a vast fleet’ (Bernaerts, in Bernaerts and Pieters 2011: 153). The same is true in the field of history. Leuven historian Jo Tollebeek has already pointed out, along with many others, that historical awareness and the way history is written ‘have been thoroughly revised’ (Tollebeek 1996: 9). There is increased complexity and variety in almost every aspect of the humanities and social sciences. Mario J. Valdés, who I will return to shortly, wrote the following ten years ago on the subject of cultural historiography:

> History has been a major area of inquiry for hermeneutic philosophy from the eighteenth century to the present. In historical hermeneutics the starting point has been the diverse ways the historian comes to grips with the ancient *aporia* of continuity and change, but never before has the field of

> debate been so diverse in orientation and purpose, ranging from openly prescriptive histories, which try to influence what will be written, to a highly and sometimes selective utopian construction of the past. […] At the other end of the spectrum of historical intentionality stand the diverse empirical approaches. (Valdés in Hutcheon and Valdés 2002: 63).

What is common to the whole spectrum of differing opinions is that literary history is, in Valdés' words, 'a kind of necessary failure'. So it does not seem possible that all of these developments and divergent opinions could be categorised as a single paradigm, unless the common element were failure.

But, albeit with the necessary caution, I will attempt to do so here. This attempt is based on a perceptible shift in our approach to literature. The shift concerns the fact that forty years ago we had stopped writing literary histories and that today they are being written again – despite a great deal of, sometimes very pertinent, criticism and the unrelenting scepticism that continues to surround the practice. In terms of the history of the methods used in the humanities, the structuralism still prominent in the 1960s was replaced, or supplemented, by the semiotic approach, or post-structuralism. In semiotics (or the theory of meaning) we have observed a change that, using Roman Jakobson's theory of communication, we can identify as a shift from sender to receiver. Applied to literature, the researcher's focus moves away from the author and past the work to the reader.

To summarise briefly, we can say that the focus of literary study in the 19th century was on the author (the 'sender' of the message). In the first half of the 20th century a number of so-called autonomy movements (Russian Formalism, Prague Structuralism, New Criticism) arose and these considered the work itself to be a self-contained entity. The searchlight of theoreticians at the end of the 20th century (Nouvelle Critique in France and proponents of reception aesthetics in Germany) went further, viewing the reader as the 'receiver' and giver of meaning to the work. In the German-speaking world, literary work was not studied simply as an isolated phenomenon – the important methods of reception aesthetics and reception history were also developed. This is a broad, simplified classification that pays no heed to the nuances literary scholars and critics themselves employed, but the outcome is that in French literary criticism the author

was declared dead in the 1960s, and focus on reception of the work, as well as on the reader's role as giver of meaning, was already generally accepted by this time. Roland Barthes, the intellectual adventurer who ensured a rapid succession of new opinions and developments, stated in his 1968 piece 'La mort de l'auteur', which was included in the collection *Le bruissement de la langue* (1984, translated into English as *The Rustle of Language,* 1989*):* 'la naissance du lecteur doit se payer de la mort de l'Auteur' (Barthes 1984: 67). His reasoning is that a text, literary or otherwise, is a fabric or web of citations, originating from thousands of cultural sources, and that in the process of writing, the author's voice is destroyed.

> Dès qu'un fait est *raconté*, à des fins intransitives, et non plus pour agir directement sur le réel, c'est-à-dire finalement hors de toute fonction autre que l'exercice même du symbole, ce décrochage se produit, la voix perd son origine, l'auteur entre dans sa propre mort, l'écriture commence (Barthes 1984: 61).

So according to today's perception, the source of meaning lies not with the text, but with the reader of the text. Barthes is an exemplary semiotician here, attributing the process of giving meaning to the reader. It is interesting in the same context that, in his essay on 'Le discours de l'histoire' in 1967 (included in the same collection), Barthes had previously attempted to read historical texts – by historians such as Herodotus, Macchiavelli, Bossuet and Michelet – in comparison with fictional stories. The fictional story and historical story share one obvious common element: the fact that they are stories, an observation that also formed the basis of influential studies by Hayden White and Dominick LaCapra in the 70s and 80s. In the Netherlands this so-called narrativist trend in historiography was put forward by influential Groningen historian Frank Ankersmit.

So it appears that we are able to answer our question of whether the cultural turn of the 1980s can be termed a paradigm shift. Since there is no unity of perception, we cannot speak of a paradigm shift in the sense of Kuhn's definition of a paradigm, as mentioned previously. We can, however, note a shift in focus among almost all observers. Some academics stretch the concept of paradigm, and therefore do apply the term to the developments of the last three decades.

So the next question is: why is this transition to new focal points important for historiography, for the representation of the past and particularly for literary historiography?

Literary history was subject to intense criticism under the influence of the autonomy movements. 'Not done', was the verdict of the most prominent and erudite literary scholar of the second half of the 20th century, René Wellek. The eminent Czech scholar brought the views of Prague Structuralism first to London and then to the US, where he became co-author of the widely read handbook *Theory of Literature* (together with Austin Warren, 1949), the most influential and enduring result of New Criticism throughout the Western World. Wellek became the model for all modern comparatists and also wrote a monumental history of literary criticism and literary theory in eight extensive volumes. But Wellek also wrote about the 'demise of literary history' in an essay entitled '*The Fall of Literary History*' (originally published in 1973 and included in the collection *The Attack on Literature*, 1982). Here he addresses the uncritical pretension of some literary histories, which only list parallels and connections between biographical information on the author and the characters in their work. According to Wellek (as well as contemporaries and others before him) these amounted to no more than a kind of 'Allerleiwissenschaft' with nationalistic objectives, which was considered out of the question due to increasing interest in comparative literature. In his reflections on the so-called shortcomings of literary history, Wellek states that 1. some advocate the complete abolition of literary history, 2. others wish to merge it with other disciplines such as general history or sociology and 3. yet others seek to establish a specific method. As a proponent of New Criticism – an autonomist movement – Wellek refers to the viewpoint of the famous Italian philosopher and historian Benedetto Croce, who had already stated at the start of the 20th century that artwork is unique, individual and directly present, and that no essential continuity between artworks can be identified. So here artworks are considered isolated objects, which exist outside history. Wellek's own views are less extreme in terms of this isolation, but he does oppose sociology, which sees literature as a mirror of social and economic change. He also holds, in line with the views already formulated by Russian Formalism, that literary works are influenced by preceding literary works, although he rejects causal connections as an explanation for

this. He also objects to the view of the Russian Formalists and Prague Structuralists that developments in literature and therefore literary history, are directly connected to an internal evolution (or history of renewal movements). He believes that this explanation of the evolution fails to provide a reason for the direction of change. Moreover, according to Wellek, the literary historian must always be first and foremost a critic evaluating individual works. With this last criticism we find ourselves in the area of tension between literary criticism and literary theory – or between a subjective assessment and an objective description – and let this be the field of play for today's literary historian. As regards the first, enduring and fundamental criticism, that history is not regular or predictable and that it is therefore impossible to establish laws as in science, we must remember that the differences between the sciences were now considered less relevant and had been pushed aside.

Yet Wellek's concerns had a lasting impact and his scepticism still influences international discussions today. The most important, most stimulating voice in this ensemble is David Perkins, who twenty years ago proposed a new point of reference in his book *Is Literary History Possible?* (1992). Perkins no longer rejects literary history, so the answer to the question he poses in the title is yes, but he continues to hold that attempts to find an *explanation* for developments within literature fail time and again. There is no regularity or predictability, but this takes nothing away from the relevance of historiography. Perkins analyses a huge number of literary histories from the Western world and notes, with approval, that new generations return to literary history. This may be the consequence of a long preceding period of 'repression' (which could be an internal or immanent explanation), but Perkins shows that this renewed interest and revaluation mainly relates to external, contextual considerations. Perkins himself, also the author of a two-part history of modern poetry, does not completely suspend his scepticism, but uses the insights of modern thought on science: the story of literary history can never be definitive, since our representation of the past is connected to numerous changing – or contingent, according to Richard Rorty – factors. History as a discipline is an open, developing process that derives its meaning from the changing and evolving consensus of academics today. It is the view of the historian (the receiver in Jakobson's theory) that gives meaning, and it is his task to describe the

reconstruction of the past so that the 'story' is plausible or credible. This last point, the credibility of the representation, is the touchstone of contemporary historiography.

> Though the past is finally inaccessible, we can reasonably require that interpretations of it be plausible. There would, of course, be no point even in this requirement unless we assumed that a partial knowledge of the past is more likely to be revealing than distorting, an assumption we make, but for which we have no adequate ground. The criteria of plausibility include the rules of historiography as a discipline: pertinent information must be sought and weighed, statements must cohere logically, judgements must be backed up and cannot rest on the mere ipse dixit of the historian, sources must be criticized, and so on. (Perkins 1992: 16).

In other words, the plausible explanations we strive for assume a social consensus. So an important point in Perkins's analysis and argument is the plausibility or credibility of the representation of the past – almost all historians today are agreed: so-called 'free' or 'excessive' interpretations such as those of the deconstructionists (I am borrowing Frank Ankersmit's definition 'losgeslagen') can never offer a consensus because they disregard the semantic roots of a text. But for Perkins and most historiographers today, the crucial point is that the historian reconstructs the context in which the work was created and functioned, from the basis of his own contemporary consciousness and knowledge. For the historian this is nothing new – historians have always contextualised. But for literary history this (re)orientation of focus is a new direction – I say reorientation because of course literary history made the link between the life and work of the author in its initial phase, albeit deterministically. The 'cultural turn' delivers a literary history that may be characterised as primarily a history of literary culture. The story created is also necessarily considered temporary – it is subject to development and must be continuously adjusted, which does not in itself constitute objection or failure. In the words of Perkins: 'Tradition in literary classification need not be merely blind inertia. It can be modelled positively, as a self-corrective dialogue that continues over generations' (Perkins 1992: 113). A (temporary) consensus on this has already been established today. Different kinds of literary history are indeed written, but '[a]t the present time, virtually all explana-

tions in literary histories are contextual' (id. 122). And it seems as though the definition of 'self-corrective dialogue' leaves plenty of scope for many generations to come. These will need to take good account of the constantly changing, never-ending discussions.

As an example of such a discussion, let me turn to two key figures in the contemporary, post-structuralism or post-modernism debate. Linda Hutcheon versus Stephen Greenblatt. Linda Hutcheon works in Canada and holds an honorary degree from our faculty; Stephen Greenblatt is an American Shakespeare specialist of Lithuanian origin – he introduced New Historicism, the roots of which go back to European ideas about history, as Jürgen Pieters demonstrated in his doctoral research (Pieters 2001). Let me add the following: Hutcheon and Greenblatt represent viewpoints characteristic of the North American continent, and these are widely known to deviate significantly from theory and practice in Europe on some points, if only because the concept of literature also differs greatly, in terms of both content and range: literature is broader in Anglo-Saxon culture than in Europe. But the important point for us is that both Hutcheon and Greenblatt contributed to the collection *Rethinking Literary History*, mentioned previously and published by Mario J. Valdés and Linda Hutcheon herself in 2002. Like Valdés, Hutcheon is convinced by the re-thinking, in the sense of reviewing, revising or reconsidering, of the discipline of literary history. They believe that this field has come to life again and that a continuous dialogue is also being maintained around it. Hutcheon has one crucial point of criticism, if not a veto: she rejects – as Wellek did previously – the national model of literary history. She therefore represents a non-European viewpoint, which places the emphasis on the impossibility of describing a 'pure', monolingual culture. (In Europe this does happen in practice, on a large scale and for the different languages). The demographic realities in the United States and Canada are not in fact connected to a single region and a single language, they are 'deterritorialized' and 'national constructions' must be reviewed in the light of the 'globalized multinational world of today' (Hutcheon 2002: 3).

The idea behind this, also highlighted by Greenblatt, is that it is no coincidence that the peak of literary history in the 19th century coincided with increasing national and cultural self-awareness (the rise of the nation state in Europe) and that a return to one's own past is associated with questions

of cultural identity, politics and power: literary history contributes to self-glory and enhances the self-image of a nation state. If literary history has seen a recent revival, this is thanks – in theory and in practice – to other groups, which previously remained marginalised. These are new groups with which to identify on the basis of class, race, ethnicity, gender or sexuality. An important need to rewrite history can also be found within post-colonial studies, which denounces the narrowness of the Eurocentric gaze and draws attention to views and large groups in society that previously remained hidden or ignored due to colonial rulers. But what remains is 'identity politics', a search for an ideological consensus within groups who previously felt, and were, marginalised. There is a double objective of both teleological and cultural legitimation. This offers a great opportunity for Greenblatt's strongly worded criticism (Greenblatt 2002), which also applies to all of these new attempts at literary history: he believes that the literary histories of these new groups are no better than the model they challenge. The search for identity remains a stumbling block and Greenblatt states that identity is simply a fable. As I have said, Hutcheon herself advocates new forms of comparatism in practice: extensive research into, for example, Latin American literatures or Eastern European cultures (the possibilities here are innumerable and presumably infinite). But Greenblatt also rejects this, which considering his field of study is understandable: in fact English-language literature has now become a 'global phenomenon' and is no longer limited to a single nation. He also rejects all pretension to unity.

In order to complete the picture on these differing viewpoints a little further, we can also consider the fact that in the same collection, Valdés does call for a reconsideration of literary history, especially in the sense of broader comparatist studies (working together with Hutcheon), but he believes that these should be real, or effective, histories (Valdés 2002). This 'effective' history – the term is borrowed from Paul Ricoeur – takes into account the increasingly significant and dominant insights of sociology, and the focus is placed on social and cultural contexts, on the community in which the author and the work originated and functioned. This is also the practice we see in Europe, including the need for historians to work as part of larger teams.

Dear listeners,

Of course I have only covered the very tip of a vast iceberg of dialogue and discussion here. I would like to complete this very brief picture with a few words about the practice of literary historiography in the Netherlands today. Dutch-language culture has been, with the brief exception of the 17th century, a primarily receptive culture, and that has not changed today: developments within the Dutch-speaking world broadly follow what is happening elsewhere in Europe and in the world. The cultural turn or shift since the 1980s, which I have just described, has also taken hold here, albeit, as usual, with a delay or in slow motion. So the publication of the handbook *Literatuurwetenschap. Grondslagen van een theorie van het literaire werk* (*Literary History. Foundations of a theory of literary work*) by Frank C. Maatje in 1970 represented the peak of the structuralist vision on literary work, at a time when elsewhere structuralism was just over. But all the ingredients and consequences of the paradigm shift or change in focus that I have sketched are present in the Netherlands, along with the prominent critics associated with the magazine *Merlyn* in the 1960s, including Kees Fens, J.J. Oversteegen and J. d'Oliveira, who furthered the close reading of the American New Critics and for whom literary history was in fact a most unattractive, outdated discipline. There were also fellow academics, such as Eddy Grootes and Hendrik van Gorp, who explained in elaborate articles how comprehensive literary history should remain utopian – how it should but in fact could not. But here too, the discipline remains in flux and living – life is simply change, searching for new things to replace and carry forward the old. In short, here too attempts to create a renewed history soon emerged, first from Ton Anbeek, who pursued a combination between reception history and poetic renewal (the latter in line with the insights of the Russian Formalists), and then by a group of Dutch literature scholars who, in the wake of the influential post-modernist literary history by Denis Hollier, *A New History of French Literature* (1989), created a history from collected short fragments, written by different authors, each presenting an important event from the past. The belief in a single, coherent story was not yet present here, but not long after this *Nederlandse literatuur, een geschiedenis* (*Dutch Literature, a History*) was published, with M.A. (Riet) Schenkeveld-Van der Dussen as chief editor (1993), there followed the need to create a comprehensive and coherent picture of literary history.

The result was a not-yet-complete, seven-part overview according to present-day insights in historiography, borne by a broad consensus in the field of Dutch literary studies and, for practical reasons, facilitated by the Dutch Language Union. The respective parts are written by different authors, who have developed their 'story' in dialogue with a select 'brain-storming group' of fellow specialists. This new *Geschiedenis van de Nederlandse Literatuur* (*History of Dutch Literature)* (2006-2013) follows prevailing trends – sociology has gained ground and requires that works function in a context ('real' or 'effective' history) – but also retains the core task of any literary study: literary texts are still central, textual analysis is not disregarded. It has also been proposed, by Frits van Oostrom for example, that literary history is cultural transfer, including in the case of Herman Pleij sketching what is primarily a history of the mentality of the late Middle Ages, starting with life in the city. Literature is a social event. The shift in perception regarding appreciation of the great authors of the Dutch Golden Age, for example, is also characteristic: the romantic interest, based on partially incorrect information about the biographical context of the works, has today been pushed into the background in favour of, for example, the internationally-oriented intellectual and diplomat Constantijn Huygens, whose work shows a high degree of cultural-historical relevance and intertextual reference. In addition, the established canon is supplemented by texts written by women and by popular songs, or in later parts, texts from the former colonies and other so called 'minorities'. The whole literary field is covered throughout as a web or network of many channels to record and disseminate texts.

A problem with this new concept that should not be underestimated is the fact that the books by the eleven authors – Frits van Oostrom, Herman Pleij, Karel Porteman and Mieke Smits-Veldt, Inger Leemans, Gert-Jan Johannes and Tom Verschaffel, Willem van den Berg and Piet Couttenier, Jacqueline Bel and Hugo Brems – have been written with different accents, dependent on both the material of the century covered and/or their own preferences and attitudes. But this is a point I cannot go into in any more detail.

It should now be clear that over recent years literary history has returned to the top of the agenda within Dutch literary studies, in a broad, international cultural context. This is not surprising: despite the beautiful and passionate

criticism of someone like Friedrich Nietzsche in the second of his *Unzeitgemässe Betrachtungen* on historiography as a whole, man remains a 'historically determined' creature: we are what we have been, our past determines what we are now, the detour of the past is necessary to understand the present.

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Laudatio Maurice Mussen

Guy Vanderstraeten

Prof Maurice Mussen was born in Belgium, Neerpelt, on the 8th of January 1931. He studied Greek-Latin studies at the Saint Rombauts College in Mechelen. He graduated in Physiotherapy in 1955 at the Higher Institute for Physical Therapy in Antwerp with distinction. He became also occupational therapist in 1966 with the highest distinction at the Higher Institute of paramedical studies in Ghent. Later on he obtained the Master's degree in Physical education (1967) and special Physical education-sports in disabled (1968). He presented his doctoral thesis on June 4th 1976 with the highest distinction on "Kinesiology of a transplanted muscle "with Prof Claessens as promoter. He continued his formation with special training in low back pain exercises (Prof De Sèze, Paris), Klapp exercises for children with scoliosis (Dr Waghemaeker, Lille) and Niederhöffer excercises (Erna Becker)

He started his career as physical therapist in 1957 at the Ghent University in the Clinic for Physiotherapy and Orthopedic surgery (Director Prof G Verbrugge and later on Prof H. Claessens). He became assistant in 1968 and first assistant in 1974 and later on in 1978 work leader in the department. He was member and secretary of the HILO (Higher Institute Physical Education). He was nominated as part-time assistant professor at the University in 1982 and full professor in 1991 till he became professor emeritus in 1996. He was the first director of the "seminar of physical therapy" at the Ghent University in 1987. He can be considered as the founding father of the University training of Physical Therapy. He was the first director of the department council of rehabilitation Sciences and Physical Therapy. Thanks to his energy, work and insight in the field of Physical

Therapy this department knew a permanent growth in personnel and an increasing production of International publications. He was celebrated on the occasion of the 25th anniversary of "his" prestigious project.

He was at the same time very active in the field of sports medicine and sports physical therapy. Prof Mussen was responsible as head of the physical therapy group in the National soccer team (Royal Belgian Soccer Association) from 1968 till 1993. He was also responsible for many great events of the European soccer association, among these Euro 2000. He was member in this period from the medical commission of the national Soccer Association. Sports for disabled was another topic on his career. He was one of the founders and secretary of the Sports club for disabled people related to the Ghent University rehabilitation Centre. He was president and secretary of many sports federations in the field of sports for disabled and this on the national, European and International level (ISOD, International Sports organization for Disabled).

He was also involved in the professional organizations of Physical therapy. Among all these functions I would like to mention his presidency of the Union of Flemish physical therapists Ghent, President of the Flemish Association for Physical Therapy and vice-President of the National Association of Physical therapy. Again, he was also active in European organizations and alternative voting delegate of the "World Confederation of Physical therapy".

Prof Mussen was member of different scientific organizations and he was secretary of the Belgian Scientific Society for Physical therapy from 1972 till 1978. He was also member of the editor committee of an important journal "Literature selection Physical therapy, Stimulus", a joined Belgium-The Netherlands project from 1982 till 2002. He was organizer and president of the National colloquia on Physical therapy.

His scientific research and national and international output was focused on different topics such as the basic principles of Physical Therapy, movement analysis of the pathology of the locomotor system, sports physical therapy, sports in disabled, rehabilitation of the musculoskeletal system, kinesiology, mechanotherapy, cryotherapy, taping, and soccer injuries. He was also the publisher on specific topics related to the history of the department of Physiotherapy and Orthopedic surgery of the University Hospital, Ghent with a publication in 2007 on Prof Dr Jean Verbrugge and Prof Dr Hendrik

Claessens in the “National Biografic Dictionary” and a publication of the “Libellus memorialis”, the history of the Clinic of Physical Therapy and orthopedic surgery. Prof Mussen was also asked to participate in the publication of the “Jubileum book “, 50 years University Hospital (2009); He was also member of the editorial committee”15 year education physical Therapy University Ghent” in 2011.

An important moment was his presentation on the subject “Physical therapy, from Byloke Hospital to Academic Hospital Ghent: 1906-2011” for the Jonckheere Foundation Ghent on the 18th November 2011.

Important books were published by him such as “Functional Rehabilitation in paraplegia” together with Dr. L. Duchesne, “Care and prevention of soccer injuries” and Mechanotherapy” together with R. Verplaetse. Beside this he was also responsible for the film-and video productions on soccer injuries, stretching for everyone, and smart ideas for people above 50.

From Heilgymnastics to the Kinesitherapy of the 21st Century

Maurice Mussen

1. The Initial Period and the creation of a discipline

Although the start of the use massage and hydrotherapy is believed to be situated within the era of the ancient Indian, Chinese, Egyptian, Greek medicine, almost all authors of historical work in this area agree that the Swedish gymnast Per Henrik Ling (1776-1839) is to be considered the founder of the 'heilgymnastics'. He merits respect for the development of standard gymnastics but also of "therapeutic gymnastics" (without gymnastic apparatus). It was a disciple of Ling, named Dr. A. Georgii (1808-1881), who moved to Paris and used the word 'kinesitherapy' for the first time in 1847 in his French publication, thus describing our new discipline.

In Belgium Dr. Fredéric Le Marinel (1862-1909) was the first to use the word 'kinesitherapy' as a collective term for massage and medical gymnastics (1898).

The founder of the – at that time – modern massage is the Dutchman Dr. Johan Georg Mezger (1838-1909) who was a massaging physician. Promoted from gymnastics teacher to physician and later obtaining an MD at Leiden University in 1868 he approached massage as a natural science from both an anatomic as well as a physiologic point of view. He was an expert in the French frictionings. Due to Mezger and his colleagues physicians massage gained the appropriate recognition. From 1870, Dutch M.D's were more and more involved in heilgymnastics. Both Mezger and some other Dutch physicians believed that this therapy, and especially massages, had to be performed by a person graduated in medicine.

Besides terms as heilgymnastics, kinesitherapy and orthopedic gymnastics, the term ‘medical gymnastics’ was used in order to clearly link medicine and physical education. From 1860 medical gymnastics was referred to as heilgymnastics in the Netherlands. Massage was repeatedly mentioned separately. In 1888, the medical world in the Netherlands officially took position against the independent practice of heilgymnastics by heilgymnasts. The ambiguous character of medical gymnastics (medicine – gymnastics) also caused conflicts of interest between physicians and physical education teachers in other countries such as Sweden and Germany.

Some Dutch physical education teachers founded on September 1st 1889 the Society for practicing Heilgymnastics in the Netherlands (‘Genootschap ter beoefening van de heilgymnastiek in Nederland’). The establishment of the Society meant the starting point for the development and professionalizing of the heilgymnastics in the Netherlands separated from the strict medical field. Belgium will follow only many years later.

In the Netherlands, the Society also started in 1895 to have exams to control the entry to the profession. It was only in 1912 that the first education for heilgymnastics was started in Amsterdam.

In the Netherlands, orthopedic surgeons claimed the field of heilgymnastics whereas in Belgium it were mostly physicians-physiotherapists who did. In 1898 the ‘Nederlandse Koninklijke Maatschappij Ter Bevordering van de Geneeskunst’ (NMKG) (Dutch Royal Society for the Promotion of Medicine) stated that orthopedics, including massage and medical gymnastics, exclusively belonged to the field of the physician. The heilgymnast-massagist was no more than the pure technical assistant of the scientifically educated M.D. It clearly was not to be considered an independent profession.

The practitioners were mostly physical education teachers and exceptionally some physicians. But it were the physicians who wrote prescriptions and controlled the implementation. In Belgium, the non-medical practitioners were called ‘aides masseurs’ and were allowed to practice medical massages and physiotherapy under the supervision of a physician.

Although Glisson (1599-1677), Boerhave (1668-1738), Jalande-Lafond (1805-1871) Pravaz (1791-1853) and A. Schreiber (1835-1908) already applied the mechanization within their therapeutic domain, the “modern

mechanotherapy" was introduced by Zander. Whereas Ling applied the heilgymnastics without the use of appliances, is was another Swede named Dr. Jonas Gustav Zander (1835-1920) who, after having studied medicine and physical education at the university of Upsala in Sweden and relying on the principles of his compatriot Per Henrik Ling, introduced the replacement of the heilgymnastics by a machine that would generate movement (passively) or resist movement (actively) by performing passive exercises or resistance exercises. This was the start of the Zander institutions. The marketing of the Zander appliances started in 1877.

Belgium counted 4 Zander Institutions, all under supervision of a physician. The Zander Institution of Brussels was founded in 1896 by Dr. Frederic Le Marinel (1862-1909). In Antwerp, the Zander Institution was founded by Dr. Hertoghe (1860-1928), but it was under the direction of Dr. Isidore Gunzburg (1875-1943) that the Antwerp Zander Institution prospered and was transformed into a centre of Physiotherapy. The Zander Institution of Liege was founded in 1901 by Professor Dr. Louis De Munter (1866-1956); the Zander Institution of Ghent was founded in 1902 by Dr. Florent Gommaerts (1865-1934) who later on was appointed Professor at the State University of Ghent (RUG). As from 1894 the Netherlands also counted several Zander Institutions.

In Belgium, Dr. Gunzburg was one of the founders of the 'Société Belge de Physicothérapie'. He also succeeded in turning the course of Fysicothérapie into an obligatory course for graduate medical students in medicine by the law of May 21st 1929.

By 1911-1912 the 4 Zander Institutions changed names and were called "Institutions for Physico-Therapy" due to the introduction of diathermy in treatments, meanwhile electrotherapy (galvanization, ionization, 4-cell-baths and diathermy), as well as thermotherapy and hydrotherapy had also been introduced. The advantage of the Zander appliances was that several patients could be treated at the same time, the disadvantage of the Zander appliances remaining the high cost as well as the customizedly required space. The latter probably were the reasons why during World War I together with the high number of casualties, the Zander appliances were seldomly used. Instead standard motoric reeducation was mostly applied; The latter treatment aimed more at functional recovery. Massage as well as 'pulley therapy' were given the necessary attention. During the 2nd World

War exercises were given in classes to patients with similar pathology. In the 20th Century, the more appropriate term of (medical) rehabilitation was introduced.

2. The Evolution and expansion of Kinesitherapy in Ghent University

a. Kinesitherapy as part of the Physicotherapy

The University of Ghent started its department of kinesitherapy in the Pasteurlaan, street in the centre of town, with the founding of the 'Institut de Physicothérapie' on April 9th 1906. At that time the out-departments of the faculty of medicine of the university were located on the site of municipal hospital 'De Bijloke'. The municipal hospital itself did not have a department of physicotherapy; this was only the case as from 1957.

At the 'Institut de Physicothérapy', there were 4 specific departments:
1. 'Electrothérapie' (Electrotheray), including radiology,
2. 'La kinésitherapie' (Kinesitherapy),
3. 'l'Hydrotherapie' (Hydrotherapy),
4. 'La Phototherapie' (Phototherapy).

With regard to the department of the Kinesitherapy the records only mention 1 large room where 8 mechano-appliances of the Zander type were installed for the treatment of all joints.

In 1911 Dr. Jules De Nobele (1865-1946), lecturer at the Faculty of Medicine, was charged with the lectures of general physicotherapy, containing electrotherapy, radiology and hydrotherapy, made an obligatory subject by the Royal Decree of November 10th 1934. In 1911 Prof. Dr. F. Gommaerts was charged in the Faculty of Medicine to teach the additional, optional, practical course of Physicotherapy, including massage and kinesitherapy. However few students were interested which was very different of the similar course of Dr. De Munter at the University of Liège.

Already in 1908 Prof. Gommaerts teached the optional course of massage to the students in physical education at the 'Hoger Instituut voor Lichamelijke Opvoeding' (Higher institute for physical education). Later his successors continued it until 1958. It resulted in the recognition of the students by

the social security agency in Belgium as kinesitherapists. The course was however marked by a varying degree of success within the group of future teachers of Gymnastics.

In 1936 the department was divided. Prof. Dr. Leopold Hendrik Vanhouteghem (1902-1949) was appointed head of the department for Orthopedics and Physiotherapy. He requested a trained/educated auxiliary worker for the additional training in orthopedic gymnastics within his department but this request was refused. On October 15th 1941 he proposed the founding of an additional school to train massagist-heilgymnasts within his department. It was however refused.

Prof. Dr. L.H. Vanhoutegem was succeeded by Prof. Dr. Jean Verbrugge (1896-1964) in March 1946 leading to the modernization of the department and the replacement of all appliances. In the basement the treatments with electrotherapy and massages were performed. A very elaborate department of hydrotherapy, disposing of many types of baths, was also at the disposal of the patients. Some nurses, one masseur and one technician were working in the basement. In-patients of the Bijloke Hospital, especially children, were treated by the nurses in the large halls and in the wooden children's pavilion of the Bijloke hospital. Other services of the department were located on the groundflour where the department disposed of a large hall for kinesitherapy, equipped with exercise racks. Here group treatments were given, for example the treatment of shoulder injuries and spine-anomalies of children (heilgymnastics). Occasional collaborators, most of them graduates (licenciates) in Physical Education were in charge until a fulltime kinesitherapist trained at the Higher Institute for Physical Therapy in Antwerp, was appointed on February 1st 1957 who gave exercises in the large hall and had treated hospitalized patients of Prof. Verbrugge in the 'Institut Moderne' (another hospital in Ghent).

b. The Belgian polio-epidemic of 1952 and 1955

Very important for the history are the epidemics of poliomyelitis in 1952 and 1955. The epidemic of 1955 was of extraordinary extent, counting 150 casualties in and around Ghent. Polio patients were lodged in the old halls of the Bijloke and in the Children's Pavilion of Prof. Dr. C. Hooft (1910-1980) where the first Engström appliance ('steel lung') in Belgium was

installed. The ‘steel lung’ can presently still be seen as museum piece at the University Hospital.

On April 1st 1956, 60 polio patients (55 children and 5 adults) were admitted to the first floor of the ‘business complex’ of the then newly built Academic Hospital. The ground floor was used as practice hall by some of the nurses of the department of Physiotherapy and Orthopedics; Three English physiotherapists of the Royal National Orthopedic Hospital of Stanford, having treated many polio patients, agreed to teach and train during three months the nurses the elementary notions of medical rehabilitation of the polio patients and the use of the Guthrie-Smith appliance (predecessor of the Rocher cage); Mrs Olive Guthrie-Smith (1883-1956) was an English physiotherapist who described in 1943 an iron frame in which paralytic war victims could be treated by means of suspension and pulley-therapy by the elimination of gravity.

On July 1st 1957, the department of Prof. Dr. J. Verbrugge was the first to move from the Pasteurlaan (next to the old municipal hospital) to the newly built Academic Hospital (AZ) in Gent. The department disposed of 1 large and 1 small practice hall for kinesitherapy. In the new department (called poli 5) there were individual boxes for treatment, 2 traction tables, a pair of parallel bars, one exercise bike and some small appliances. Also a department for hydrotherapy including underwater massage, baths, running pool, butterfly pool and one room for special bathing (sulfur bath, oxygen bath) existed. One nurse was in charge for the hydrotherapy department, assisted by three nurses. In the basement were two halls with separate boxes for electrotherapy and massages, given by six nurses and one blind masseur.

Both during the period of the Pasteurlaan as during the polio epidemic, as well as later during the first years in the Academic Hospital the nurses accomplished excellent work that proved to be a unique basis of experience for the first fulltime kinesitherapist.

On November 5th 1959, the first part of the Academic Hospital (later renamed to University Hospital in 1986) as well as the new children’s hospital were inaugurated. The young polio patients were moved to the new children’s hospital where they could also dispose of a small exercise hall supervised by a nurse, who already assisted the children during therapy at the beginning. The last polio patient was admitted in the hospital on October 7th 1960.

On February 1st 1960, a second kinesitherapist was engaged, quickly followed by some more collaborators after having completed their internships. The admission of paraplegia patients in the clinic and the intensive kinesitherapy given to these patients lead to the manual "Functional readaptation in case of paraplegia", written by Dr. L. Duchesne and M. Mussen (having a print run of 5000 copies in Dutch and 2000 copies in French). Meanwhile, besides the usual group exercises in the policlinic, like heilgymnastics for treatment of spinal anomalies with children as well as group exercises for shoulder injuries, group exercises for back pain were also started (exercises following De Sèze). Correcting crawling exercises according to the Klapp methodics for children with dysfunctions of the vertebral column as well as isometric contractions for spinal anomalies according to the Niederhöffer method (Erna Becker) were also available. Breathing gymnastics were also started after an internship in Groningen; From June 1961 onwards a kinesitherapist on call/on duty was introduced.

c. The kinesitherapy in child birth

After the move of the obstetrics and gynecology department of the University from the Bijloke to the Academic Hospital in 1964 the department of Prof. Verbrugge delegated kinesitherapists to the department in order to assist on pre-and post-natal gymnastics as well as during labour and childbirth. Within the walls of the obstetrical outpatient building an exercise hall was available. At first 10 prenatal as well as 10 postnatal lessons were given; nowadays this is only 3 and 7. Perinatal lessons consist of only 9 sessions; The last years assistance during labour was no longer performed.

d. An extra space and new possibilities for kinesitherapy

By the end of 1967 the department of kinesitherapy was moved from the department of orthopedics (Poli 5) to the larger building at the right, thus bringing significant extra space and possibilities. The Guthrie Smits appliances were replaced by the Rocher cages. These cubic spaces, which were open at the front end, offered an unlimited number of possibilities for junctures enabling both mobilizing, assisted as well resistance exercises.

As from 1968 kinesitherapy within the football sports was also given more attention, M. Mussen being during 1968-1983 the kinesitherapist of the Belgian national football team. He was in no time assisted by other colleagues and doctors of the department, thus giving sports kinesitherapy a full worthy place within the department.

In 1970 the department of electrotherapy and massage was moved from the basement of Poli 5 to the ground floor, after which it was moved on 1983 to the first floor of another building.

Gradually nurses were being replaced by kinesitherapists. Massages as well as electrotherapy are now less applied and kinesitherapy evolves more and more towards treatment with fitness appliances. The exercise hall, which started as a large open space, is now filled with all kinds of appliances just like a fitness centre. The only remains of the early years is a sole Rocher cage and some exercise racks. The image of an exercise hall with a group of children practicing heilgymnastics is far gone. The remaining lessons aim at special groups like the back school, obese patients etc. Thus the original link with and the origin within physical gymnastics seems to have disappeared. It now more looks like a medically supervised fitness center.

It seems as if the circle has been closed. Zander appliances have been replaced by fitness appliances. According to Prof. Emeritus Dr. R. Oostendorp things already went wrong as from the early 1970's. At that time fitness appliances became fashionable and started replacing the kinesitherapist thus fading proper movement therapy to the background.

The exercise hall is also used for group classes for patients with breast cancer, obesity, back problems as well as for medical supported fitness exercises.

Over the last few years a lot of attention is also considered to pelvic re-education, both on an out-patient basis as during hospitalization as well for adults for children. The therapy trains the pelvic floor muscles in order to control micturition, urine loss, stress incontinence and urgency, habitual constipation, bowel loss, urinary tract infections and over-activity of the bladder, prostate problems, erectile dysfunctions, gynecological pain problems and dyspareunia. The therapy consists of: manual evaluation of the pelvic floor muscles, stimulating technics, biofeedback training and assistance during exercise plan at home.

e. The treatment of the in-patients of the hospital

In-patients patients can be treated both in bed as well as in a small exercise hall of the department where they reside, both as single person as in group. The kinesitherapeutic treatments are very variable, e.g. respiratory kinesitherapy and bronchial toilet, mobilization with or without apparatus, walking re-education with or without walking apparatus, ADL (activities for daily life), independence training, activation and toning, use of appliances such as cough assist and IPV (intermittent percussion ventilation). In rheumatology treatments with kinesitherapy have diminished with at least 50% following to improved medication. In oncology patients are cared and supervised on a multidisciplinary basis. It implies kinesitherapy and physical training.

In pneumology, the use of supporting respiratory appliances has increased and tapotage clearly no longer forms the basis of the respiratory kinesitherapy. Autogenous drainage and respiratory techniques are still applied. In geriatrics, the aim is, according to the needs of the patient, improving condition and balance through functional training, ADL, respiratory techniques and supporting revalidation. In psychiatry, it is mostly musculoskeletal problems that can be treated by kinesitherapy. Psycho-motorical therapy can be very important.

f. The kinesitherapy of sport

1/ The early days

Massage before the matches was considered preventive therapy in order to avoid injuries as well as in order to recognize overload injuries meanwhile giving guidelines for warming-up and stretching. The massage in no way replaces warming-up exercises nor stretching.

After the match, massages can shorten the fatigue phase especially for people sensitive to muscle hangover caused by extreme performances or by specific weather conditions.

Stretching is not to be forgotten both in order to exercise and improve flexibility. Taping also was considered obvious and frequently applied.

2/ Present

Over the years (1980-2012) a number of remarkable shifts in the approach of the care and accompaniment of sportsmen in general and of the treatment of injuries in particular have occurred.

2.1. Club level

On club level maior efforts have been done in order to raise financial means for infrastructures, baths, fitness appliances and handlings equipment. With regard to staff, specific trained medical rehabilitation kinesitherapists as well as manual therapists are engaged.

The role of massage nowadays is discussed.

Standard taping is by us now being replaced by kinesiotaping.

The major shift in focus: from assisting the rehabilitating sportsman within the walls of a treatment room to the out-door assisting like exercise field, beach and forest. With the assistance and control of a medical rehabilitation kinesitherapist the sportsman will be able to join the group much faster.

With regard to specific treatments, electrotherapy is lesser applied but the use of appliances (such as Compex®, Cybex®) has increased. Also aqua-jogging has proven to be an important added-value treatment.

2.2. Sports-medical Centre

The present sports kinesitherapy has enormously evolved. It starts with a good and thorough screening of the athlete in order to determine the 'weak points'. The sportsman is examined within the frame of the exercising of his/her sport. Treatment has evolved from local treatment to overall treatment, taking into account all aspects of the human functioning.

– Muscles:
  myofascial technics, traverse stretching, trigger point treatment and tens therapy, electro with feedback for motor control.
– Joints:
  mobilizations angular and non-angular.
– Exercise therapy:
  • active exercise therapy integrated within the chain of the sportsman with great importance considered to core stability, lots

of excentric work and PNF muscle work, lots of field therapy, red cord therapy, kineses (appliance for full corps exercises);
    - aqua medical rehabilitation;
    - specific exercise therapy with injury prevention.
- Taping:
  classic taping as well as kinesiotaping (guidance of movements and tonus regulation of muscles).
- Screening: large gamma of testing material.
- Compex® and muscle recovery.

In conclusion it can be stated that presently sports kinesitherapy has become a full worthy specialism both for treatment of professional athlete as well as the recreational sporting person.

g. The Centre for Locomotoric and Neurological Rehabilitation

In order to obtain a clear view on the evolution of kinesitherapy within the field of a medical rehabilitation centre, we have the reference framework of the University Hospital of Ghent.

Two periods can be distinguished.

Period 1: 1971 till 1993

The treatment complex was composed of a large exercise hall with neighbouring rooms for individual treatments and a kinesitherapy room for hemiplegia patients as well patients suffering from brain injuries on the first floor. There also was a 25m swimming pool as well, a pool for subaqual exercises as well as walking rehabilitation.

For the larger part of the patients, the day started with morning gymnastics composed of mobilizing and active exercises for the full body, starting from a sitting or standing position, depending on the possibilities of the patient. Specific kinesitherapy was given in a specially equipped room and consisted of electro-, warmth- and cold-therapy. Mecanotherapy was given with assistance of appliances mostly in the Rocher cages. Patients suffering from hemiplegia or brain trauma exercised in the separate room on the first floor.

Balneotherapy, both swimming as well as common exercises, were given in a swimming pool of 25m by 8m. Subaqual walking re-education was given in a walking pool of 5m by 3m with different depths. There also was a pool for subaqual massage and mobilization. Outside, there was a sports ground and an obstacle course in order to exercise walking, balance, agility and endurance. As from 1980, there was also a newly built sports hall at disposal.

Medical rehabilitation was rather generally approached as a very wide range of patients was treated. Patients suffering from a vast variety of orthopedic injuries, peripheral as well as central neurologic dysfunctions and cerebral lesions were treated kinesitherapeutically just as operated patients were treated. There were individual medical rehabilitations, there were group lessons such as the daily morning gymnastics, and exercise circuits were defined. Extensive mechano-or pulley-therapy was available. Exercises in the swimming pool or in the treatment pools also were part of the care; From the start, patients were divided in ten groups linked to specific diseases or injuries with a daily extensive rehabilitation program. The ultimate goal was the socio-professional reintegration of the patient. Every group was assigned its own kinesitherapists, thus leading to the early start of some specialization within the field of kinesitherapy.

Period 2: 1993-2012

At present, 3 clusters are left at the Revalidation centre, each disposing of their own multi-disciplinary team: paraplegia patients, acquired cerebral lesion patients and patients suffering from amputations and polytraumatic patients. The basic accommodation remains: exercise tables, walking treadmill, electro stimuli, myo-feedback, thermo- and cryotherapy but the very specific consequences of some injuries requested more and more specialized kinesitherapy during rehabilitation.

Also more and more sophisticated appliances are used, not all of them identical to the appliances in fitness centres. The classical exercise appliances remain but are now up-to-date. An exercise bike remains an exercise bike but nowadays it can be controlled by cardio control, or paralyzed muscles can be electro-stimulated to move to a riding. Different exercise programs are available and results can be stored and analyzed afterwards.

Proprioceptive training can vary from general exercises on soft underground to exercises on sophisticated appliances. Wii appliances are also frequently used as well as the standing table with CPM (Continuous Passive Motion) for the lower limbs.

Medical training therapy makes its appearance but the Rocher cage keeps its place within the medical rehabilitation. Robotics are already applied for the walking on the walking belt. This as well as virtual reality will play a more and more important role within medical rehabilitation.

Simple walking aids as a walking stick or an elbow crutch or armpit crutch remain useful aids. The basic principles in its use remain the same as before, but the design meanwhile is ergonomic.

Only little remains of the former electro-therapy. The appliances are now very compact. Pain relief and electro-stimulation are still daily practices. Functional electro stimulation (FES) can be used during walking or riding on a customised bike.

Respiratory rehabilitation is gaining interest not only in critical services. Appliances for supporting breathing and/or expectorating are more and more used.

And last but not least there is the giant evolution within the domain of manual therapy. The identification of the kinesitherapist as masseur has gone although some form of massages still remain. Passive mobilization techniques evolved from global mobilizations to techniques taking into account the biomechanics of the joint that is manipulated. The stress now is on active participating and a lot less on a passive supporting of the rehabilitation. The patient is clearly more responsible in the aiming of the set goals. Evaluation and testing are, next to training and rehabilitation, very important parts of the rehabilitation process. Permanent control and adjustment of the kinesitherapy should grant the set goals within feasible boundaries for the patient involved.

Hydrotherapy still has multiple applications for both patients of the centre as well as for sportsmen.

Cardiac rehabilitation consists of running and walking exercises as well as evening training sessions and swimming.

Meanwhile tele-rehabilitation was progressively introduced. Tele-rehabilitation is kinesitherapy at home under supervision of a kinesitherapist at

distance by means of computer data streaming. It implies the possibility of immediate feedback although at present in its initial phase.

h. The Children's rehabilitation centre

Formerly children who were admitted at the University Hospital were treated in the children's hospital. Following to the more multidisciplinary approach, a childrens' rehabilitation centre was founded within the children's hospital in 2001. As from March 20th 2012, this childrens' rehabilitation centre was moved to the new building of the rehabilitation centre although functioning separately. The emphasis is put on the multidisciplinary individual rehabilitation of children from 0 till 16 year, both hospitalized as ambulant, struck by an acute loco-motoric or neurologic problem. Most rehabilitations are started while children are still hospitalized in the children's hospital of the University Hospital of Ghent as the children's rehabilitation centre does not dispose of beds. From the moment that their medical condition allows it, children are dismissed from hospital and continue treatment as an out-patient at the Children's rehabilitation center or with private therapists. Rehabilitation is worked-out "tailored" according to the patient's needs following a multidisciplinary treatment schedule. Rehabilitation is very intense, including several hours of treatment on a daily basis for each child. The development of the child is being watched at every stage. More recent treatment techniques for children's' rehabilitation are applied, such as hippotherapy, hydrotherapy, Sherborne, creative psychotherapy etc. During rehabilitation, a lot of attention also goes to school skills due to intense cooperation with the school of the University Hospital. It is very important to stimulate the independence of the child taking into account its age level. Also cooperation with the parents of the child during rehabilitation process is of utmost importance for the success of the rehabilitation. This is also the aim of the weekly parental meetings. Regular feed-back with the referring physicians is very important.

3. Evolution of the profession and the teaching in Flanders and Netherlands

a. The Beginning

From 1947 onwards the kinesitherapist became a professional in Belgium but only within the boundaries of the Social security Department (Ministerial Decree 15.10.1947). His professional field was limited to the following treatments: massage, mobilization, mecanotherapy, medical gymnastics and warmth therapy.

Following to the Ministerial Decree of 22.09.1955 the very first commission for the recognition of kinesitherapist was founded within the Social Security department of the government (RIZIV) in order to determine the terms and conditions for the recognition of the kinesitherapist.

b. The Diegenant Code and the Professional status of the kinesitherapist

Kinesitherapy had been catalogued in Belgium following the Royal Decree n° 78 (1967) concerning the medical, nursing and paramedical professions under the chapter of paramedical professions. The statute of April 6th 1995 (Belgian Official Gazette 16.06.1995), drafted and filed by senator Achiel Diegenant (senator for the political party of Christian Democrats and also kinesitherapist) and his French speaking colleague senator dr. Ph. Mahoux (physician and social democrat), afterwards called the Diegenant Code, determines now the definition of kinesitherapy. It states the recognition procedure of the kinesitherapist, the relationship with the prescribing physician and the creation of the National Board of Kinesitherapy. As ruled by the Diegenant Code, the degree of the kinesitherapist first had to be recognized by the Department of Public Health before obtaining his/her recognition by Social Security Department. Following to the code, kinesitherapists act “sui generis” implying the end of his/her status as paramedic but limiting his/her autonomy in contradiction to practitioners of medicine (medics, dentists and midwifes). The code also determines the length of the formation of kinesitherapist to a minimum of 4 years of academic education.

Education being among the competences belonging to the domain of the Communities, the former Flemish minister of education Luc Van Den Bossche filed an appeal before the Court of Arbitration on behalf of the Flemish Community in order to obtain the nullification of some of the articles of the code. Nevertheless, following The arrest n° 81/96 of December 18th 1996 by the Court of Arbitration, the appeal was rejected. The Diegenant Code, as the Code is generally called, thus implies the full and official recognition of the profession linked to a solid education causing radical changes and discussion within the domain of education In Belgium.

c. The battlefield of Minister Luc Van Den Bossche

On January 23rd 1997 minister Van Den Bossche, the minister of education of Flanders, introduced the plan to only provide the 4 year curriculum within the 'Hogere Instituten' (Practical Colleges) leaving only research as well as superstructure for education to the universities. At that time, the education for kinesitherapy was available through both a 4 year master education (2 cycle education) at 3 universities as well as a 3 year graduate education (1 cycle education) at 9 Practical Colleges. According to the minister's view kinesitherapy was a professional training, thus belonging within the domain of Practical Colleges.

But already the next day, January 24th 1997, the students in kinesitherapy of the Ghent University, as well as students in speech therapy, audiology and students in diet and nutrition supported by professors and staff marched in procession to the main building of the university of Ghent where the Board of Governors was holding their assembly at that very moment. Both the present Rector of the University of Ghent (Prof. Dr. P. Van Cauwenberge) as well as the present Dean of the Faculty of Medicine and Health Sciences (Prof. Dr. G. Vanderstraeten) joined the procession. The latter, together with a small delegation, was admitted to the Boardroom in order to clarify the problem. Following to deliberation Prof. Dr. P. Van Cauwenberge, also member of Board of Governors, could announce the shared point of view by the board of Governors., which stated that such a decision was unacceptable.

Next came a national demonstration in Brussels on January 30th 1997 and a public hearing in the Flemish Parliament on March 12th 1997.

On March 23rd 1997, a Regional Decree was submitted to the Flemisch Parliament by minister Van Den Bossche, stating that only one 4 year higher education would be allowed to be given by the University of Leuven and the 3 year Practical College education would be allowed to be given by the "Katholieke Hogeschool of Gent" (KaHoG), the "Hogeschool of Antwerp" and the "Provinciale Hogeschool of Hasselt". However this initiative was followed by a negative recommendation by the Council of State in May 1997;

The rejection by the Council of State made it possible for minister Colla, responsible for the Department of Public Health in the federal government, to delay in extremis the date of application of the so-called Diegenant Code by 1 year in June of that same year of 1997. This decision made a long term more sensible and respectfull solution possible.

d. The National Board for kinesitherapy

The National Board for Kinesitherapy was installed on March 11th 1998 in the presence of Minister Colla according to the Royal Decree of 29/07/1997 (Belgian Official Gazette 04.11.1997). This Board has to advise to the Minister of Public Health as well as to the Communities with regard to all issues of kinesitherapy. This Board can be advised by the Academy for Medicine.

The Board is composed of 14 kinesitherapists, 6 physicians and 2 officers of the Department of Public Health. The major objective of the Board is the admission and the qualification of special professional skills and of special professional titles. It has to be said that at present, with regard to specializations and denominations, chaos reigns.

With regard to recognitions there are both a Dutch speaking as well as a French speaking Board functioning as qualification board and gathering at regular times. Previously the kinesitherapist was recognized by social security. Although the different workgroups have performed excellently until now, the National Board itself has not gathered since March 2011. Since no new nominations have been published in the Belgian Official Gazette, Paul Rabau, nominated by Royal Decree of 17.12.2004, remains President of the National Board.

e. The fixed numbers Royal Decree of 3 May 1999

By the Royal Decree of 3 May 1999 the Minister of Public Health made a ruling limiting the number of kinesitherapists that are officially recognized for entering the profession in a private office or at home. Graduates were however allowed without any limits to work as employee in hospitals and old people 's care homes. The Royal Decree was suspended in May 2000. In May 2001 a new ruling stated that a fixed number ("quotum") each year would be allowed as newly recognized professionals by the department of Social Security. As from 2005 a limited number of 450 for Belgium (270 in Flanders, 180 in the French speaking community) was accredited. The selection out of the graduates was performed through a comparative exam per region. Non-succeeded candidates can always re-try. This exam has not been organized in some years since the number of candidates that year stayed under the imposed quotum.

The maximum quotum has meanwhile been adjusted. A 10% surplus is allowed (but it has to be compensated in the following year); The quotum is increased by the number of previously selected with a limited number of patient-interventions (less than 500 performances/year) during the previous year.

In 2012 the exam has been suspended. Now negotiations are started with both "Communities" (official authorities organizing education) in order to limit the access to the education for kinesitherapy (intake restriction)

f. The Education of the kinesitherapist in Flanders

Originally kinesitherapy was mainly practiced by teachers in physical education who also followed a course in massage and thus obtained their license from the Social Security. This was also the situation at the State University of Ghent until 1958 for some of the licenciates in Physical Education and from 1967 until 1977 for students graduated in so-called Special Physical Education.

Simultanously and later universities and practical colleges started also a program:

– Universities (original degree: Licenciate (4 years) – now 'Master (5 years) in Revalidation Sciences and Kinesitherapy'

  - 1962: KUL (Catholic University of Leuven)
  - 1963: VUB (Free University of Brussels)
  - 1986: RUG State University of Ghent later to become University Of Ghent (from 2005 in cooperation with the Artevelde University College Ghent), from 2013 only University Ghent.
- Practical Colleges (original certificate: masseur-kinesitherapist, "graduate in kinesitherapy", later licenciate temporarily, now no longer active as since 2013 all training is concentrated in the universities)
  - 1948: Antwerp: Hoger Instituut voor Massage en Kinesitherapie (Higher Institute for Kinesitherapy)
  - 1953: Brussels: Aedes Paramedicorum
  - 1954: Gits
  - 1957: Ghent: Stedelijk Hoger Instituut voor Paramedische Beroepen (City Higher Institute for Paramedical Professions), stopped in 1998.
  - 1958: Kwatrecht (Wetteren) Mariagaard later to be transferred to Ghent (1968) as Hoger Instituut voor Paramedisch beroepen (Higher Institute for Paramedical Professions)until 2000.
  - 1961: Bruges: Higher Technical Institute.
  - 1994: Hasselt: Provinciale Hogeschool Hasselt (Provincial Higher Institute Hasselt).

  And some more: Mechelen, Kortrijk, Ronse, etc.

The 'Exchange operation'

By a ruling from the Flemish minister of education, to decrease the number of Higher Institutes offering an education for kinesitherapy, from 1998 until 1999 schools offering an education for kinesitherapy could apply for an exchange operation; The exchange operation consisted of a choice to stop educating kinesitherapists and getting another field of higher education ouside university. It resulted in the remaining of only 4 Institutes, namely Antwerp, Bruges (only bachelor), Ghent (Artevelde, later in cooperation with UGent) and Hasselt.

The non-university education became a 2 cycle education resulting after 4 years in a degree of Licienciate in Kinesitherapy; the university education

resulted after 5 years in a degree of Licenciate in rehabilitation sciences and kinesitherapy. Both educations gave the same professional competence.

The Integration Decree of July 2012

All remaining education in kinesitherapy are by the integration decree of july 2012 integrated in the universities of their association.

- 'Provinciale Hogeschool Limburg' is integrated in the University of Hasselt
- 'Artesis' is integrated in the University of Antwerp
- KULeuven supervises the bachelor education in Bruges
- 'Artevelde' is integrated in university of Ghent

Thus, as from 1 October all training and education in kinesitherapy in Flanders is part of the universities.

In Flanders, at present 3540 students follow the education in kinesitherapy of whom 1009 bachelor students and 364 master students study at the University of Gent and Artevelde University College. Will the high number of students to be mastered by an intake exam or will quota to be reintroduced? Another topic is the urgent need for standardization of specializations within the master program

With regard to the evolution of the learning curriculum of the Revaki Gent (name for the integrated kinesitherapy education unit), it is not only the diversity of the kinesitherapeutic courses that strikes, but also their soundness. Yet, one can already remember 2 things: the name of mecanotherapy has been replaced by 'Medical Training Therapy (M.T.T.)' and the present generation of kinesitherapy students is not keen on the association with massage, although this subject is still being teached both as a theoretical and a practical subject. Nowadays it is called 'Soft Tissues Technniques', but then again: what's in a name.

g. The Netherlands

On August 31st 1942 the profession of heilgymnast-masseur was the first para-medical profession to be legally recognized in the Netherlands. The expression of heilgymnastics was officially used in the Netherlands until 1965. In 1965 the so called decree of Physiotherapists in the context of the

law on paramedical professions was realized. Previously, the were heilgymnast-masseur, now they are called physiotherapist.

Nevertheless, heilgymastics and physiotherapy are not synonymous. Heilgymnastics means activities as exercise therapy and massage, whereas physiotherapy also includes other therapies. Physicians kept the right of referral and of control on the execution of exercise therapy, massage and physic therapy in a more strict sense. Heilgymnasts who obtained their 'Society degree' before 1942, were allowed to exchange their degree for the new official state degree and were thus also registered by the Ministry of Public Health. The available, and officially recognized treatment by the mandatory insurance, existed of massage, heilgymnastics or mecanotherapy.

In the Netherlands, a physiotherapist had the official name of 'physiotherapist', that is not to be confused with the in Belgium until 1979 common title for physicians – specialists in physical medicine and medical rehabilitation. In current everyday language in Flanders these physicians still are frequently called physiotherapists in Dutch whereas kinesitherapists are called in Belgium 'kinesists' in Dutch.

In the Netherlands in 2011, a degree in physiotherapy, as it is called there, can be obtained at 4 Practical Colleges. Every year around 2000 students start the studies for physiotherapy and about 1000 graduate. About 68% of the students are female. In 2009, the first university education was started at the University of Maastricht, led by professor Rob De Bie. The Netherlands also have a documentation Centre 'Foundation History of Physiotherapy' of which my colleague Henk Bylsma is the President.

h. Further and continued training

Since the start of the academic training in kinesitherapy, there was a demand for further and continued education. Especially due to private initiatives, both short term as long term trainings were organized of which quality not always the prime objective. It was only much later that these private companies started to appeal for both renowned foreign teachers as well as practice teachers from our own officially recognized education centers. During the past years this pioneering work has been taken on by the officially accredited institutions.

All of the long term continued educations, leading to accreditations for special professional competences, should only be organized by institutions which are embedded within the educational structure recognized by official decree. After all, it is within these institutions that internal and external as well as accreditation boards guard the didactical quality as well as the scientific base of all different educations. Another urgent necessity is the clear definition by the National Board of both the list of as well as the content of special professional competences.

In order to obtain a continued accreditation, it is necessary for a kinesitherapist to follow continued education, especially for colleagues who have been graduated for some time.

The 'visitation committee' of 2012 (A 'visitation committee' is a Flemish name for the external quality assurance committee installed by the Flemish University Council) states that permanent continued education in a cooperation between the professional organisations as well as the academic education becomes necessary. At the end of the 80's the obligatory further and continued education was also introduced in the Netherlands. The continued education is necessary for a permanent accreditation of the kinesitherapist.

Accreditation means the official qualification of the kinesitherapist based on the decision of an official organization stating that the kinesitherapist meets predetermined maximum quality and level requirements.

In order to meet further and continued education the 'Instituut voor Permanente vorming in de Kinesitherapie Gent' (Institute for permanent education of kinesitherapists Gent) was founded in 1996 under the presidency of Prof. Dr. G. Vanderstraeten, present dean of the Faculty of Medicine and Health Sciences, and with the driving force of Bart Vanthillo, practical assistant.

The functioning of this Institution was thoroughly reformed and extended by its present president Prof. Dr. L. Danneels in 2001. In 2004, following to the union with Artevelde University College, the offer of extra trainings was largely extended. Since then a new unit called 'Revaki Gent' came to life. To be mentioned are 2 maior post-graduate courses by our group in Gent, namely the post graduate Muscolosceletal physiotherapy since 1996 and the post graduate pediatric rehabilitation in case of neurologic diseases

since 2010. This latter education is an inter-university education organized by KULeuven and Revaki Gent in cooperation with the Belgian Bobath Association.

One can thus state that Revaki Gent played a pioneering role within the organization as well as the structural implantation of further and continued education within the domain of the rehabilitation sciences and the kinesitherapy. Within this frame, standardization and structuring of all post-academic training and scientific education are of utmost importance.

Furthermore according to the 'visitation committee' (2012), the formation of the 'omnipracticus' (general formation) may not be jeopardized.

Scientific continued education has to be led by officially recognized education centres which can appeal on both teachers out of education as well as teachers out of private settings. Professional associations have a different mission, although they can certainly contribute. Over the years Belgium counted different professional associations not always aiming at the same goals. Fortunately, and despite the history, Belgium now counts one national professional association, namely AXXON, a major step forward.

Regrettably, the Belgian Scientific Association for Kinesitherapy, founded in 1972 by the former chairs in kinesitherapy in the universities (Albert Leduc (Brusssels University) Hugo Stijns (KULeuven) and Maurice Mussen (Gent) was furled in 1978. Scientific associations should preferably be directed by universities. There remains a strong need for a scientific committee (sciences, professional field, policy), eventually under the auspices of the National Board, or for a national scientific union directed by the universities.

There do exist various national and international scientific associations per intervention field (back, shoulder, manual etc) but no Belgian association functioning as umbrella association.

i. The kinesitherapy for animals

Kinesitherapy for animals is internationnally a relatively new branch within the kinesitherapy. The education program in Flanders was started by the IRSK in cooperation with the Faculty for Veterinary Medicine UGent in October 2000 (De Moor, Mussen and coordinator F. Pille). The basic

module consists of 7 course days, the dog module of 13 course days and the horse module of 10 course days. Both kinesitherapists as well as veterinarians are admitted to the education program. Meanwhile 150 students have followed this program. In Flanders no other institutions can offer the same program on a structured basis. The profession itself is not officially recognized in Belgium in contradiction to The Netherlands where there is a qualification as official para-veterinarian since 1992.

There are different national professional associations. In Belgium this is the "Belgian Association for Certified Animal Physiotherapists (BACAP)". The international professional association "International Association of Physical Therapists in Animal Practice (IAPTAP)" was founded in 2011. The major aims for the future are the recognition of the profession, of the educational program and of its the scientific aspect by analogy to human;

j. The private practice

Private practices are less and less solo practices and show more and more evolution towards group practices, offering multiple specialists in the same location. It implies a larger chance of survival for this type of practice. The other evolution is towards more functional exercises instead of analytical practice. Complicated and expensive appliances are not needed. A solid and functional treatment table and some exercise tools, taking not much space, are already sufficient.

4. Conclusions

The kinesitherapist is no longer the pure technical executor of performances but has also become a therapist who, according to a critical-scientific concept, composes his treatment for which he also bears full responsibility. Kinesitherapy has thus become a therapeutic discipline preferably belonging to the educational offer given by the university, as it is planned as from October 1st 2013.

In order to provide in a serious education, it is not only necessary that professors keep a good affinity with practice, it is also necessary to dispose

of a sufficient number of practical assistants who keep working in private practices on a part-time basis.

A certain sense of pride is not unjustified when looking back at the historic evolution that has known kinesitherapy, especially during recent years. The history of the Kinesitherapy should be introduced as mandatory course or course section within the curriculum of the educational program to physiotherapist.

The realization of this synthesis history of kinesitherapy could only be achieved mainly to the willing cooperation and information of many colleagues.

The Sarton Medal of the faculty of medicine and Health Sciences, attributed for the first time to a kinesitherapist, therefore is not just a sign of appreciation to myself, but mainly to all colleagues who all have contributed to the success of kinesitherapy. That is why I dedicate this medal to them, my fellow kinesitherapists.

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Laudatio Jennifer Platt

Raf Vanderstraeten

We celebrate today work accomplished in the history of the social sciences in general, and of sociology in particular. We celebrate the work accomplished by Professor Jennifer Platt, in the course of a very long and very productive career. Prof. Platt is Emeritus Professor at the University of Sussex in the United Kingdom, where she taught for nearly 40 years, from 1964 to 2002. She is currently using this experience to provide us with a unique archival overview of *Sociology Teaching Materials.* The *Platt archive* at the London School of Economics comprises teaching-related materials, such as synoptic degree syllabi outlines, individual course reading lists, University Calendar digests, and so on, from the late 1950s onwards. It shows us how teaching contributes to reproducing, canonizing and forgetting sociological knowledge.

Prof. Platt's research career spans more than half a century. Jennifer Platt was, for example, one of the authors – together with John H. Goldthorpe, David Lockwood and Frank Bechhofer – of the influential study *The Affluent Worker in the Class Structure*, which was first published in 1969 and which is still available in print. Over the last decades, she has been the author of several books and book chapters, as well as numerous articles in leading scholarly journals.

Jennifer Platt has also played an important professional role within the scientific community. She has, for example, been President of the British Sociological Association in 1987-89. She currently is Vice-President of the International Sociological Association's (ISA), responsible for Publications. Her interest in the history of sociology is reflected in her terms as Secretary

and President of the Research Committee on the History of Sociology of the International Sociological Association, and as Chair of the Section on the History of Sociology of the American Sociological Association.

An overview of Jennifer Platt's research interests cannot but remain incomplete. There are two lines of research in the history of sociology to which I would like to point. The first one is directed at the cognitive or intellectual level. It focuses on the development of theories and methods. It offers a critical reconstruction of the instruments we use to 'do science'. It traces the developments which have altered the way we do and think of – what Thomas Kuhn called – 'normal science'. More particularly, Jennifer Platt has during the last decades published extensively on the history of research methods in the social sciences, such as the interview, the survey method, the case-study. At present, her research on research methods still stands out – not only because of her detailed knowledge of these instruments and their histories themselves, but also because of her more systematic critical reflections on how those methods are defining the body of knowledge we are producing and reproducing in the social sciences.

The second line of research, to which Jennifer Platt has contributed, is more explicitly directed at the social level. It focuses on the social conditions under which science is done. It looks at the social context which allows scientists to pursue their interests, to engage in particular discussions, to contribute to ongoing discussions. Over the last decades, Jennifer Platt has looked in much detail at the formation of disciplines and specializations. In an historical and empirical way, she has looked at the formation of specialised 'scientific communities'. Jennifer Platt has particularly directed attention to the history of professional associations. As I mentioned before, she has herself played and continues to play a very prominent role in the profession. She has held many positions in the profession – both nationally and internationally. But she has also critically studied this profession. Let me just briefly mention her contributions to the history of the International Sociological Association, including its "official history" which was published in 1998 on the occasion of the 50th anniversary of its foundation, as well as her study on the history of the British Sociological Association, which was published in 2003. Until today, these publications remain noteworthy – for their historical detail, their methodological accuracy and their more systematic or theoretical implications.

As Prof. Bob Rubens explained just a few minutes ago, George Sarton became an influential American scholar, based at Harvard University, after he had left Belgium during the First World War. At Harvard University, one of his Ph.D. students was named Robert King Merton. Merton also was the first person ever to receive the Sarton medal of Ghent University. Upon accepting the medal in the year 1986/1987, he delivered here a lecture on the 'Matthew Effect in Science.' It was a reconsideration of his earlier, influential analyses of reputation mechanisms in science. Merton first coined the term 'Matthew effect' in 1968; it takes its name from a line in the biblical Gospel of Matthew: "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken even that which he hath." (Matthew 25:29). As Merton explained, eminent scientists will often get more credit than a comparatively unknown researcher, even if their work is largely similar. Or stated somewhat differently: credit – measured in terms of citations, invitations, prizes and honours – will usually be given to researchers who are already famous. In the terms Merton used here some quarter of a century ago: "prime recognition for scientific work, by informed peers and not merely by the inevitably uninformed lay public, is skewed in favour of established scientists" (1987: 27).

Some might suggest that we are today witnessing another example of the Matthew effect in science. Jennifer Platt received many awards during the last years. She was not only elected as the Vice-President of the International Sociological Association, as I mentioned earlier. Just a few months ago, she also received the First Distinguished Service Award of the British Sociological Association and the Lifetime Achievement Award for work in the history of sociology from the Section on the History of Sociology of the American Sociological Association. However, I was entirely unaware of these awards at the moment that I nominated Jennifer Platt for the Sarton medal of Ghent University. Both at the level of the staff of this faculty (the Faculty of Political and Social Sciences), and at that of the Sarton Committee of this University, we made our own judgments. We are proud to be able to honour Prof. Jennifer Platt here for her work in the history of the social sciences and sociology.

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What have we done, and what remains to be done, in the history of sociology?

Jennifer Platt

I am indeed honoured to be awarded this recognition by the distinguished university of Ghent. It is yet more meaningful to me because the first recipient was Robert Merton, for whose work I have the greatest respect, not least because some of my earlier work benefited from his comments. When I started thinking about the general pattern of work being done on the history of sociology, inevitably I found myself influenced by Merton's approach, and especially his distinction between the history and the systematics of sociological theory (1957: 4-5), although his concern in making it was to get the theory right, while mine is with the history.

What is the history of sociology used for? It has had two broad functions, which have sometimes been confused:

(i) to create a shared identity and to offer exemplars and heroines for emulation, as part of the professional socialisation of entrants to the field, and to celebrate the institutions of the field by marking the anniversaries of departments, associations and journals;

(ii) to understand the workings of intellectual production processes, of higher education, of publishing, of research funding and of scientific organisations, and how these combine to lead to the production and diffusion or neglect of ideas, research practices and findings.

These can be distinguished as the celebratory or symbolic, and the analytical-historical, functions. In the celebratory, the focus is really on the present. Celebration requires that the value of past contributions to the present is emphasised – and it ignores authors and topics no longer valued

and remembered. The celebration of anniversaries marks the survival of a reputation or institution, and makes claims for its solid worth and importance; only the most successful bodies will survive to reach such anniversaries. This leaves out a lot. The celebratory and symbolic are appropriate in their places, and to choose predecessors to follow is fine. But this encourages focus on a small number of favoured cases, and can have unfortunate consequences for our historical understanding.[1]

In symbolic discourse, the names of some past writers are widely used as signs to stand for present intellectual positions; this confers retrospective recognition as ancestors, largely without the social continuity provided by school membership and the direct transmission of ideas. But this can be seriously misleading, as when Weber's *verstehen* is seen as relevant to the emergence of the modern practice of participant observation (Platt 1983). Thus in the English-speaking countries there has been a lot of attention to the Chicago department of sociology, commonly seen as the home of participant observation[2] and qualitative method more generally. This has an odd effect on our historical knowledge, since it both completely ignores the important quantitative work done in the Chicago department at the same time and, given current intellectual fashions, means that we know a lot about Chicago and much less about almost any other department.[3] Considerable French interest in the Chicago School has developed more recently, and that is clearly influencing some French work, but this does not show that there has been a continuing Chicago influence; that too is a retrospective ancestor choice.

Exploring the changes in how Durkheim's *The Rules of Sociological Method* has been received in the USA (Platt 1995), I found that before the late 1930s he was not seen as an outstandingly important French sociologist, and was commonly dismissed in textbooks as just one of the writers who believed in the existence of a group mind, a current issue in the US; later, his *'conscience collective*' is no longer taken in that way, but seen as referring merely to the beliefs and sentiments held in common. Such proc-

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1 This tendency is surely supported by the pressures of undergraduate teaching for clarity and simplicity, as well as disciplinary socialisation.

2 If one looks more closely at the texts it is evident that quite a lot of the participant observation was not done by the sociologists, though they used its results (Platt 1994).

3 Abbott (1999: 10-33) has a very useful review of the angles of approach to the subject taken by different authors.

esses of active reception are normal, but also likely to be historically misleading.

Of course my two types are in practice not always clearly distinct, and the motives may be celebratory[4] even if the work done is thoroughly analytical, or vice versa, but the conceptual distinction still seems useful. To study Weber's or Durkheim's writings with a view to using their messages for current concerns is theoretical or methodological work, not in itself work on history.

We have collectively made a curiously unsociological approach to our own history. Even if we start from interest in the intellectual content of the social thought of individual thinkers, that surely raises empirical historical questions: what social factors affected the content of their thought? [5] What was the system of institutions and social networks through which knowledge of it has been diffused? How was the writer's career affected by stratification and mobility processes in the university sector? What was the role of funding, or the publication system? To fail to recognise the roles of such factors risks treating ideas as responsible for their own reproduction.[6] I prefer the analytical approach, and history of sociology is for me part of the *sociology* of sociology – that is, it is concerned with describing, understanding and explaining the relevant social phenomena as they have changed over time.

But one cannot explain without having a good idea of what there is to be explained, so a primary historical task is to provide correct descriptions; this is especially necessary when questionable versions of the facts are current. Description has often been under-valued, but for historical work good description is an essential part of the process. But descriptions of what? What are the relevant phenomena, and what do we need to look at to understand and explain them? Against this background, I have found myself focusing on such areas as research methods, textbook production,

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4 However, I have had an article, commissioned in connection with an anniversary, rejected on the ground that it was not celebratory enough, apparently because it presented citation data and mentioned some of the criticisms which had been made of the work that it was about!

5 Peneff (2009) has fascinating sections in his book on participant observation about the influence on French sociologists of childhood experience in different villages and, like Heilbron (2011), the later impact of experience in the Algerian war on the mature style of Bourdieu among others.

6 There are well-known critiques by Robert Alun Jones (1983) and by Camic and Gross (2001) with which I am much in sympathy, but they are still rather inclined to focus on the history of social thought, not of sociology as a more rounded whole.

and editorial board composition and, when asked what I worked on, saying (only semi-jokingly) that I do the parts of the history of sociology that other people don't do.

Some areas of subject matter have received a disproportionate share of attention, while others have been neglected. There are sometimes practical methodological reasons for this, but I think it is often without good intellectual reason. I propose, therefore, to draw attention particularly to some areas relevant to a general history of sociology which have been relatively neglected.[7] I have not read everything, and it is impossible to demonstrate a negative, so I can only sketch a selective overview of what I know, mainly in English. I concentrate on some salient parts of our daily experience: ordinary sociologists, sociology teaching, university departments, empirical work, and the publication system. These are substantive areas, but in this context methodological and substantive aspects are intertwined; indeed, the substantive has direct methodological implications. Under each head I give an indication of what has been done, with its strengths and limitations, and briefly consider some methodological problems making these topics hard to research, and how their neglect might be remedied.

Ordinary sociologists

The most obvious gap in historical coverage is the absence from the scene of those of us, the great majority, who are neither Max Weber nor ibn Khaldun – nor even less-known luminaries such as Harriet Martineau or Morris Ginsberg. Historians long ago decided that the workers and the peasants needed to be studied as well as the kings and knights, but sociologists do not seem to have caught up with them yet when writing about their own history. The published work of the ordinary sociologist may not be impressive, but those in the crowd of workers and peasants are an essential part of the whole picture, even if as members of a group rather than as individuals, and many of them will be performing roles other than that of writing what come to be seen as important new works.

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[7] Other areas that might have been mentioned include where the boundaries of 'sociology' are drawn, the audiences addressed, and relations with such less academic bounding areas as journalism, social work, or practical politics and community activism. Work such as that of Igo (2007), using pollsters' archives to show how the American public adapted to surveys of public opinion, is a model of what can be done.

As I was starting to prepare this lecture, I saw a newspaper obituary (Pugh 2012) of an ordinary British sociologist which illustrates this general point nicely; her main contributions, over many years, were to teach and mentor students from working-class and ethnic minority backgrounds, and to take part in the feminist movement within sociology, transmitting the intellectual work of others more widely than it would otherwise have spread. All teachers, and writers of elementary textbooks, contribute towards canon formation by choosing what material to give priority. How a discipline is taught is also important because it affects not just the public stock of available research data and interpretive ideas, but also the knowledge that its graduates take out into the world and use, consciously or not, for the rest of their lives, whether or not they become professional sociologists.

The American Sociological Association's section on the history of sociology celebrated the Association's centenary by supplementing its official general history of American sociology (Calhoun (2006), with a volume of papers highlighting a range of minority experiences (Blasi 2005).[8] This sometimes gets near to a focus on documenting the ordinary careers of members of the rank and file. Of course it is harder to study them, since they do not generate as much paper as leading researchers.

Such problems of documentation were interestingly tackled in Christian Fleck's excellent recent book (translated into English as *A Transatlantic History of the Social Sciences*). He wanted to develop a collective biography of the generations of sociologists from the German-speaking countries who suffered the impact of Nazism. To do that, he created a sample of more than 800 'sociologists' – not all of them initially identified as such; they included obscure and academically unsuccessful ones who had left little written trace. The sources he used were various published lists of scholars compiled at the time by others for different purposes. An inevitable consequence of the choice to spread the net so widely is that, for many members of the sample, data are missing on some points. The list was, thus,

[8] I do not know of any other intentionally historical work of which this could be said. However, historically relevant data have sometimes been produced by learned societies acting in a quasi-trade-union role, or by official enquiries into educational issues. Thus the American Sociological Association's Department of Research on the Discipline and Profession regularly produces data on salaries and employment opportunities, and on its website entry lists public sources that others might draw on.

not unproblematic, but still much more careful and relevant to his problem than most.

Analogous sources and problems arise in other contexts. For instance, the British Sociological Association (BSA) has produced several times over the years valuable directories, in which every member was asked to provide information on their date of birth, degrees, earlier jobs held, research interests, and so on – but a lot of members did not go to the trouble of filling in the form. It is obvious that failure to fill in the form might indicate some characteristic, such as lower levels of disciplinary attachment, which would make it a sample biased in ways that limit its usefulness. Only slightly less obvious is that belonging to the BSA at all, and thus qualifying to appear in its Directory, has the same problem if one wants a sample representative of British sociologists. It is worth noting that the same limitations do not necessarily apply in all the directories produced by learned societies. The American Sociological Association (ASA) *Guide to Graduate Departments*, a separate document from its register of members, has a complete list of each department's members with their degrees,[9] although it appears to rely on the departments to provide this and is sometimes a little out of date. Even such a limited source can be used to look at patterns of academic recruitment and migration, or the changing levels of formal qualification required, though not outside the ranks of *graduate* departments.

International Sociological Association (ISA) presidents constitute a small and highly specialised sample, but one of some interest, and brief accounts of their careers, with references to relevant sources, now also appear on its web site; similarly, the ASA provides a little online information on its past presidents, vice-presidents, secretaries and executive officers.[10] But these are not 'ordinary' sociologists. (However, such groups could be slightly extended by drawing on the documents circulated as part of the electoral process, which include defeated candidates.) The online provision now of some full CVs is valuable, but there is a tendency for abbreviated versions, aimed at prospective students, to be given on university web sites, and those are likely to be removed when the subject retires or dies. I do not

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9 For Britain and other Commonwealth countries the *Commonwealth Universities Year Book* used to provide this information, but some years ago it downgraded to provide information only on senior members.

10 More cv information is also provided on all candidates in its elections.

know if there is any sampling bias in the availability of such data, but in Britain at least it is my impression that more teaching-oriented universities are less likely to provide any information about their staff.

Obituaries can be valuable sources, despite their uneven sociological merit, and they are available for some colleagues who died before the age of the internet or who were not prominent. I commend to you the fine example of one elderly colleague who, when I contacted him to ask a question about a date, told me that he could easily answer that, because he was just writing a careful account of major events in his professional life to ensure that his obituaries were correct!

Thus there are documentary sources available which are useful for some purposes, but their limitations need interpretive attention. If the group one is interested in is young enough still to be around, and one knows who they are, one can of course cover more ground by approaching them directly; that takes more time, effort and funding.

Teaching

I have not come across any really good work on the history of sociology teaching. There is a modest specialist literature on the teaching of sociology,[11] commonly intended to inform current practice; this is not usually in itself sociological, though it could be the object of sociological study with a historical perspective. The subject can be treated at a very macroscopic level, drawing on routine university publications, by discussing such patterns as the increasing prevalence of courses in criminology[12] or on qualitative methods, or can focus much more narrowly on topics such as the uses made of a particular author[13], but there is very little of such work. In this context the demography of academia has consequences worth

[11] See the ASA's journal *Teaching Sociology*. Data on citations and downloads of its articles might throw light on teaching patterns.

[12] A trend strongly in evidence recently in British undergraduate courses is the salient presence of Criminology, sometimes as a whole degree running alongside Sociology; this has become extremely popular among students (which is commonly imputed to the popularity of some TV programmes on crime and detection – and the misleading impression they give of the range of jobs available in the area), and so exemplifies the influence that student choices can have on which areas are developed.

[13] Peter Baehr (2012) has used teaching materials as one source for his work on Raymond Aron, though not out of an interest in teaching as such.

exploring. For instance, the enormous expansion of staff in the late ‘60s and early ‘70s appears to have created a marked generation effect, with more important work produced (Abbott 1999), and canonical works made such by the intellectual fashions of the time then, as university cuts came into force, a shortage of new work in the ‘80s to push those aside. The emergence of feminism obviously also had strong effects on both staff composition and the content of teaching. More could certainly be done on the structure of syllabuses, and what they show. (For instance, many introductory courses in Britain now seem to consist largely of a set of modules, each of which corresponds to the research interests of the faculty member teaching it; the pressure for this arises from the extreme stress on the importance of publication caused by the national system of evaluation of departmental research. How do their students learn, if at all, what is regarded as general sociology?)

How important textbooks are in teaching varies between national traditions, so it would be unwise to make cross-national comparisons without taking this into account, but it is not unreasonable to consider their role as defining contemporary orthodoxies. There are some discussions of textbooks, often based on personal experience and general impressions plus analysis of the content of just a few current ones; data on their sales or adoptions may be available, and throw some light on the reactions of the using public. But research on them seems most commonly to have used their contents as data on such topics as changes in canonical authors.[14] These discussions have seldom been very historical in their approach, nor are they necessarily about textbooks as such. (For an attempt to develop that for a number of countries, see ed. Platt, 2008.)

The paper that those whose main career focus is on teaching are most likely to generate themselves is written for their students, and unfortunately little of that has been systematically archived, though some may be found in the papers of individual scholars. An invaluable source for some of the older British universities is their Calendars, in hardback book form, which may list the complete set of courses taught in that year, with the name of the teacher, a short course description and a list of basic reading. I am proud to

[14] However Clarke (1976) gives a useful report of the findings of a survey of British first-year sociology courses in 1975, and there have been a number of reports on the teaching of research methods in Britain – commonly responding to anxiety about its adequacy – such as the special issue of *Sociology* devoted to the subject (Burgess and Bulmer 1981).

have been responsible for collecting quite a large body of British teaching materials, which has been archived at the London School of Economics and has been found useful by some serious scholars of the history of sociology – but a more complete record would be better.[15] Such materials show what have been regarded as the most central parts of sociology, which every student should know about, and which authors were seen as the most appropriate sources; they also show what areas of specialization were available, and give clues about how their popularity has fluctuated. Indeed, they also show how individual sociologists, some of them leading intellectuals and others the discipline's rank and file, have made sense of the world, and how that has changed over time.

This area, however, provides an example of other practical difficulties that can arise in compiling good data. Some years ago I held a grant to support the establishment of a system by which a sample of departments would routinely submit copies of their reading lists for specified courses, thus gradually building up a systematic archive. I thought this would be very easy to run, but I was wrong. Some departments agreed to take part but, despite having nominated a person to be responsible for this, did not actually send anything in. But a totally unexpected problem arose at an earlier stage: at some universities, there was no longer a head of the sociology department, or anyone else with a central role for sociology as such, in a system which had created larger schools of which sociology was only one part; I was therefore unable to identify anyone with whom such an arrangement could be made. Looking on the bright side of this, one could at least say that it did provide data on the contemporary organisation of British sociology teaching!

Departments[16]

A department is potentially an intellectual community, which may or may not have a distinct character;[17] it can also be the base for intellectual

[15] The ASA has for many years produced sets of syllabuses for particular areas of sociology; although these sets certainly make no claim to be random samples they are nonetheless potentially very informative.

[16] Research units can have some of the same characteristics; for a valuable example of work on the historical role played by research groups in France, see Vannier (2000).

[17] See Platt (1988) for a short discussion of more and less socially meaningful departmental types.

conflicts. It is located in a university setting, which has consequences for resources, what colleagues there are from other disciplines, administrative opportunities, reputation, character of students taught; that university is located in a particular community, which provides research opportunities, is a locus for service, and sometimes criticises or attacks sociological work. Camic (1995), in a paper particularly valuable because it compares different departments, has argued persuasively that the wider university may be an intellectually consequential local context. There is a strong case for work to be done on the role of a representative range of departments (whatever their local structure) in more than one country, but I do not know of any such, though as sociologists we should surely expect there to be departmental effects. However, we should also bear in mind that the 'department' has not been a universal mode of organization, and that there may be sociologists located outside departments of sociology, so that relations with other disciplines, or different drawings of the disciplinary map, are relevant factors.

I have criticised the quantity of work on the Chicago department, but at least both Bulmer's and Abbott's work on it is exemplary. Bulmer's theme is 'the rise of empirical social research in a university setting and the institutional conditions, within and outside the university, that fostered its growth' (Bulmer 1984: xiii); thus he looks not only at the department but also at its relation with other disciplines within the university, the local institutional structures for research, the nature of Chicago as a city, and the role of foundation funding. He sees the importance of the department as lying *not* in its typicality, but in its special 'ability to bring theory and research together in a fruitful way' (1984: xv), so the approach is implicitly comparative. He sees such practical matters as budgetary allocations, and space arrangements, as contributing3 towards an outcome which was truly a product of the department as a social unit. Abbott too emphasizes that, suggesting another way in which its social meaningfulness can be seen:

> 'the lineages intersected at Chicago in a way that produced something more than an accidental conjuncture... we think of the Chicago School as a social thing because it had consequences that go beyond those implicit in the historical sequences that flowed into it... The school emerged as a social entity…' (Abbott 1999: 31-2)

Michael Hill suggests (1988: v) that Chicago's power has been used to maintain the reputation of its early work, at the expense of other departments.[18] Hill and Mary-Jo Deegan have provided an unparalleled level of documentation for the Nebraska department,[19] and the Nebraska material is sufficient to demonstrate the inadequacy of versions of history which suggest that until the 1930s only Chicago could be taken seriously; similar work to retrieve the early history of other US departments – beyond Columbia and Harvard – would be well worth while, and there are a few examples.

Martindale has published a highly idiosyncratic story of the Minnesota department; his perspective was that of a member with grievances. One cannot treat him as an unbiased source, and does not know what the version of other participants might be. The story becomes increasingly one of how unsatisfactory the behaviour of colleagues became – for example, he reports the institution of parties at which one could observe '... staff members, including the chairman himself, with young women in their arms...' (Martindale 1976: 137), which would never have happened in the old days. This may seem mildly funny, but when later he mentions students reporting the trading of sexual for academic favours one is less inclined to laugh. Perhaps there is a place for the member who reports, however one-sidedly, what others would not mention.

A quite different example of the rare book-length departmental history is Blasi and Donahoe (2002) on Notre Dame. That is particularly interesting because the department is one of a special character; this is also a study of the place of sociology in Catholic universities, and the effects of Catholicism and its changes over the period on sociology. That is not merely a doctrinal issue, affecting the content of research and teaching: many students have been priests or members of religious orders, sometimes studying sociology under obedience, in relation to wider Catholic organisational purposes. The careers this creates are very different from more conventionally secular ones.

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[18] Part of that power he sees as exercised through the University of Chicago Press – which published both Abbott's and Bulmer's books.

[19] See, for instance, in addition to Hill 1988, the special supplement to *Sociological Origins* 2.2 for Nebraska sociology's centennial, and the articles by Deegan and Hertzler in *Journal of the History of Sociology* 1, 2, spring 1979.

When a significant departmental anniversary comes round, there is a relatively strong probability that someone will be commissioned to produce some kind of history;[20] that someone may or may not be the longest member of the department, or one working historically already. Whether they will find adequate sources to supplement memories is a lottery. Departments tend to accumulate routine papers until they need to move offices, and then throw them out – if that has not already been done because for daily practical purposes they became out of date.[21] There is, however, a sub-genre of heavily quantitative material, drawing on published statistics, or departmental rankings;[22] this and other similar work is a by-product of current policy pressures rather than representing historical interest, though it can be historically useful.

Departments are one of the areas where it should be relatively easy for members to obtain both formal records and reports of personal experience; it is a pity that little attempt seems to have been made to set up comparative studies of sets or samples of departments. There are some examples of short locally-written departmental histories which have not been put in general circulation, though they may appear on web sites, and if those could be directed to some central repository they would provide a useful start. In a historical ideal world, each department would make one faculty member or secretary responsible for maintaining an archival record…[23]

Empirical research

Another major area where we do not have nearly enough research is the history of empirical work. Philippe Masson's recent book (2008) on the

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20 Over the past decade this has led to the production of a number of histories of learned societies (three of them, Platt (1998, 2002, 2003), on the ISA, ISSC and BSA, by myself) as the 50th anniversaries of the social-scientific bodies founded after World War II, as part of the programme of postwar reconstruction led by UNESCO, are reached.

21 I am happy to have succeeded in encouraging both the BSA and the ISA to make it a matter of office routine to deposit some of their more recent records regularly in the archival collections of their earlier papers.

22 For example G. Gross (1970) on departmental prestige and its role in exchange of personnel, Knudsen and Vaughan (1969) on the publication records of faculty and graduates, Shichor (1970) on the placement of PhDs, Solomon and Walters (1975) and Sturgis and Clemente (1973) on the relation between prestige and productivity, Taylor (1995) on research evaluation in British departments.

23 Her task would include arranging the conduct of an oral-history leaving interview with each member as they retired or left, and negotiating the archival deposit of papers no longer needed.

history of French sociology offers an inspiring example here. It presents a history of French postwar sociology which is based on analysis of key empirical works and their background. Moreover, it does so from a stated position (with which I am in strong sympathy) that sociological knowledge is knowledge of the findings of empirical studies, without which sociology would be merely speculation, and the basic task of the sociologist in doing sociology is carrying out such studies. That position, however, does not seem to be widely shared. John Madge's *The Origins of Scientific Sociology* (1963), most of whose chapters are about single empirical studies, superficially overlaps with Masson in its aims, but was intended as a text in support of methods teaching. Thus he chose, as the projects to cover, ones he saw as making salient contributions to method; the book tells a story of landmarks in the progress in the direction of a scientific sociology, while stressing the innovation rather than the continuity shown, without offering a general history of the discipline.

Studies of empirical projects are not altogether absent from the English-language literature and, if not usually written up as history, can still be used historically;[24] the largest number of descriptive accounts, however, have been solicited by editors for collections of autobiographical stories such as those of Hammond (*Sociologists at Work*, 1964) and Deflem (*Sociologists in a Global Age*, 2007) rather than based on systematic data collection done for this purpose.

Sara Delamont (2003: 119-134) used some of the male autobiographical accounts in these to see what place they gave to women. She demonstrates how the men, probably unconsciously, described their intellectual lives as conducted in almost entirely male environments (although some women are known to have been present in the same academic settings); clearly other themes could be treated in the same way. In a larger group, of all identified such collections from the USA, authorship was very much skewed towards people who were, or became, unusually prominent – but that does not prevent some interesting secondary analysis. Despite criticism of the logic of studies where the implicit assumption is that general statements

[24] Books on individual projects are, unsurprisingly, always on controversial or otherwise very prominent ones. Excellent examples of what can be done are given by Gillespie (1991) on the Hawthorne project, and by Simonson et al. (2006) on Katz and Lazarsfeld's *Personal Influence*. In principle, of course, it could be equally instructive – if less likely to find publishers – to have similar studies of less-known, more typical books.

can be made about sociology on the basis of data which represent what is much nearer to an elite than to the average or typical sociologist, studies of elites are of course of considerable interest as such – especially when they examine the processes of creation of elites and non-elites, and compare those who became members of elites with 'ordinary' sociologists.[25] Delamont is the only author who I recall offering an explicit methodological justification for treating the available autobiographical accounts as more widely representative. Her justification is that they are in their nature 'carefully crafted social products', not simply reports of the facts, and so should be read as 'ways in which male sociologists have chosen to represent their lives as lived'. We may still ask 'which male sociologists?', but it seems to me a powerful justification – as long as that is how the stories are actually used. This draws attention to the potential more general use, at some remove from the writers' intentions, of treating autobiographical writings as examples of the kinds of stories that sociologists choose to tell about themselves – which would be a very interesting line to follow further.[26]

Less selective sources for similar data on single cases are provided by some introductions and methodological appendices to books reporting empirical data. The more fragmentary data offered in printed acknowledgments can indicate significant influences, and can also be used as an indicator of the structure of the intellectual world occupied by the author.[27] There are also a few autobiographies, which may give at least a little historical information about the author's empirical work, as do for instance those by Form (2002) and Worsley (2008), and important scholarly biographies such as Helmes-Hayes (2010) on Canadian John Porter, and Oakley (2011) on English Barbara Wootton. We may note, too, that it is of some potential interest simply to observe how much attention such accounts give to empirical work as compared with alternative topics.

Some valuable work is now being carried out at Qualidata, the section of the British national data archive which collects qualitative data, including lengthy unstructured interviews with key researchers talking about their

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25 Some discussion of related issues is concealed under the rubric of 'hegemony' or 'post-colonialism'; how does it come about that there appears to be intellectual dominance sufficiently effective to make it seem natural to treat elite ideas as sufficiently representing the huddled intellectual masses? It would be useful to develop this further on an empirical basis.

26 A fine example is set by John Burrow's fascinating book (2009) on the history of histories.

27 Interest is now developing in the reality of the roles played by the many wives whose participation in husbands' research is acknowledged, but who do not appear as joint authors.

careers. But there are equally possibilities in the survey data deposited in the main archive, which now covers several decades; it seems puzzling that this appears hardly to have been used as a resource for historical study of research methods and problem choices.[28] Maybe the only book reporting systematic data on the events of empirical research is my own *Realities of Social Research* (1976). For this a large number of participants in recent research projects, drawn from a range of different research roles and often several (from different roles in the same project) were interviewed. But that too was not carried out for historical purposes, though its results could be used as descriptive material on the period it deals with.

Not all empirical work carried out is published, but the great majority of what is in practice of disciplinary significance is,[29] so there is always the possibility of analysing the publications. However, even when the publications have been produced with serious commitment to transparency and reflexivity they are inevitably in the end stories we tell about our research – and can be treated as such, as well as treated as a story about the data

The publications system

Another area which has been relatively neglected is the publication system. Andrew Abbott (2008) has written a very interesting paper about the macro-level changing pattern of the system as a whole, in which he reaches the somewhat surprising conclusion that 'It's actually a matching system, where books and articles are trying to find publishers and journals. Sooner or later everybody gets hitched'.[30]

But not everything done does get written up and submitted, and not everything submitted is accepted at the first try. What is accepted has often, in

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[28] However, Savage (2010) has made some use of this, in a perhaps excessively imaginative way. A key part of the data he has drawn on is not the formal data or methods, but the free comments written by interviewers at the end of the lengthy schedules used for Goldthorpe et al. (1968); the interviewers' gender was not recorded in the data, but the interpretation is made in terms of increasingly masculine intellectual style as more men came into empirical research. The principal investigators on this project were men – but they were not responsible for the interviewing; I did c. 20% of the interviews, and was not the only female interviewer.

[29] There are occasional cases where work has become widely known before publication, through seminar presentations, conference papers or informal circulation of drafts. See also Merton 1980.

[30] A very brief exploration of the types of publishers responsible for a set of more-or less ethnographic books (Platt, Horgan and Crothers 2013: 58-9) illustrates some of the characteristics which may make a difference.

its final form, been influenced by referees, editors, and publishers, and their decisions are influenced by a variety of practical as well as intellectual factors, ranging from the availability of paper in wartime (Holman 2008) to the perceived state of market demand.[31] It is clear that the character of textbooks, at least in the US, has been heavily affected by publisher templates (Platt 2008), and Thompson (2005) explains some of the causes of this in the US system. Raf Vanderstraeten (2010) has shown how cross-national trends in the journal system, intersecting with national policy strategies, have had marked consequences, revealing 'the collective character of the scientific practice'.

Books are much more likely than articles in learned journals to reach a wider public, but little work has been done on the factors involved in this; however, two US collections, by Gans (1990) and Clawson (1998), make a useful start on the subject of what becomes a bestseller. (This would naturally lead into the study of audiences, connecting academia with a wider social setting.) Some excellent contributions to study of the book publishing system, by Thompson (2005) and by Powell (1985), have been made, but they have not aimed at its historical role or its specific connections with the history of sociology; for that, archival sources would probably be needed – and there are some available.[32]

A founder of the Sage publishing company claims, with some plausibility, that Sage decisions have affected the direction of development in some areas of sociology, in cooperation with sociologists whom they identified as having important new contributions to make, by commissioning books and creating new journals and series (McCune 2010). My own recent work on the history of the International Library of Sociology and Social Reconstruction, edited by Karl Mannheim from 1942-7 (and then by W. J. H. Sprott), which has drawn heavily on the publisher's archives, makes it clear that the editorial process did indeed sometimes lead to significant changes in the books submitted (Platt, forthcoming), while Mannheim's editorship led to some commissioning, purchasing of rights, and spontaneous submissions, which would have been less likely to occur with an editor lacking his wide European connections. When I looked first at the series it seemed

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31 Turner (2007: 137-142) gives a short account of the system, considerably different from that of today, of getting sociological books written and published in the US in the 1920s.

32 For Britain, there is a fine archive of publishing in the University of Reading's Special Collections.

obvious to me that its emphasis on 'reconstruction' arose from his general socio-political analysis, predating his move to England – but then I looked further at the wider historical situation in the 1940s, and it rapidly became evident that postwar reconstruction was very widely discussed in England from early in World War II, which was no doubt part of the reason why his publishers, Routledge and Kegan Paul, set up the series and recruited him to run it. There is a warning here about the risk of imputing too much to the intellectual influence of important sociologists.

Journal content covers a long period, so historical change in it is easy to examine, and it is easy to access and analyse; this encourages work on it, although the content on its own provides little background information. Once the SSCI made citation studies so easy there were many of them, but there are obvious problems about how citations should be interpreted,[33] as well as the sampling problems caused by SSCI's skew to US and English-language journals, plus its policy of including only journals deemed of core importance to the field.[34] However, the selection process is such that some claim can be made to those selected being indeed those in some sense most representative of the field, or its moving frontier.

In this area too there has been a marked focus on the most prominent and general journals. It is obvious that more specialised journals often have a different character, sometimes one deliberately created as such. Some journals' remit is to have a specific ideological or intellectual character, and smaller ones may in practice be primarily associated with a clique or school of thought, whether or not they have high sociological standards; journals do not all have the same relationship to their constituency. There is plenty of room here for historical work on the careers of individual journals, and on the structure of the system of journals.

Inferences about editorial bias which seem plausible are often made from observation of journal content but, as editors have in reply frequently pointed out, the content of the papers in the journal depends not only on editorial policy, but also on what papers are submitted to it. Unfortunately editorial confidentiality means that there is no access for outsiders to the

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[33] Lindsey (1978: 131) suggests that citations convey more about invisible colleges than they do about the scientific quality of the papers cited.

[34] It is possible to do a citation study oneself by hand, without an inordinate amount of work, as long as the journal in question has a strict policy on how references to sources are given, and for pre-Social Science Citation Index articles this is the only way it can be done.

internal processes of journal decision-making, so most writers have to rely on general statements in editorial reports, personal experience, and anecdotes from friends. Abbott (1999), however, was able to write about the AJS from much closer to the editorial chair, and provides a footnote bibliography (p. 184) of the small amount of other work on editorial behaviour.

Journal content also, of course, depends on the demographic composition of the constituency whose members might submit papers to it, which is less often borne in mind. When, for instance, the proportion of women among academic sociologists is taken into account, it can be seen in the British case that, despite the low total number of women's articles, they have still sometimes been if anything *over*- rather than under-represented, as had often been assumed. (Platt 2007). (Similar findings would be likely in relation to the proportion of authors coming from different national or linguistic groups

The patterns over time of article topics, methods and styles of argumentation can be and have been studied, and this throws considerable light on what was regarded as appropriate at their time. But it is generally long-established elite journals that have been used, and treated as representative of sociological thought or research – indeed, I confess that I have done this myself – so the sampling problem still remains unless that is taken into account in the conclusions drawn. Journals started more recently may need to be treated as a group for analysis of the emerging patterns until they have a longer backfile to avoid excessive influence from such temporary factors as a special issue on one topic.

Access to lists of journals' editorial board members is easy, but tells one nothing about how they work in practice; little has been done on that. Boards such as that of the *British Journal of Sociology* in 1960, with five members all at the London School of Economics, must work differently from that of the *American Journal of Sociology* (AJS) with 64 members, certainly not all from the Chicagofaculty, in 2000. There is some potential interest in the composition of boards, which can be associated with the discipline's stratification, though there have been few publications on it. When I started to look at them from that point of view, I discovered that department-based journals commonly treat the complete membership of the department as members of the editorial board. This can mean that some long-serving members have, at least in principle, exercised extraordinary

power over journal decisions; for instance, Fred Strodtbeck and Donald Bogue were both on the board of the AJS from 1960 until at least 2005. A novel method of claiming reflected prestige by extending the active career was put into practice by *Cahiers Internationaux de Sociologie*, whose listings retained Morris Ginsberg and Ernest Burgess on its board for some years after their deaths.[35] But the most complete details of the names of board members and referees do not tell how the system works to accept some papers and reject others. The necessary constraints of confidentiality make this an area hard to deal with at a level beyond that of gossip, speculation and paranoia. One might hope for a rule similar to those for the release of British government papers, with everything sent to archives after 30 years.

What is to be done?

A range of criticisms of the biases and omissions in the literature on historical topics is suggested above, but so far inadequate attention has been paid to the practical factors which encourage these; we turn now to consider them briefly.

The ideal sources for historical work are commonly archival, and appropriate archives have been very unevenly available. I was lucky enough to be able to get from Robert Merton, when he was alive, copies of some unpublished historical documents valuable to my research. I found his filing system, covering much of a long career, deeply impressive. Anyone who can, in around 1990, walk straight to a filing cabinet in his office and immediately find a copy of an unpublished report that he wrote in the 1930s, has a commitment fundamental to historical work, and deserves all our respect.

If more of us kept records like that, and placed them in the public domain, historical work would be easier. (Of course if more of us had the same office, of that size, for many years, it would be easier to save our papers and

[35] Such interesting details become much harder to find once the journal is placed online, your university library ceases to find room for paper copies of the complete journal, and the assumption is made by the system of online access employed that only individual articles are what need to be indexed and available. Special acknowledgment should be given to JSTOR for its categories of ‘front matter’ and ‘back matter’, so that one can still see online what is in effect the whole journal.

keep them in good order!) Merton's papers are now in Columbia's archives, as they should be. But university libraries' 'special collections' tend to show interest only in the most distinguished researchers, and not in the teaching done even by them. We need to persuade librarians to extend their interests, and to support them by doing what we can to provide the material they need. Once an archival deposit has been made, my experience is that librarians are willing, even eager, to accept additions to it which will improve its coverage. On that basis I have, for instance, given a run of newsletters from the ISA's Research Committee on the History of Sociology to the ISA archive at the International Institute of Social History in Amsterdam. It is possible that many more of us could do the equivalent, and if we did our data resources would be noticeably improved. But donating copies of semi-structured interviews with sociologists, conducted many years ago, to suitable homes has been more difficult because of the ethical and legal constraints which imply that the subjects – many of them now dead – should give their consent.

However, some kinds of historical work become much easier as time goes by. The practical attractions of data sources such as cohort studies lodged in data archives, Sociofile[36] (with much better coverage than the SSCI), governmental records, and texts such as newspapers which are routinely available online and whose changes over time can be followed there, are considerable. As historians we can both write about this pattern of methodological change and participate in it, as for instance Eleanor Townsley (2006) has done in a study of the diffusion of the concept of 'public sociology' in publications representing three different public spheres, and Clive Seale (2008) has done in analysing the keywords given in two journals of medical sociology to reveal differences between US and British work.

As more and more reaches the internet, sample sizes, in particular, plus some coding, may cease to be problematic.

Stuart Dodd dreamed in the 1950s of a 'pansample':

> '... a study of a sample of persons each of whom is observed in hundreds or even thousands of ways... a representative panel of persons must be recruited to be interviewed and tested, each for several hundred hours...

[36] On Sociofile and its uses, see Crothers (2011).

> towards cumulating eventually every measurable index known to any social science on one and the same set of persons... pan-sampling would make exactly known all *the conditions under which any generalization held good*... The conditions for each variable are simply all the other variables that show correlation indices with it...' (Dodd 1948: 310, 311).[37]

An idea which was then merely a crazy dream now seems to come ever nearer, and indeed is seen as a threat to us in our daily lives – though Amazon is making a serious mistake when it assumes that my *own* tastes are reflected in my nephew's avant-garde preferences for the birthday presents that I buy him.

However, such data can have serious limitations alongside their advantages. What is the effect of getting data collected by a machine? Someone else may have done the coding, and the chances that they had your problem in mind are very low. What do you do if it does not contain a variable that you want? There is a temptation to improvise. The price paid for the decision to apply sophisticated quantitative methods to second-hand data can be unconvincing operational definitions as well as gaps.

I have stressed the limitations of the resources available on the history of some topics, and the neglect of important social aspects of the discipline, but the situation is not as bad as that may suggest. Any publication contributes to the history of its topic, even if its author does not treat it as such. There are many pieces of work not intended as historical, and which have not been incorporated into our understandings of history, that may be usefully treated as sources of historical data about a particular period. Sometimes works from several authors can be placed in a historical sequence; that approach can be applied, for instance, to individual biographies, research projects, canon composition[38] and the ranges of specialisms represented in course options and learned society sections;[39] recycling in this way is a viable strategy. Conference programmes, learned society newsletters and handbooks, the acknowledgments made in book prefaces, even job advertisements, are also valuable, and if one uses multiple sources with different limitations one will be able to build a richer picture.

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37 For more on Dodd and his setting, see Platt (1996).
38 Cf. Harley (2008).
39 For examples of this, see Ennis (1992), Platt (2010a, 2010b).

The message is, thus, not that we should give up using data with limitations, but that our work will be better if we draw on a wide range of sources, but take their limitations into account seriously in the conclusions we reach. I conclude, therefore, with a summary of my positive suggestions about things that we could do to improve the situation. For the time being, we can look for ways in which to use the existing resources to fill gaps in the record, searching for multiple methods and sources so that they may supplement each other's weaknesses, and taking advantage of opportunities to recycle older work to give historical and comparative depth. For the future, we can take steps to improve the resources available for historical work, by collecting and saving materials such as course syllabuses, conference programmes, obituaries and festschrifts, membership lists, documents from local anniversary celebrations, …, and donating these, as well as our own working papers, to archives. That can be done as an individual, but it would be highly desirable also to encourage departments and associations of which we are members to do the same, making regular archival deposits of newsletters, routinely created teaching materials, and administrative materials such as the minutes of meetings

More important than such necessary practicalities is the substantive argument: there are important and interesting topics out there, neglected so far in our versions of our history, just waiting for attention. By no means all of them have been mentioned above, and they do not all have practical problems of data resources. Forward!

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Laudatio Randall Lesaffer

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On the 10th of April of this year 2013 it will be exactly 430 years ago that one of the fathers of the law of nations, in more modern terminology international law, was born in Delft, The Netherlands. Of course everyone realises that I refer to Hugo Grotius or with his proper family name Hugo De Groot. During his lifetime he was strongly influenced by three forces: humanism, politics and religion. At the early age of eleven he became a student of Leyden University which was founded in 1575 by William of Orange. Leyden being the university with which this faculty of law at present has a long standing relation evidenced by yearly visits of colleagues delivering the so called Thorbecke lectures and also by a student pleading competition, which, by the way was now for four years in a row won by the students from Ghent. Just as our lecturer of today, Grotius' major work deals with war. In his "De jure belli ac pacis" he opposed the idea of isolationism by claiming that states are not allowed to disinterest themselves from the affairs of others, allowing – be it very cautiously, a right to intervene under certain conditions in armed conflicts. This doctrine of "bellum justum", the just war, was elaborated by Saint Thomas Aquinas and extensively discussed by Vitoria, Suarez and Alberico Gentili. The concept of just war is still to be found in international law, surely not in the same wordings, but the use of violence as regulated in the Charter of the United Nations bears certainly strong resemblances.

So far for the intro to the subject of the present Sarton lecture: "War as Sanction". In general violence in international law is in principle not allowed under art. 2 § 4 of the UN Charter with respect to the territorial integrity and the political independence of a State. Nevertheless chapter

VII of the Charter provides the possibility of using force, military force, in cases of aggression and where peace and international security are under threat of being breached or have been broken. So the use of (military) violence in international law can be seen as simple use of force – principally not allowed – or as enforcement which, within the contours of the Charter and the policy of the Security Council, remains acceptable. It is clear – at least to my mind – that the concept of war as sanction has strong historical antecedents culminating in the present day views as elaborated in the UN Charter and within the Security Council.

I could not have imagined a better legal scholar to take on such a subject of legal history, in particular international legal history, than Prof. dr. Randall Lesaffer. It might be a bit presumptuous to say that Randall Lesaffer and Hugo Grotius both strongly influenced international law. Nevertheless there are similarities between the two. Just as Grotius Prof. Lesaffer shows an interest in humanism and politics as is evidenced by his teaching and by his extra academic activities. Although he did not enter the university at the age of eleven, he graduated in law and in history after having studied both in Ghent and in Leuven. In 1998 he obtained his Ph D from Leuven with a study on peace and alliance treaties.

His teaching as a full professor at Tilburg Law School focuses on the history and theory of international law and on European Imperialism in the 16th to 19th centuries whilst at the Catholic University of Leuven he enlightens students in European Legal History and history of international law. Prof. Lesaffer has a very impressive research output. Let me just mention his writings on 'Alberico Gentili's *ius post bellum* and Early Modern Peace Treaties', a major book on *European Legal History: A Cultural and Political Perspective*, published by Cambridge University Press in 2009 and his contribution in the British Yearbook of International Law on 'The Grotian Tradition Revisited: Change and Continuity in the History of International Law' (2002). You see Grotius is not far!

Prof. Lesaffer is not only an outstanding legal scholar and academic but he also contributed to the development of his university's general policy by serving as a dean of the law school for four years until the end of 2012. He is not the kind of academic who resemblances the ascetic kind. He has been active outside academia for instance in politics in his home town of Bruges. There are even certain similarities with myself – not in the field of legal

history of course, which I nevertheless like very much, but as a mere amateur, but in the maritime sector. Indeed, Prof. Lesaffer serves for a long time as a vice-chairman of the board of administrators of the Port authority of Zeebrugge. I must admit however that this was not the main reason why I proposed to the Ghent faculty of law to accept Randall Lesaffer as the Sarton lecturer for this year. His outstanding career in Belgium, the Netherlands and indeed in Europe and beyond as a legal historian of international law has for a long time convinced me that this is the right person on the right place at this moment.

Finally I would like to conclude this laudation by expressing my thanks to the Sarton Committee for providing us with the opportunity to invite such a distinguished scholar amongst us. Furthermore I would like to thank my colleagues of the department of jurisprudence and legal history for the support they have given to my initial proposal of introducing into the Sarton lectures the subject of history of international law which in this faculty has always been held in very high esteem from the teachings of my predecessor Prof. Elie Van Bogaert to the research of youngsters the like of Frederic Dhondt today.

Too much history

From war as sanction to sanctioning of war

Randall Lesaffer

1. Introduction

The enshrinement of the prohibition for States to use force in Article 2(4) of the Charter of the United Nations of 26 June 1945 is mankind's most ambitious attempt, to date, to ban war and establish a *jus contra bellum.* The UN Charter stands at the end of an evolution by which the right of States to use force was progressively limited. This evolution started at the turn of the 20th century with the two Hague Peace Conferences (1899/1907). Historians of international law and international lawyers alike have written about the rise of the *jus contra bellum* as one of the key changes that revolutionised international law and divided the 'classical international law' of the 19th century from the 'modern international law' of the 20th century.[1] They have caught this revolution in terms of a stark contradiction between the licence of the 19th century for States to resort to force and the almost complete, albeit far from effective, prohibition of force in the Charter era. Under this historical narrative, the *jus ad bellum* – the laws about the conditions under which war is legal – of the 19th century was reduced to the mere acceptance that the decision to resort to war fell within the preserve of State sovereignty and was a matter of policy rather than law. The *jus ad bellum* shrunk from a 'law to war' into a 'right to war.' Some

[1] I Brownlie, *International Law and the Use of Force by States* (Clarendon Oxford 1963) 19-111; Y Dinstein, *War, Aggression and Self-Defence* (3rd edn CUP Cambridge 2001) 71-85; WG Grewe, *The Epochs of International Law* (De Gruyter Berlin/New York 2000) 575-8; MN Shaw, *International Law* (6th edn CUP Cambridge 2008) 1119-22.

scholars have added that the revolution of use of force law after World War I reached back beyond the 19th century towards the tradition of the just war of the late Middle Ages.[2]

This narrative has historical merit. It is sustained by the writings of 19th and early 20th century international lawyers.[3] But, we should be careful not to turn a blind eye to the elements of continuity in the history of use of force law. Two important nuances need to be made. First, although ultimately the sovereign States of the 19th century had a right to resort to force, the *jus ad bellum* had not been emptied of all meaning. The State practice of the 19th century showed that States still justified or condemned forcible actions under a widely accepted, albeit evolving, framework of reference that partook in the tradition of just war. Doctrinal writers may indeed have relayed these justifications to the domain of morals and politics, but facts show that a customary use of force law that had not shed the influences of the just war doctrine persisted. This sheds new light on the so-called return of the just war of the 20th century. Second, the gradual rise of the *jus contra bellum* did not occur in a context where there was hardly any material use of force law. This rise occurred in constant dialogue with the existing customary use of force law. In that sense, the *jus contra bellum* of the Charter did not mark a clear and utter break with the old *jus ad bellum*.

2. The Just war in the Middle Ages (12th-15th centuries)

Throughout the narrative of the intellectual history of war in the West runs the scarlet thread of the just war tradition. Throughout the ages, ideas about the justification of war have been changed, twisted and turned around a stable nucleus of ideas. The central core of that tradition is that war is a reaction to an injustice committed by the enemy. The just war tradition roots back to the Roman *jus fetiale,* the stoic concept of natural law as evidenced in the work of the Roman orator Marcus Tullius Cicero (106-43

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2 E.g. C van Vollenhoven, *The Three Stages in the Evolution of the Law of Nations* (Nijhoff The Hague 1919). The works of James Brown Scott and Arthur Vanderpol were instrumental in reviving the interest of international lawyers in scholastic just war doctrine. CR Rossi, *Broken Chain of Being: James Brown Scott and the Origins of Modern International Law* (Kluwer The Hague/London/Boston 1998); Arthur Vanderpol, *Le droit de la guerre d'après les théologiens et les canonistes du moyen-âge* (Tralin/Goemaere Paris/Brussels 1911).

3 Amos Hershey, *The International Law and Diplomacy of the Russo-Japanese War* (Macmillan New York 1906) 67.

BC)[4] and early Christian theology, in particular the writings of Saint Augustine (354-430).[5] Augustine's thought found its way into the *Decretum Gratiani* (c. 1140), the basic authoritative text of late-medieval canon law. The just war doctrine came to its full articulation in the writings of the theologians and canon lawyers of the 12th to 14th centuries. The Dominican theologian Saint Thomas Aquinas (1225-1274) moulded it into its classical form.

Aquinas distinguished three conditions for a war to be just: *auctoritas, causa justa* and *recta intentio. Auctoritas* meant that a war could only be waged by or under the authority of a sovereign. Most late-medieval writers did not list possible just causes, but confined themselves to a broad definition. In general, it boiled down to the view that a just war was a reaction against a prior or threatening injury by the enemy – 'ulcisci iniuriam' in the words of Augustine.[6] It was a form of law enforcement (*executio juris*), of forcible self-help in the absence of a superior authority to turn to.

In his *De jure belli ac pacis* (1625), the Dutch humanist Hugo Grotius (1583-1645) discerned three just causes: defence, the re-vindication of property or rights and the inflicting of punishment.[7] The final condition, *recta intentio,* implied that the war needed to be waged with the intention to do justice, and ultimately, to attain a just peace.[8]

In relation to the classical just war doctrine, three important remarks must be made. First, war was discriminatory. Except for the rare case when both sides had to be considered unjust, a just war was a war between a just and an unjust side. In a consequential application of the doctrine, the *jus ad bellum* spilled into both the *jus in bello* – the laws of war properly speaking, i.e. the laws regulating warfare itself – as well as the *jus post bellum* – the laws about the ending of war. Only one side had a right to be in the war and could thus benefit from the so-called *jura belli*¸ the rights of war such as the right to use violence, to take loot, to hold enemy persons to ransom or

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4 Cicero, *De officiis* 1.11.33-1.13.41; idem, *De re publica* 3.33.

5 RA Markus, 'Saint Augustine's Views of the "Just War"' in WJ Sheils (ed) *The Church and War* (Blackwell Oxford 1983) 1-13; SC Neff, *War and the Law of Nations. A General History* (CUP Cambridge 2005) 29-38 and 45-47; A Watson, *International Law in Archaic Rome. War and Religion* (John Hopkins UP Baltimore/London 1993).

6 Augustine, *Quaestionum in Heptateuchum liber sextus (in Iesum Nave)*, X, *PL*, 354, coll. 780-1.

7 Hugo Grotius, *De jure belli ac pacis libri tres* (1625) in JB Scott (ed) *Classics of International Law* (Clarendon Oxford 1925) 2.1.2.

8 Thomas Aquinas, *Summa Theologiae* IIaIIae 40.1.

make conquests. The soldiers on the unjust side only retained their natural right of self-defence in case of personal attack. A just peace stood at the end of a just war. This implied that the claim over which the war had been fought had to be attributed to the just belligerent and that he would receive compensation for all the damages suffered because of the war. The just side had a right to punish the enemy as a means to guarantee against new wrongs. In the words of the neo-scholastic theologian Francisco de Vitoria (c. 1480-1546), the victor of a war had to 'think of himself as a judge, sitting in judgment between two commonwealths, one the injured party and the other the offender.'[9] This, however, did not mean that the writers of the just war doctrine equated victory to justice. Just war was not an ordeal; nothing guaranteed the victory of the just side. It could only be deplored that its defeat would lead to injustice.

Second, the scope of the just war doctrine was theological because it was chiefly the product of theologians and canon lawyers. The just war doctrine was the answer to the question of what partaking in war did to one's eternal soul. Nevertheless, the just war doctrine was also picked up by late-medieval Roman lawyers and those writers who discussed the actual practices of war under the code of chivalry.[10] To these authors, the matter at hand was the actual effects of the justice of war in the here and now, in other words, the legal effects of war. At this level, some of the main civilians struggled with the discriminatory application of the *jura belli*, which was not sustainable in practice. In this context, they made reference to the concept of *postliminium* from classical Roman law. According to the Digest, *postliminium* – the right of a prisoner of war to be restored to all his prior rights and property after his liberation – applied between *hostes* – enemies in a properly authorised war between independent peoples.[11] On this basis, Bartolus of Sassoferrato (1314-1357) acknowledged the indiscriminate application of the *jura belli* to both sides in a war between sover-

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9 Francisco de Vitoria*, Relectio de Jure Belli*, *in fine* in Anthony Pagden (ed) *Francisco de Vitoria, Political Writings* (ed Anthony Pagden, Cambridge Texts in the History of Political Thought) (CUP Cambridge 1991).

10 E.g. Honoré de Bonet, *L'arbre des batailles* (c. 1386), GW Coopland (transl) *The Tree of Battles of Honoré de Bonet* (Liverpool UP Liverpool 1949), whose work was largely based on that of the commentator Johannes da Legnano (died 1383), *De bello, de represaliis et de duello* in JB Scott (ed) *Classics of International Law* (Carnegie Oxford 1917). See MH Keen, *The Laws of War in the Middle Ages* (Routledge/Kegan Paul London 1965).

11 D. 49.15.5.1, in combination with D. 49.15.24.

eigns. The later commentators Angelus de Ubaldis (1327-1407) and Raphael Fulgosius (1367-1427) as well as the humanist jurist Andrea Alciato (1492-1550) would take this a step further by accepting that a war could be just on both sides, so that all belligerents enjoyed equal rights during the war. This concession, however, only pertained to its effects on earth; it left the effects of the justice of war at the Last Judgment untouched.[12]

Third, the religious scope of the theory, combined with its law enforcement character, accounted for the fact that war was conceived of as a limited forcible action between a lessor and a lessee and their respective adherents to enforce a claim, rather than an all-out war. War was not thought of as a state of war in which all normal, peaceful relations between the belligerents and their people were broken, but as a set of concrete hostile actions.[13]

3. Just and legal war in the Early Modern Age (16th-18th centuries)

Although the just war doctrine could not mould the practices of war and peace making to its farthest consequences, it did have a real impact in late-medieval Europe. Wars were often justified in terms which were derived from the just war doctrine. The 'universal' authority of canon law and ecclesiastical courts, and in particular the papal court, provided a mechanism for discriminating between just and unjust belligerents and sanctioning the latter.

During the first half of the 16th century, the context in which the old *jus ad bellum* operated radically changed. The Reformation caused the collapse of the religious unity of the Latin West and struck a mortal blow at the main pillars of authority – canon law and ecclesiastical jurisdiction – upon which the bridge between the doctrine and reality of just war rested. The discoveries and conquests in the New World necessitated a frame of reference for

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12 Bartolus, *Digestum novum in tertium tomum Pandectarum commentaria Secunda super Digesto novo* (Basel 1592) ad. D. 49.15.24; R Fulgosius, *In Pandectas* (Lyon 1554) ad. D. 1.1.5; A Alciato, *Commentarii in Pandectas* (Lyon 1550) ad D. 1.1.5 and idem, *Paradoxorum juris civilis* 2.21, in *Opera Omnia* (4 vols., Basel 1549) vol. 3.

13 On the just war in the Middle Ages: P Haggenmacher, *Grotius et la doctrine de la guerre juste* (Presses Universitaires de France Paris 1983) 51-444; Neff, *War and the Law of Nations*, 45-82; FH Russell, *The Just War in the Middle Ages* (CUP Cambridge 1975).

the laws of war other than those of Christian theology, canon and Roman law. The rise of great dynastic power complexes such as Habsburg Spain, Valois France and Tudor England, out of which the modern sovereign States grew as well as the Military Revolution and the massification of armies, navies and warfare it brought, denied the notion of war as a limited law enforcement action. All this wrought important changes to the *jus ad bellum*, without however signalling the utter demise of the just war doctrine.

The vast majority of the jurists and theologians of the 16th to 18th centuries who plied themselves to the laws of war and peace sustained the general outline of the just war doctrine, time and again repeating the three conditions of Aquinas in one form or another. But building on the work of their medieval predecessors, they made some all-important amendments that changed the *jus ad bellum* in its core.

First, early-modern writers did away with the discriminatory character of war in relation to actual warfare (*jus in bello*) and peace making *(just post bellum*). Vitoria, while sustaining the objective impossibility of a war to be just on both sides, acknowledged that each side could be excused, on the basis of an invincible error, from believing in good faith that he was waging a just war. Thus, he introduced the concept of *bellum justum ex utraque parte* (war just on both sides) at the subjective level. For Vitoria, the implication of this was that the unjust party would not condemn his eternal soul. But through this, he also opened the door to a non-discriminatory conception of war in which both sides had the right to wage war and enjoy the benefits of the laws of war in the here and now.[14]

The civil lawyers Baltasar de Ayala (1548-1584) and Alberico Gentili (1552-1608) took a more radical step. Building on the tradition of Roman law, they focused on the effects of war in earthly life rather than those in eternal life. They articulated the concept of legal war, or war in due form as it was later known.[15] So long as war was waged by a sovereign and was formally declared, it was legal. This did not signify a rejection of the just

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14 Vitoria, *De jure belli* 2.4-5.

15 Hugo Grotius used the term 'bellum solemne' (formal war) in his *De jure belli ac pacis libri tres* 1.3.3.4-5. Emer de Vattel preferred the terms 'guerre légitime' (legitimate war) and 'guerre dans les formes' (war in due form); Emer de Vattel, *Le Droit des gens, ou Principes de la loi naturelle appliqués à la conduit et aux affaires des Nations et des Souverains* (1758) in JB Scott (ed) *Classics of International Law* (Carnegie Washington 1916) 3.4.66.

war doctrine, but neutralised its effect on the *jus in bello* and the *just post bellum.* Gentili, following in the footsteps of – above all – Fulgosius, held that because human fallibility made it impossible in most cases to establish who was in the right, it had to be accepted that both sides had a right to wage war. As such, the laws of war were to be applied indiscriminately to both sides. Gentili brought this new conception of war to its full complement in his *just post bellum*. Since one could not be certain about the justice of war and since victory did not indicate justice, the outcome of war itself – or in the absence of clear victory, of the peace negotiations – determined the attribution of the claims over which the war was waged. This radically changed the conception of war from a law enforcement action (*executio juris*) into a substitute for a legal trial: a form of dispute settlement.[16] Whereas under the just war doctrine, the attribution of property and all kinds of claim had to be vested in the justice of a cause preceding the war, under the doctrine of legal war it was vested in the outcome of war itself. The *jus post bellum* became a *jus victoriae.*[17]

Grotius synthesised the theological-canonist tradition of just war with the civilian tradition of legal war. In *De jure belli ac pacis*, Grotius sustained both conceptions of war, just war (*bellum justum*) and legal war (*bellum solemne*). He relayed the question of the justice of war to the domain of natural law, which applied in conscience (*in foro interno*), while the question of the legality of war fell within the domain of the positive, human law of nations, which was externally enforceable (*in foro externo*).[18] After Grotius, this inherently dualistic scheme became part and parcel of mainstream thought on the laws of war and peace. Christian Wolff (1679-1754) and Emer de Vattel (1714-1767) still adhered to it.[19] Modern minds

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16 Gentili likened a war to a duel as well as a civil trial. Alberico Gentili, *De jure belli libri tres* (1598) in JB Scott (ed) *Classics of International Law* (Clarendon Oxford 1933) 1.2.18 and 1.6.47-52.

17 Balthasar de Ayala, *De Jure et Officiis Bellicis et Disciplina Militaris* (1584) in JB Scott (ed) *Classics of International Law* (Clarendon Oxford 1944) 1.2.34; Gentili, *De jure belli* 1.2 and 1.6. Randall Lesaffer, 'Alberico Gentili's *ius post bellum* and Early Modern Peace Treaties' in Benedict Kingsbury and Benjamin Straumann (eds) *The Roman Foundations of the Law of Nations. Alberico Gentili and the Justice of Empire* (OUP Oxford 2010) 210-40. See on the conception of war as a form of dispute settlement, JQ Whitman, *The Verdict of Battle. The Law of Victory and the Making of Modern War* (Harvard UP Cambridge, Mass./London 2012).

18 Grotius, *De jure belli ac pacis* 1.3.4.1, 3.3.4-5 and 3.3.12-13; Haggenmacher, *Grotius et la doctrine de la guerre juste*, 457-62.

19 Christian Wolff, *Jus gentium methodo scientifica pertractatum* (1749) in JB Scott (ed) *Classics of International Law* (Clarendon Oxford 1934) 6.617 and 6.633-5, 7.777-8 and 7.888; Vattel, *Le Droit des gens* 3.3.24-28 ad 3.3.40.

have often described the Grotian move in terms of side-lining the just war doctrine. This was not the case for the deeply religious men and women of the Early Modern Age. In fact, the Grotian move hardly changed anything in the material terms of the law. It only put the long existing difference between theologians and canon lawyers on one side and civilians on the other side into a single system of thought. The question of justice of war remained as ever a matter of eternal salvation or damnation. Natural law may not have been enforceable in the courts of man, but it was enforceable in the court of God. It was only when religion started to recede to the background – which happened at the earliest from the mid-18th century onwards – that the just war doctrine lost its primary position in the minds.

Second, the concept of war as a state, rather than a string of separate belligerent actions, was introduced. Whereas under the medieval just war doctrine, war had been conceived of as a limited law enforcement action by a prince and his adherents against the perpetrator of the injury which had caused the war, in Early Modern Europe, war became clashes between sovereign States in their entirety. By the late 16th century, it had become customary for belligerents, at the inception of war, to take a series of measures in relation to trade, enemy property and subjects, which fundamentally disrupted normal peacetime relations. Thus, war became an encompassing state of affairs, which differed from the state of peace.[20] Whereas Gentili and others had already operated this notion, Grotius was the first to expressly define war as a state of affairs.[21] The concept of 'state of war' had two implications. Firstly, it related to the legal effects of war. The concept served to distinguish two spheres of applicable laws. To the state of peace, the normal laws of peace (*jus in pace*) applied; to the state of war the laws of war (*jus in bello*) applied for belligerents, while for third parties the laws of neutrality applied.[22] Secondly, the doctrine of state of war allowed taking away all brakes on the expansion of war. Under the just war doctrine, hostile action had to be limited to the perpetrator and those who personally supported his injustices, including his unjustified resistance.

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20 Lesaffer, 'Gentili's *jus post bellum*', 210-4.
21 Grotius, *De jure belli ac pacis* 1.2.1.1.
22 SC Neff, *The Rights and Duties of Neutrals. A General History* (Manchester UP Manchester 2000).

Under the new doctrine, war constituted an all-out struggle between two sovereigns and their subjects. Whereas under the old doctrine, violence was only allowed against the guilty and the taking of property was limited to the object of contention and compensation for damages, now all enemy subjects and property became liable for attack or seizure in the service of victory.[23]

More than just a feature of doctrine, the dualism of just and legal war mirrored the realities of early-modern State practice. On the one hand, State practice operated the conception of legal war in relation to its effects on the waging of war itself (*jus in bello*) as well as the making of peace (*jus post bellum*). The very rare cases in which the indiscriminate application of the laws of war was challenged all related to rebellion, whereby one party refused to recognise that the other had *auctoritas*. This was, however, a consequential application of the doctrine of legal war. The concept of legal war also dominated the way wars were ended. In Early Modern Europe, almost all wars were ended by peace treaties. With a single exception, no peace treaty of the 15th to 18th century among European sovereigns included an attribution of justice or guilt for the war.[24] Concessions were not based on the justice of the causes of war, but on its outcome (*jus victoriae*), or, in the vast majority of cases where there was no clear victor, on the outcome of the peace negotiations. Nothing illustrated the rejection of the just war doctrine in peace treaties better than the so-called amnesty clauses. From the late 15th to late 18th century, close to all peace treaties included such a clause. Under this provision, the former belligerents denounced all rights for themselves and their subjects or adherents to bring forward any kind of claim for the harm or damages that had been inflicted upon them by the enemy because of the war, thus swiping away all questions of justice of the war and of legality of war time actions. After 1800,

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23 Neff, *War and the Law of Nations,* 100-2.

24 The Preamble to the Peace Treaty of Madrid of 14 January 1526 between the Emperor Charles V and Francis I of France, who was held in captivity by Charles, stated that Francis had been taken captive in a just war. P Mariño (ed) *Tratados internationales de España. Periode de la preponderencia española* (Consejo Superior de Investigaciones Cientificas Madrid 1986) vol. 3.3, 128. For a list and the text of early-modern peace treaties, see the 'Publikationsportal Europäische Friedensverträge' of the Institut für Europäische Geschichte in Mainz at http://www.ieg-mainz.de/likecms/likecms.php?site=site%2Ehtm&nav=209iteid=312.

these clauses disappeared from most peace treaties, but by then it was generally accepted in doctrine that they were silently implied.[25]

On the other hand, the just war doctrine was still very much alive with regards the practice of the justification of war (*jus ad bellum*). In most cases, the princes and republics of Early Modern Europe went through a lot of trouble to justify their decision to resort to war. Formal declarations of war were often substantial texts in which the reasons for the war were explained in detail; these, as well as the less formal manifestos of war, were widely distributed. In these declarations and manifestos, the language of just war was operated.[26]

One could say that when the sovereigns of Early Modern Europe went to war, they went to a just war; but when they waged or ended war, they waged or ended a legal war. To the modern mind, this might all seem to be a grand exercise in propaganda and duplicity, but, at least until deep into the 18th century, there was more to the resilience of the just war doctrine. There was no inherent contradiction between just and legal war. The two concepts played out on different fields. Sovereigns might have been legally safe from sanction for an unjust war by their peers or any human power, but they were not safe from divine sanction. To the vast majority of the princes of Early Modern Europe, this counted for much. It was a widespread practice for princes to consult a council of specialists, on which regularly theologians took a seat, before the decision to go to war was taken. It was only late into the 18th century that the religious dimension began to recede and the justifications for war became commonly criticised for being mere propaganda or pretext. A now secularised natural law lost its teeth and its

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25 R Lesaffer, 'Peace Treaties and the Formation of International Law', in B Fassbender and A Peters (eds) *The Oxford Handbook of the History of International Law* (OUP Oxford 2012) 71-94. For a good example of an amnesty clause: Peace of Utrecht of 13 July 1713 between France and Great Britain, Art. 3 in C Parry (ed), *The Consolidated Treaty Series* (Oceana Dobbs Ferry 1969) vol. 27, 475-501 (hereinafter CTS).

26 E.g. justification by Gustav Adolph of Sweden (1611-1632) for his invasion in the Holy Roman Empire in 1630; the justifications forwarded in the French declaration and manifesto of war of 1635 and the Spanish counterdeclarations, see R Lesaffer, 'Defensive Warfare, Prevention and Hegemony. The Justifications for the Franco-Spanish War of 1635' (2006) 8 Journal of the History of International Law 91-123 and 141-179; P Piirimäe, 'Just war in theory and practice. The legitimation of Swedish intervention in the Thirty Years War' (2002) 45 Historical Journal 499-523. See for more examples from the 17th and 18th centuries B Klesmann, *Bellum solemne. Formen und Funktionen europäischer Kriegserklärungen des 17. Jahrhunderts* (Zabern Mainz 2007); S Whatley (ed) *A General Collection of Treatys, Declarations of War, Manifestos, and other Publick Papers, Relating to Peace and War, Among the Potentates of Europe, from 1648 to the Present Time* (Knapton London 1710-32) 4 vols.

commands became truly unenforceable natural obligations, to be re-coined as natural or political morality. But this did not cause princes and other rulers to stop rendering justifications in terms of the demands of natural justice.[27]

Two important remarks must be added with regards early-modern State practice. First, the conception of war as a state led to a distinction between full wars and hostile actions not amounting to full war – in the language of early-modern doctrine, perfect and imperfect wars. From this distinction, in the 19th century, the category of 'measures short of war' emerged. The justifications for imperfect war drew heavily on the just war tradition. During the Early Modern Age, the most common instances of 'imperfect wars' were actions in reprisal or as an auxiliary. Reprisal rooted back to an old late-medieval institution whereby a sovereign authorised a subject to forcefully seize property from the subjects of another prince to seek compensation for an injury committed by a subject of that same prince. Out of this original form of 'particular' reprisal, grew the practice of 'general' reprisal, which formed the legal foundation for privateering. Thereby a private person was granted the authorisation to seize all ships belonging to the subjects of a foreign prince. Auxiliaries were non-belligerents who actively supported an ally during a war without declaring war on the enemy. The actions of auxiliaries could stretch to the intervention of their troops or fleet.[28]

Second, there is the question of defence. Already in medieval doctrine, a distinction was made between self-defence and defensive war. Self-defence was the natural right of an individual to defend himself or his property against armed attack. Under early-modern doctrine, it was also attributed to States. Self-defence was not a major justification of force in medieval Europe, as it did not sit well with Christian theology. The fundamental justification for the use of force, which Augustine had forwarded to overcome original Christian pacifism, was that of an instrument to correct the unjust and to restore justice for all. As such, it was an altruistic action.[29] Self-defence, in contrast, was an egoistic action. Nevertheless, as theology faded into the background in the discourse of the *jus ad bellum* between the

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27 Vattel, *Le Droit des gens* 3.3.32; Whitman, *Verdict of Battle*, 95-123.

28 Neff, *War and the Law of Nations,* 121-6.

29 Augustine, *Letter* 238, see H Paolucci (ed) *Augustine of Hippo, The Political Writings of St Augustine* (Cambridge Texts in the History of Political Thought) (CUP Cambridge 1962).

17th and 19th centuries, self-defence came to be seen in a more positive light. Under the impact of humanism and the writers from the Modern School of Natural Law, self-defence gained traction as the most natural of human instincts and rights. However, in early-modern State practice, self-defence was rarely invoked on behalf of the State. Most often it was used to justify the actions of individual soldiers or units, e.g. a border garrison repelling a raid.

A defensive war was a perfect war for which the just cause was defence against an unjust armed attack by the enemy. There were some major differences between the two categories. Firstly, self-defence was more limited in terms of duration, both with regard to its beginning as its end. Whereas self-defence was only justified in case of actual or imminent attack, defensive war was also put forward in case of threat of a future attack. A person or state had to desist from hostile action once the attack had stopped. At most, he could continue his action to get back what was taken, but only immediately contingent upon the end of the enemy's attack. A defensive war could be pursued until total victory. Secondly, self-defence had to be proportional and directed towards the actual attackers, whereas defensive war did not. In a defensive war, the defender could use all violence, including against enemy subjects innocent to the war, necessary to secure victory.

Whereas self-defence was only rarely invoked in early-modern State practice, the argument of defence was used with much and increasing frequency to justify 'perfect' war. One of the main drives behind the increasing popularity of the notion of defence was the all-important role alliance treaties played as instruments of diplomacy and warfare from the 17th century onwards. Most of these alliance treaties were defensive, meaning that they were only triggered in case of prior attack by the enemy. For this reason, belligerents went to great lengths to argue that they were fighting a defensive war. In the process, the concept of 'defensive war' was relaxed and expanded. Under the just war doctrine, all just wars were defensive *sensu lato* to the extent that they constituted a reaction against a prior injury by the enemy – armed or otherwise. But they were only defensive *sensu stricto* if they were fought in reaction to a prior or threatening armed attack by the enemy. Other wars were offensive. In their endeavours to justify wars as defensive, the rulers and diplomats of the 17th and 18th centuries blurred the

lines. Declarations and manifestos of war of the 17th and 18th centuries show a standardised line of argument for the justification of war, which meant to trigger the *casus belli* of defensive alliance treaties. In most cases, a belligerent when declaring war argued that the enemy had committed a long and incessant series of wrongs against the legitimate claims of the State. Ideally, but not always, one could point at a few instances of the use of force, such as reprisals or border incidents, or attacking an ally. As all other measures had failed, war was said to be necessary as the last resort to stop this and secure the most fundamental legitimate claims of the State. As the 18th century progressed, the language changed to the extent that the protection of the security and interests of the State came to supplement, and with time, supplant the invocation of rights.[30]

4. Just war in the shadows (19th century)

Since the days of Grotius, the law of nations had been thought of as an inherently dualist system existing of two, interconnected bodies of law: natural law and positive law. The legal positivism of the 19th century brought this dualism to an end, as natural law was cast out of the world of law and reduced to a code of morality. Thus, modern international law shrunk to what had been the secondary, voluntary or positive law of nations. The just war doctrine was therefore ousted from the field of international law. Under the pens of some of the leading international lawyers of the late 19th and early 20th century, the *jus ad bellum* withered to the mere recognition that sovereign States had a right to resort to force or war to pursue their claims or protect their security and interests. Some even brought this to its ultimate consequence: the decision to go to war was not a matter of law, but one of expediency.

Mainstream international legal doctrine does not wholly reflect 19th-century State practice. The just war tradition proved somewhat more resilient. First, over the course of the 19th century, states continued to offer express justifications to their subjects and allies when they resorted to war or force. Certainly, States more often than before neglected to make a

[30] Klesmann, *Bellum solemne*; R Lesaffer, 'Paix et guerre dans les grands traits du XVIIIe siècle' (2005) 7 Journal of the History of International Law 25-41; idem, 'Defensive Warfare'; Neff, *War and the Law of Nations,* 126-30.

formal declaration of war to the enemy, the forms in which justifications were made became more diverse and explanations became less extensive.[31] The language shifted further away from war as a means of legal self-help to that of war as a means of self-help altogether – or war as 'a pursuit of policy by other means' to use the famous phrase of Carl von Clausewitz (1780-1831)[32] – as wars became justified in terms of the safeguarding of security, territorial integrity, 'vital interests' or honour of States rather than legitimate rights. But wars were by and large justified as reactions to prior unwarranted action, preferably armed action, by the enemy. They were justified for being defensive.[33] By the late 19th and the early 20th century, this focus on defensive war founds its correlation in an increasingly general rejection of aggression by the international community. Although doctrine preached the free arbiter of States in relation to war and force, in practice a weak and vague international customary law that condemned aggression and extolled defence unfolded. But States expanded the term 'defensive' to its widest possible extent, completely blurring the lines between defence against an armed attack and reaction against a prior injury of rights or interests. One might say that defence became an empty vessel. The important thing, however, is that defence moved to the centre of modern international law's *jus ad bellum*.[34]

Second, the 19th century also saw the rise of 'measures short of war' in doctrine and practice. The different types of measures short of war were all rooted in the tradition of just war. The major categories were humanitarian and political intervention, self-defence, defence of nationals and reprisal. Humanitarian and political interventions were justified as actions to safeguard or restore other people's fundamental rights or actions for the sake of international order and stability. Self-defence of a State and defence by a State of its own nationals on foreign territory drew on the doctrine of the

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31 While formal declarations delivered to the enemy were still often used, the preferred form of the 19th century was the ultimatum delivered to the enemy or a general public declaration of war. Neff, *War and the Law of Nations,* 184-5 and examples there.

32 Carl von Clausewitz, *Vom Kriege* (1832) in M Howard (ed) *On War* (Princeton UP Princeton 1976) 69.

33 E.g. the Russian declaration of war against the Ottoman Empire of 26 April 1828, in *British Foreign and State Papers* (HMSO London 1842) vol. 15, 656-62 (hereinafter BFSP); the declaration of the British Queen Victoria announcing the war against Russia on 27 March 1854, 44 BFSP 110; and the diplomatic discussions just before the outbreak of war in 1914 as well as the declarations of war themselves, *Collected Documents Relating to the Outbreak of European War* (London 1915).

34 Brownlie, *Use of Force*, 19-50; Neff, *War and the Law of Nations,* 161-214.

natural right of self-defence. The stress was now on the immediate necessity of the action under the imminence of the threat of greater harm in the absence of a non-violent alternative. These were also the elements in the famous definition of self-defence rendered by the US Secretary of State Daniel Webster (1782-1852) on the occasion of the *Caroline Incident* (1837).[35] Reprisal had evolved from its traditional meaning of the authorisation for private individuals to use force into the modern meaning of an armed action by a State against another State in retribution of an injury and enforcement of the right that had been injured. This category remained the closest to the original meaning of just war, both with regards its cause as its extension. Through the practice and doctrine of measures short of war, some concepts and rules from the old natural law of nations were transplanted into positive international law.[36]

The reasons why Western rulers, in spite of international legal doctrine, continued to offer their justifications of war has partly to be sought in the emerging role of public opinion in the formation of international policy and the rise of a clamour against war amongst the public. In the wake of the Napoleonic War, in different countries of the West, peace associations emerged from civil society. By the midst of the 19th century, international peace conferences were convened by these peace societies. For all of the 19th century, the organised peace movement remained a rather elitist affair. It had, however, some foothold in politics and from time to time attracted attention at the highest level.

The peace movement drew on two great European historical traditions. First, there was Christian pacifism. Early Christianity had been radically pacifist but by the 3rd and 4th centuries, when Christian faith won acceptance in the Roman Empire, pacifism had to cede for a more pragmatic attitude that found its expression in the just war doctrine. Pacifism remained in the margins until it gained a constituency in some protestant denominations from the 17th century onwards, particularly in Britain and its Northern American colonies. Anglo-American Protestants would play an important

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35 '(...) a necessity of self-defence, instant, overwhelming, leaving no choice of means, and no moment for deliberation', Letter of Daniel Webster of 24 April 1841, 29 BFSP 1137-8.

36 SA Alexandrov, *Self-Defense Against the Use of Force in International Law* (Kluwer The Hague/London/Boston 1996) 11-27; Neff, *War and the Law of Nations,* 215-49; B Simms and DJB Trim (eds) *Humanitarian Intervention. A History* (CUP Cambridge 2011); G Simpson, *Great Powers and Outlaw States. Unequal Sovereigns in the International Legal Order* (CUP Cambridge 2004) 227-253; EC Stowell, *Intervention in International Law* (Byrne Washington DC 1921).

role in the 19th century peace movement.[37] Second, from the Late Middle Ages, a tradition of peace plans in European literature emerged. Writers from Jean Dubois (c. 1305) over the Duke of Sully (Maximilien de Béthune, 1559-1641), Emeric de Crucé (c. 1590-1648), Godfried Wilhelm Leibniz (1646-1716), William Penn (1644-1718) and Saint-Pierre (Charles-Irénée Castel, 1658-1743) to Immanuel Kant (1724-1804) and Jeremy Bentham (1748-1832) laid out schemes to stabilise peace and ban war.[38] Many of these plans proposed a combination of the peaceful settlement of disputes through arbitration with a form of collective security whereby all powers committed themselves to combine against a power who did not respect the outcome of such a settlement or unjustly attacked a third power.[39]

From early on, a division existed between radical pacifists and moderate reformists. The latter sought gradually to limit the frequency and the devastation of war. After the crisis of the peace movement in the 1850s and 1860s wrought by the Crimean War (1853-1856) and the American Civil War (1861-1865), the moderate peace movement gained traction and influence. It gained strength through its alliance with international lawyers, who from around 1870 started to organise their field into an autonomous, inter-

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37 R Bainton, *Christian Attitudes towards War and Peace: A Historical Survey and Critical Re-examination* (Abingdon New York 1960).

38 Pierre Dubois, *De recuperatione Terrae Sanctae* (1306) in W Brandt (transl) *The Recovery of the Holy Land* (Columbia UP New York 1956); Maximilien de Béthune de Sully, *Oecomomies royales* (1640) in D Buisseret and B Barbiche (eds) *Les oeconomies royales de Sully* (Klincksieck Paris 1970-1988); Emeric de Crucé, *Le nouveau Cynée ou Discours d'Etat représentant les occasions et moyens d'établir une paix générale et liberté de commerce par tout le monde* (1626) in A Fénet and AZ Guillaume (ed) (Presses Universitaires de Rennes Rennes 2004); Gottfried Wilhelm Leibniz, *Codex juris gentium diplomaticus* (S. Ammonus Hannover 1693); idem (anonymous), *Caesarini Fuerstenerii, Tractatus de Jure suprematus ac Legationis principum Germaniae* (s.l. 1678); William Penn, *An Essay towards the Present and Future Peace of Europe by the Establishment of an European Dyet, Parliament or Estates* (London 1693-1694, repr Olms Hildesheim 1983); Charles-Irénée Castel de Saint-Pierre, *Mémoires pour rendre la Paix perpétuelle en Europe* (Cologne 1712; 2nd edn Utrecht 1713-1717, repr Fayard Paris 1986) in H Hale Bellot (transl) *Selections from the second edition of the Abrégé du Project de Paix Perpétuelle by C.I. Castel de Saint-Pierre* (The Grotian Society Publications 5) (Sweet & Maxwell London 1927); Imanuel Kant, *Zum Ewigen Frieden. Ein philosophischen Entwurf* (Friedrich Nicolovius, Königsberg 1795) in M Campbell Smith (transl) *Perpetual Peace. A Philosophical Essay* (Allen & Unwin London 1917); Jeremy Bentham, *Plan for an Universal and Perpetual Peace* (1786-1789) in CJ Colombos (ed) (The Grotius Society Publications 6) (Sweet & Maxwell London 1927).

39 FH Hinsley, *Power and the Pursuit of Peace. Theory and Practice in the Relations between States* (CUP Cambridge 1963) 13-91; Jacob TerMeulen, *Der Gedanke der internationaler Organisation in seiner Entwicklung* (2 vols., Nijhoff The Hague 1917-40); Kurt von Raumer, *Ewiger Friede. Friedensrufe und Friedenspläne seit der Renaissance* (Alber Freiburg 1953).

national academic discipline and pressure group.[40] A programme to limit warfare through international law was articulated and set on the agenda of international civil society and public diplomacy. This programme rested on four pillars: disarmament through binding international agreements, the furthering of the peaceful settlement of disputes through arbitration, the codification of the laws of war and collective security.[41]

5. The limitation of the right to war (1899-1945)

The invitation by the Russian Tsar Nicholas II (1894-1917) to an international peace conference at The Hague in 1899 moved this programme to the centre of international diplomacy. The major achievement of the 1899 and 1907 Conferences was the partial codification of the laws of war.[42] The proposal to introduce obligatory arbitration as a means to settle disputes between States was rejected. The *Hague Convention I on the Pacific Settlement of International Disputes* (29 July 1899) did not go beyond a promise of the contracting parties 'to use their best efforts to ensure the pacific settlement of international disputes.'[43] The Convention provided for the establishment of a Permanent Court of Arbitration.[44] The Hague Conferences also codified the age-old obligation of States to formally declare war before starting hostilities, which had somewhat lapsed in practice over the 19th century (*Hague Convention III Relative to the Opening of Hostilities*, 18 October 1907).[45] After the Conference, attempts to promote international arbitration as the ultimate way to prevent war continued unabated. During the first four decades of the 20th century, an impressive number of bilateral arbitration treaties were signed, if not always ratified. But many of these treaties mitigated the obligation to subject disputes to arbitration or to other forms of peaceful settlement by the exclusion of disputes which

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40 Martti Koskenniemi, *The Gentle Civilizer of Nations. The Rise and Fall of International Law 1870-1960* (CUP Cambridge 2001).

41 On the 19th- and early 20th-century peace movement: D Cortright, *Peace. A History of Movements and Ideas* (CUP Cambridge 2008) 25-62; C Lynch, 'Peace Movements, Civil Society, and the Development of Law' in B Fassbender and A Peters (eds) *The Oxford Handbook of the History of International Law* (OUP Oxford 2012) 198-221.

42 A Eyffinger, *The 1899 Hague Peace Conference. 'The Parliament of Man, the Federation of the World'* (Kluwer The Hague/London/Boston 1999); idem, *The 1907 Peace Conference. The Conscience of the Civilized World* (Wolf Legal Publishers Oisterwijk 2011).

43 Art. 1, 187 CTS 410-428.

44 Art. 20.

45 (1908) 2 AJIL Supp 85-90.

touched on the security and vital interests of the State, thus effectively excluding those disputes that most endangered peace. As such, these treaties made a distinction between disputes that were deemed of a legal nature and those that were deemed of a political nature, limiting the scope of application of international law to the former.[46] The series of 'Treaties for the Advancement of Peace', also known as the Bryan Treaties (1913-1914) after the American Secretary of State William Jennings Bryan (1860-1925), provided for the submission of all disputes, without restriction, to an international commission for investigation. They also stipulated that the parties to the dispute could not resort to war for a period of twelve months.[47]

The entry of the US under President Woodrow Wilson (1856-1924) in the Great War in 1917 pushed collective security to the centre of the international agenda. Wilson refused to adhere to a traditional strategy for peace and pushed his allies at the Paris Peace Conference (1919-20) towards a new world order. At the heart of this stood collective security, a combination of an obligation to settle disputes peacefully by international law, the limitation of the right to wage war and collective action against aggression by an organised international community, the League of Nations. The Peace Treaty of Versailles of 28 June 1919 between the Allied and Associate Powers and Germany was an amalgam of Wilson's radical ideas and tradition, but altogether caused a revolution in the *jus ad bellum*.

The Versailles Peace Treaty was the first peace treaty among sovereigns in centuries that broke with the tradition of silence over the justice of war. Article 231 attributed responsibility for the war to Germany and her allies. Germany was designated as the aggressor. In Articles 231 and 232, Germany was made liable for all the loss and damages the Allied and Associated Powers, their governments and nationals had suffered because of the war – with the exception of most of the costs of warfare itself. The German Emperor Wilhelm II (1888-1918) would be indicated before an international tribunal 'for a supreme offense against international morality and the

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46 E.g. the Arbitration Treaties between the US and respectively Britain and France of 3 August 1911, Art. 1 in R Bartlett (ed) *The Record of American Diplomacy. Documents and readings in the history of American Foreign Relations* (New York 1964) 338.

47 E.g. Treaty between the United States and Austria-Hungary of 6 May 1914, 220 CTS 6-7. On arbitration in the era of the League of Nations, F.P. Walters, *A History of the League of Nations* (OUP London/New York/Toronto 1952) vol. 1, 377-87.

sanctity of treaties.'[48] Articles 228-9 provided for the prosecution before military tribunals of Germans who had violated the laws and customs of war or committed crimes against the nationals of the Allied and Associate Powers.

These clauses constituted a return to the just war tradition. This revival was only partial and it was not followed up on in general peace treaty practice after 1920. Nevertheless, it was far reaching. The Versailles Peace Treaty restored the discriminatory concept of war from the old just war tradition. Only one side of the belligerents had a right to wage war; the other side had not and was therefore liable for all the costs of damages due to the war. The Treaty went beyond early-modern practices and doctrine, which had restricted the enforceability of just war to the court of God, by providing for criminal prosecution for infringements against both the *jus ad bellum* and the *jus in bello* by the unjust side. The basis for the attribution of responsibility to Germany and its allies were aggression and the disregard for treaty obligations, most of all in relation to Belgian neutrality.[49] Some elements of the just war tradition were thus drawn into the sphere of positive international law.

The Paris Peace Conference also agreed upon the Covenant of the League of Nations, which was inscribed in all the peace treaties.[50] Articles 10-17 regarded collective security and the *jus ad bellum*. The founders of the League refrained from inscribing a general prohibition of war, but focused on preventing war by imposing upon States the duty first to resort to peaceful ways of dispute settlement. Articles 12, 13 and 15 imposed upon the Members of the League the obligation to refer any dispute that was likely to lead to war either to arbitration or to the Council of the League. Article 12 stipulated a cooling-off period for 3 months after the award of the arbitrators or the report of the Council in which the parties could not resort to war. If the Council voted unanimously on a report regarding the dispute, no State could wage war on a member which abided to the report. If no such unanimity was reached, the Members had a right to take all actions they deemed 'necessary for the maintenance of right and justice.'

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48 Art. 227 of the Peace Treaty of Versailles, 28 June 1919, *The Treaties of Peace 1919-1923* (Carnegie New York 1924) vol. 1, 3-264; 225 CTS 188.

49 *Report of the Commission on the Responsibility of the Authors of the War and the Enforcement of Penalties*, 29 March 1919 (1920) 14 AJIL 95-154.

50 E.g. Articles 1-24 of the Versailles Treaty.

Article 14 provided for the establishment of a Permanent Court of International Justice to rule over disputes between States, but its jurisdiction was not mandatory. Articles 10, 11 and 16 enshrined the compromise the allies had reached on collective security. Article 16 provided for automatic economic sanctions against a Member which resorted to war in contravention of Articles 12, 13 and 15. It stated that in such a case States had to indicate which armed forces they would contribute to protect the Members of the League. In 1921, the League Assembly stipulated that economic sanctions could stretch to naval blockade.[51] Article 10 was at one time the most encompassing but also the vaguest of the Covenant's *jus ad bellum* clauses. It imposed upon the Members the commitment 'to respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League' and made any threat or danger of aggression a matter of the League's Council. Article 11 provided that any war or threat of war should be referred to the Council.

These clauses from the League's Covenant did not lay down a new, coherent and all-encompassing *jus ad bellum.* They neither emerged in a juridical vacuum nor did they sweep away existing practices and customary law. During the first decade of the League's existence several attempts were made to interpret and supplement the Covenant to clarify and fill in the gaps in the system which were perceived to exist. One of these attempts concerned the so-called *General Act of Geneva on the Pacific Settlement of Disputes* of 26 September 1928, which provided that all disputes should ultimately be settled by peaceful means.[52]

Apart from the difficulties of interpretation and the unsystematic character of the Covenant Clauses, there were more fundamental reasons to leave the peace movement far from satisfied with the outcome of the Paris Peace Conference. The refusal of the US to join the League and the initial exclusion of communist Russia and the former Central Powers weakened and reduced it to a club of the European victors of the Great War and their allies, minus the main one. The League system neither provided for an effective mechanism of collective security nor for a general prohibition to

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[51] *League of Nations Assembly Resolution on the Economic Weapon*, 4 October 1921, LNOJ, Special Supp 6, 24, see also *Legal Position Arising from the Enforcement in Time of Peace of the Measures of Economic Pressure Indicated in Article 16 of the Covenant, Particularly by a Maritime Blockade* 15 June 1927 (1927) 8 LNOJ 834-45.

[52] (1931) 25 AJIL Supp 204-24.

use force. Its major lacunae in this respect were that it only condemned aggression, but it did not exclude war in case peaceful dispute settlement procedures failed after a period of cooling down had been respected – it even seemed to confirm the right to war in Article 15 – and it did not restrict use of force other than war and aggression.[53]

In the 1920s, part of the American peace movement, in concordance with some major political figures, retook the battle and redirected the agenda. As League membership was, after rejection by the US Senate, deemed impossible or even undesirable because of its commitment to the security of other States, the focus was now on the peaceful settlement of disputes – through the accession by the US to the Permanent Court of International Justice – and through what became known as 'the outlawry of war.' Aided by the desire of the French to obtain at least some security agreement with the US, in 1928 the peace movement saw a major success through the *General Treaty for the Renunciation of War* of 27 August 1928, better known as the Pact of Paris or the Kellogg Briand Pact. The Pact was initially signed by 15 States, among which were the major powers of the West. Some 48 other states joined later. The Pact condemned 'recourse to war for the resolution of international controversies' and renounced it 'as an instrument of national policy in their relations with one another.'[54] Article 2 provided for the pursuing of the settlement of disputes by pacific means.[55]

The international community of States had thus abolished the concept of legal war. The Kellogg Briand Pact did not provide for any sanctions, but this did not mean that violation remained without legal consequences. Neff indicated the major consequences attached to the resort to war in breach of the Pact of Paris. First, resort to war in contravention of the Pact made the State liable for all the costs and damages ensuing from the war. Second, a violation of the Pact gave all parties to the Pact the right to intervene against the perpetrator. Whereas there was hardly any State practice of

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53 Brownlie, *Use of Force,* 59-65.

54 Article 1, 94 LNTS 57.

55 C Chatfield, *For Peace and Justice: Pacifism in America, 1914-1941* (University of Tennessee Press Knoxville 1981); Cortright, *Peace,* 62-6; RH Ferrell, *Peace in their Time. The Origins of the Kellogg-Briand Pact* (Yale UP New Haven 1952); idem, *Beyond Appeasement: Interpreting Interwar Peace Movements in World Politics* (Cornell University Press Ithaca/London 1999); B Roscher, *Der Briand-Kellogg-Pakt von 1928. Der 'Verzicht auf den Krieg als Mittel Nationaler Politik' im völkerrechtlichen Denken des Zwischenkriegszeit* (Nomos Baden 2004); H Shinohara, *US International Lawyers in the Interwar Years. A Forgotten Crusade* (CUP Cambridge 2012).

armed intervention pursuant to violations of the Pact, during the 1930s a practice of relaxing the duties of neutrality by third parties – as the US in the case of the German aggression against Western Europe in 1939-1940 – arose. Also, the 1930s saw the emergence of a form of non-belligerency, whereby a third power one-sidedly supported one belligerent with supplies, arms, subsidies and the like without resorting to force or declaring war. This new concept was to some extent reminiscent of the old concept of auxiliaries, although the support third States could give was less far reaching as the support auxiliaries in the Early Modern Age could give. Third, over the 1930s, there arose a rule in State practice that a war in contravention of the Pact could not give rise to any conquest or acquisition of rights of any kind, under the old maxim 'ex iniuria non oritur jus.' This was enshrined in the so-called Stimson Doctrine, laid out by the American Secretary of State Henry Stimson (1867-1950) in 1932.[56] To these three consequences forwarded by Neff should be added that resort to war in violation of the Paris Pact was equalled to aggression, triggering the obligations of third States under Article 10 of the Covenant.[57]

Similarly to the Covenant, the Paris Pact referred to 'resort to war' rather than 'force.' Whether 'war' in the Pact was used in its technical meaning and all other uses of force were excluded was and remains a matter of contention among international lawyers.[58] What is certain is that actions in self-defence were excluded from it.[59] Self-defence gained a lot of traction in the State practice of the 1920s and it would gain even more so after the Paris Pact. The negotiators at the Paris Peace Conference of 1919-20 put the spotlight on aggression by making it the touchstone of Germany's responsibility for the war and by making it the concern of all League Members. In putting aggression at the heart of the new *jus contra bellum*, the drafters of the Covenant and the peace treaties inevitably lifted its correlate, self-defence, to the heart of the newly emerging *jus ad bellum*. After 1920, States started more than ever before to invoke self-defence.

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56 Neff, *War and the Law of Nations*, 294-6. The Stimson doctrine was also inscribed in the so-called Saavedra-Lamas Treaty of 16 December 1933 between most American and European powers, banning wars of aggression, 163 LNTS 393.

57 *Draft Treaty on the Rights and Duties of States in Case of Aggression*, Introductory Comment (1939) 33 AJIL Supp 819-909 at 823.

58 Brownlie, *Use of Force*, 84-92.

59 Note by Kellogg to the French ambassador, 1 March 1928 in DH Miller, *The Peace Pact of Paris* (Putnam's Sons New York/London 1928) 43.

They did so either as a justification for their actions against a so-called aggressor or to trigger collective defence by the international community under Article 10 of the Covenant. Under the State practice of the Interwar Period, these actions were not considered to amount to full war. Thus, the old natural right of self-defence was given a central place within positive international law, without however shedding the cloak of necessity that hung together with its origins. States followed this strategy for two main practical reasons. First, by invoking self-defence they attempted to avoid the restrictions on war from the Covenant and the Paris Pact and the consequences of its violations. Second, by not considering a conflict as war third States could relax the strict duties of neutrality and act with partiality towards the two sides in the conflict. This would prove a crucial element in the strategy of the American President Franklin Delano Roosevelt (1882-1945) to overcome the strict laws of 'New Neutrality' in the face of German aggression.[60]

The major treaties and State practice in relation to war and self-defence of the Interwar Period has allowed for the claim that by the end of the 1930s an international customary rule against aggression had been formed.[61] This conclusion gives too rosy an idea of how far the prohibition to use force had progressed before its inscription in the UN Charter. The Covenant of the League and the Paris Pact ended the legality of war, but only in a discriminatory way. The State practice from World War II indicates that States still considered themselves to have a right to resort to a war and formally declare war in case of prior aggression by the enemy. Moreover, the Covenant and the Paris Pact had left the door wide open to an alternative strategy to resort to force rather than war, primarily in the guise of self-defence. Whereas States claimed to operate the limited, by origin natural, right of self-defence in the face of aggression, they did in fact draw from the rich tradition of defensive war to justify their own actions. State practice agreed with the notion of defence *sensu stricto* as a reaction against a prior attack, but States would use the smallest instance of use of force by the enemy to justify a disproportionate and all-out reaction. Thereto, they beefed up their arguments by referring to injuries against their rights and interests, thus persisting with much of the language of early-modern and 19th-century

60 Neff, *War and the Law of Nations,* 307-13.
61 Brownlie, *Use of Force,* 105-11.

justifications for war. Also, States pushed their defensive actions beyond the limits of the traditional notion of natural self-defence imposed, so that at times there was little or nothing to distinguish self-defence from full-blown war. In the end, the Covenant and the Paris Pact did very little to stop the tradition of defensive war or restrict the lax interpretation of the term defensive. To the contrary, the transfer of the natural right of self-defence to the domain of positive international law allowed for an even stronger association with the lax justifications of defensive war and opened up the box of Pandora.[62]

6. Conclusion

This box the founders of the United Nations attempted but failed to close. The drafters of the UN Charter at the conferences of Dumbarton Oaks (1944) and San Francisco (1945) consciously tried to stop some of the gaps the earlier treaties had left. In rephrasing the term 'resort to war' to 'use or threat of force' they attempted to settle the discussion on the extent of the prohibition of 'war' under the Paris Pact.[63] The choice to inscribe the right to self-defence in the Charter was not a major step in itself, as the principle had already become well established in positive international law. The merit of the Charter lay in the qualification of the right. By using the word 'inherent' the drafters of the Charter referred to the origins of the right as a natural right, with all its restrictions and limitations. Furthermore, the right was clearly defined in terms of a reaction against an *occurring armed* attack and the duty was imposed upon States who acted in self-defence to refer to the UN Security Council. Through this, the founders of the UN did everything possible to restrict the sole exception to the prohibition to inter-State use of force, short of banning it. But, as State practice since 1945 proves, in this the UN has met with only very partial success.[64]

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62 DW Bowett, *Self-Defense in International Law* (FA Praeger New York 1958) 120-31; Neff, *War and the Law of Nations,* 303-313.

63 R Hildebrand, *Dumbarton Oaks. The Origins of the United Nations and the Search for Postwar Security* (University of North Carolina Press Chapel Hill 1990).

64 TM Franck, *Recourse to Force. State Action Against Threats and Armed Force* (CUP Cambridge 2002) 45-134; C Grey, *International Law and the Use of Force* (3rd edn, OUP Oxford 2008); Neff, *War and the Law of Nations,* 326-34.