SHORT PAPER SESSION L1O

L10.1 Albert Salomon: the man behind the mammogram

Kimberley Bradshaw[1], *Prof Paul Miller*[1]
[1]*University Of Cumbria, Lancashire, United Kingdom*

Background

Albert Salomon is considered to be one of the earliest pioneers of breast imaging, however little is documented about his fascinating life and career. During his life, he overcame many personal adversities in order to remain committed to his profession and research. Through his research, Albert Salomon was able to distinguish between cancerous and benign breast tissues and started to explore how x-rays could be used to image the breast. His early work also explored the importance of microcalcifications and their significance in breast disease. Although his research was ultimately disrupted by the events of the Second World War and the Holocaust, his work created a foundation for other clinicians to build upon, contributing to the development of modern-day mammography.

Purpose

- To celebrate the life of Albert Salomon.
- To consider Albert Salomon's achievements.
- To consider Albert Salomon's impact on modern day mammography.

Summary of content

This submission focuses on Albert Salomon's life and work and the impact his research had on modern day mammography. This submission also explores the adversities faced by Albert Salomon, including the impact of the rise of the Nazi Party in Germany, the subsequent Second World War and the Holocaust.

L10.2 The origins and specialisation of radiology in the United States of America: historical and contemporary perspectives

Dr John Chen[1,2], *Scott Podolsky*[2]
[1]*Department of Radiology, University of Cambridge, , United Kingdom,* [2]*Department of Global Health and Social Medicine, Harvard University, , United States of America*

Although the history of radiology is usually traced back to the fortuitous discovery of x-rays by Röntgen in 1895, that did not alone usher in the era of radiology that we know today.

Radiology began as a disorganised mass of investigators and practitioners; physicians and nonphysicians; legitimate practitioners and quacks. There were no recognised training programmes or standards. Yet, over the next decades, radiology would be transformed from an unregulated technical discipline into an exclusively medical specialty, where physicians emerged as the only licensed practitioners. How did this transformation take place? What forces shaped the specialty during its formative years? Part of the change was due to technological developments that enabled radiology to gain increasing prominence. But more profound were changes in professional organisation, where physicians took control of the growing discipline, generating conflicts with technical colleagues, other medical specialists, and manufacturers. More than a century after x-rays were revealed, how relevant are these historical factors today? Remarkably, the same influences that moulded the specialty in its early years continue to shape its development: tensions with technical colleagues, paralleled in controversies over evolving roles of radiographers; with other medical specialists, observed in modern territorial conflicts; with visibility to colleagues and patients, and its own professional standing, particularly given the proliferation of outsourcing and teleradiology; with new technologies and commercial interests, amidst the disruptive rise of artificial intelligence. Will these modern crises shake the professional status quo, or will radiologists retain authority over their field, as they have in the past?

Brecher, R. and Brecher, E.M., 1969. The Rays: A History of Radiology in the United States and Canada. Williams and Wilkins.

Eisenberg, R.L., 1992. Radiology: An Illustrated History. Mosby-Year Book.
Grigg, E.R.N., 1965. The Trail of the Invisible Light: From X-Strahlen to Radio(bio)logy. Charles C Thomas.
Howell, J.D., 1995. Technology in the Hospital: Transforming Patient Care in the Early Twentieth Century. Johns Hopkins University Press.
Kevles, B., 1997. Naked to the Bone: Medical Imaging in the Twentieth Century. Rutgers University Press.
Mould, R.F., 1993. A Century of X-rays and Radioactivity in Medicine. Institute of Physics Publishing.
Stevens, R., 1998. American Medicine and the Public Interest: Updated Edition with a New Introduction. University of California Press.
Thomas, A.M. and Banerjee, A.K., 2013. The History of Radiology. Oxford University Press.
Weisz, G., 2006. Divide and Conquer: A Comparative History of Medical Specialization. Oxford University Press.

L10.3 Constantin Shilovsky and the conception of ultrasonics

Dr Francis Duck[1]
[1]*Independent, Bath, United Kingdom*

Background
The name of the Russian inventor Constantin Shilovsky (Chilowsky) is linked with the genesis of ultrasonics, although it is Paul Langevin who is generally recognised as the 'originator of modern ultrasonics'. This presentation will review who Chilowsky was, and how his role was critical in the conception and subsequent development of ultrasonics.
Method
Recent access to Chilowsky's Russian biography has enabled a critical assessment of his role in the origin of ultrasonics, especially from his proposal "On the possibility of vision underwater', which was taken up by Langevin. It also adds detail to Chilowsky's role in the commercialisation of ultrasonic depth-sounding after the war.
Results
Chilowsky is revealed as a prolific inventor and patentee, supporting himself entirely on his income from selling and licensing his IP. Thus, his attitude to exploiting technology was opposed to Langevin's, who had no interest in financial gain, and regarded all science to be shared for the common good. The resulting tension between the two men was essential to the genesis and subsequent development of ultrasonics.

Conclusion
Work on ultrasonics for submarine detection in France and subsequent work on Asdics in Britain would not have commenced during WWI without Chilowsky's initiative and drive. While he played only a minor role the practical engineering, his motivation to commercialise ultrasonics after the war, seeking financial gain from his own participation and patent, served as the driving force that resulted in the subsequent widespread exploitation of ultrasonics including, eventually, for medical imaging.

L10.4 Replayed stratification - what can the increasing prevalence of layered sculpture teach us about the past, present and future of cross-sectional imaging?

Michael Jackson[1]
[1]*NHS Lothian, Edinburgh, United Kingdom*

Relatively uniform layered structures occurring as natural phenomena such as clouds and rock strata predate our earliest human ancestors, and architecture has utilised uniform sized layers stacked on top of one another for several millennia. However, the use of regular step or slice-like layered units to produce art (and specifically sculpture representing the human body) seems to be a much more recent trend.
This presentation will explore the use of the "stack" or "stratified slices" in numerous examples of sculpture from across the world. In some cases, exemplified by artists including Marilene Oliver and Angela Palmer, the influence of CT and MRI scans is explicit, whilst in examples from others, such as Matthew Darbyshire and Danny Lane, the relationship may be more tangential. Nevertheless, the growth in popularity of this technique closely mirrors the growth of cross-sectional imaging in chronology, and radiological techniques, along with greater availability of 3-D printing would appear to be instrumental in the adoption of this increasingly familiar style of sculpture.
Furthermore, the adoption and promulgation of specific visual schemes and techniques has a more profound relevance to clinical radiology in the era of AI. Emerging techniques such as synthetic CT (in which CT-like images are constructed from an MRI dataset) and "synthetic-pseudo MR" (effectively the opposite) pose fundamental questions about how best to visualise the body for the benefit of patients.

1. Upadhyay, J., Iwasaka-Neder, J., Golden, E. and Bixby, S., 2023. Synthetic CT assessment of lesions in children with rare musculoskeletal diseases. Pediatrics, 152(2), p.e2022061027.
2. Abu-Qasmieh, I.F., Masad, I.S., Al-Quran, H.H. and Alawneh, K.Z., 2022. Generation of synthetic-pseudo MR images from real CT images. Tomography, 8(3), pp.1244-1259.

L10.5 Sebastian Gilbert Scott and radiological photography

Dr Adrian Thomas[1]
[1]*Canterbury Christ Church University, Bromley, United Kingdom*

Sebastian Gilbert Scott (1879-1941) was a pioneer radiologist at the Royal London Hospital. He was appointed as Radiologist to the Royal London Hospital in 1909, holding the post until 1930.
Scott came from the family of architects; his grandfather was Sir George Gilbert Scott, his father George Gilbert Scott and his brother Sir Giles Gilbert Scott.
He gave an interesting account of the photographic aspects of radiology when he started at the Royal London Hospital. He describes encountering piles of glass X-ray plates and 'accidently' knocking them over!
I knew his radiologist son Dr Michael Gilbert Scott well, and he gave me his father's photographic material and books from the 1900s to the 1940s.
This material comprises:

- Radiographs on glass plates - a beautiful collection, and some with clinical details.
- Radiographs on paper - several collections of interesting radiographs including Great War injuries (shrapnel etc).
- Radiographs on film - particularly rich in musculoskeletal radiograms. There are also many fluoroscopically acquired barium/bismuth meals. Also, a stereo-pair is included.
- An album with a very varied collection of clinical photographs. Much of this is pre- Great War material.
- Scott's teaching collection of slides (traditional large format slides on glass). Some slides are only partially prepared.
- His magic lantern (slide projector) that he used for lectures.
- A collection of radiological books including his own publications.

The talk will describe this collection and will emphasise the photographic aspects, and the development of early radiographic photography.

Thomas, A.M.K (2022) Invisible Light, The Remarkable Story of Radiology. Boca Raton: CRC Press (Taylor and Francis Group).

L10.6 Ernest "Harry" Harnack III - the medical establishment and its reluctant relationship with the first radiographer

Dr Mark Viner[1]
[1]*Barts & The London School Of Medicine & Dentistry, Queen Mary University Of London, London, United Kingdom*

Harnack was born in Hoxton in 1868, into a family descended from German Immigrants. After working for a lithographic printers, he joined the London Hospital in 1884 as a clerk at the age of 15. He was recognised as a diligent worker, and by 1895 he was deputy clerk to the Registrars, a post responsible for all hospital photography.
In May 1895, after years of indecision, the Hospital Medical Council established an electrical department, appointing a "Medical Electrician" on October 19th. Dr William Hedley took up this post on 1st January 1896, four days after the publication of Rontgen's communication.
In February 1896, Hedley, along with two medical colleagues, conducted experiments in roentgenography, including an X-ray examination of a patient which he exhibited at the Hospital's Medical Society on March 12th. Photographic expertise and processing was provided by Harnack.
The London Hospital was one of the first hospitals to pioneer the use of radiography in the United Kingdom. Despite early attempts by Hedley to secure medical assistants within the Electrical Department, responsibility for X-ray work continued to fall upon Harnack who eventually gained the support of Hedley and the House Governor and was officially appointed as "radiographer" to the hospital in December 1898.
Harnack helped establish the London Hospital as one of the leading X-ray departments of its time, conducting pioneering work in technique, equipment design and radiation protection and sharing knowledge through articles and teaching. He suffered terribly from the effects of radiation, retiring from ill health in 1909.

1. Hedley, (1896) The scope and Value of Electricity in Medicine, Abstract of a paper read before the Medical Society of the London Hospital on March 12th.The Lancet, May 1896
2. London Hospital Gazette (1896) May 1896 (Vol 3, No 1, page 2) Royal London Hospital Archives MC/A/25/1
3. London Hospital House Committee Minutes (1898), 12th December 1898. Royal London Hospital Archives, LH/A/5/47
4. London Hospital Medical Council Minutes (1895), October 19th 1895, Royal London Hospital Archives LM 1/1 & 1/2