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THE DISCIPLINARY DEVELOPMENT OF UNIVERSITY BUILDINGS: MEDICINE AND MANCHESTER

Medical and architectural histories have often focused on hospitals as the dominant sites for understanding the practices and performance of medical ideas and their relationship to physical spaces. However, the architecture of medical school buildings has been largely absent from these accounts. This article attempts to address that gap by viewing medicine's institutional and disciplinary history through the physical spaces provided for medical education and research in a university environment. Herein, the changes in medical school architecture are seen as providing a means for understanding institutional, disciplinary and societal change. In particular, this article examines the medical school buildings at the University of Manchester in order to appreciate evolving medical knowledge and practise, pedagogical change and the relationship between medicine and society.

This paper focuses on three building projects for medical education and research at the University. First, the University's original medical school building, which was completed in 1874, and second, its significant extension completed in 1894. Third, the 20th century replacement, built in 1973, which still functions as the University's medical school.

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This article will outline the scholarly context for research on medical school buildings, discuss the building projects and examine how each can be used as a resource for better understanding the development of medicine during the 19th and 20th centuries.

THE ARCHITECTURAL HISTORIES OF MEDICAL SPACES

The history of medicine has attracted a wide range of scholarly contributions from case studies of cities, localities and public health challenges, to histories of pioneers, treatments and disciplines as well as medicine in particular contexts, such as war. Until recently, with a few notable exceptions, British medical schools from the late nineteenth and early twentieth centuries have often received a narrative treatment, charting their continued progress and achievements. However, in recent years, medical historians have turned a more critical eye toward these institutions though amongst that work, little attention had been paid to medical school buildings, except to note their development or to focus on the work of a particular architect. The link between architectural and disciplinary histories is often missing.

Of the buildings examined within the large body of medical and architectural history, hospitals have been seen as the main stage for understanding the complex processes of science, health and the work of the practitioners.⁴ This has suggested that the dominant cultural values and expectations of medicine are written into hospitals' facades and spatial arrangements.⁵ Such a consideration of architectural form has rarely been extended to medical schools, even though alongside

¹ William Brockbank, 'The Early History of the Manchester Medical School', Manchester Medical Gazette, 47 (1968).

² For example, see Keir Waddington, 'Mayhem and Medical Students: Image, Conduct, and Control in the Victorian and Edwardian London Teaching Hospital', *Social History of Medicine*, 15 (1) (2002), 46–47.

³ Keir Waddington, Medical Education at St. Bartholomew's Hospital, 1123–1995 (Woodbridge: Boydell Press, 2003).

⁴ Leslie Topp, James E. Moran, Jonathan Andrews, *Madness, Architecture and the Built Environment: Psychiatric Spaces in Historical Context* (New York: Routledge, 2007), 1.

⁵ Allan M. Brandt, David C. Sloane, 'Of Beds and Benches: Building the Modern American Hospital', *The Architecture of Science*, ed. by Peter Galison, Emily Thompson (Cambridge, MA: MIT Press, 1999), 281.

hospitals, these have been a site for developing medical culture, technology and practices.

MANCHESTER AS A MEDICAL CITY

Medicine and medical education in Manchester pre-date the buildings discussed here. Manchester opened its main hospital, the Manchester Royal Infirmary, in 1752. At that time, medical students in Manchester received ad hoc and uncoordinated education from a physician to whom they were apprenticed. Thereafter, they would often spend time listening to lectures in one of the medical cities, such as London, Edinburgh, Glasgow, Aberdeen or Dublin, before taking the examination of the licensing body of those cities. No lectures on medical subjects or demonstrations on anatomy were available outside of London or Scotland until 1781.

The early 19th century in Manchester and elsewhere saw the emergence of proprietary medical schools, run by local practitioners, which competed for students. Without a formal curriculum, students learnt by attending lectures which they could choose to attend or not, and the rather haphazard process of walking the wards, which may or may not enable them to learn about certain conditions. Students would then acquire their qualifications in one of the medical cities through bodies such as the Society of Apothecaries and the various royal colleges.⁸

In Manchester, a school of anatomy opened in 1814, which reflected anatomy's role as the centre of medical knowledge. Following the Apothecaries Act of 1815, which required a formal apprenticeship and qualifications to practice, and as hospitals were progressively requiring qualifications to join its paid staff, medical schools grew in popularity nationwide.⁹ As a result, starting in 1824, a series

^{6 &#}x27;Ninety-Seventh Annual Meeting Of The British Medical Association Manchester, 1929', *British Medical Journal*, 2 (3575) (13 July 1929), 65–67.

⁷ Kenneth Calman, Medical Education: Past, Present and Future: Handing on Learning (Edinburgh: Churchill Livingstone, 2007), 173.

⁸ John V. Pickstone, Medicine and Industrial Society: A History of Hospital Development in Manchester and its Region 1725–1946 (Manchester: Manchester University Press, 1985), 48.

⁹ Stella V. F. Butler, 'A Transformation in Training: The Formation of University Medical Faculties in Manchester, Leeds, and Liverpool, 1870–84', *Medical History*, 30 (2) (1986), 117.

of medical schools that provided lectures in various branches of medicine opened in Manchester, although anatomy remained at the core of the curriculum along with the dissection of corpses. ¹⁰ Most of these private medical schools amalgamated by 1836 to form the Royal Manchester School of Medicine.

The Royal Manchester School was fairly successful, but nonetheless, in the early 1870s sought to join Owens College, the fledgling university college in Manchester, which became the Victoria University of Manchester through a series of transformations between 1880 and 1903. The College had opened in 1851 in a rather humble building in the centre of the city, but nonetheless aspired to provide for Manchester and the north of England the type of university education offered at Oxford and Cambridge. The Oxbridge style of education focussed on preparing young men for a life of politics, cultured leisure or the church and adopting this approach almost caused Owens College to fail as the style of education did not suit the requirements of Manchester's mercantile class which made up the majority of its students. 12 The College soon adapted in order to survive and employed several key figures who were German or had been educated in Germany. These individuals were instrumental in extending the College's educational offer to include subjects that focussed on the needs of the city and its industry and developed scientific research at the College to complement its teaching.¹³

Despite the change in educational focus, the College had reservations about joining with a medical school. For much of the 19th century, medicine had suffered from a poor reputation because of public outrage over grave robbing, the lack of certification of practitioners, and a lack of evidence that treatments actually worked. Moreover, medical students were known for excessive drinking and wild fun instead of study, which contributed to the belief that they

¹⁰ Pickstone, Medicine and Industrial Society, 48.

¹¹ Henry B. Charlton, *Portrait of a University: To Commemorate the Centenary of Manchester University, 1851–1951* (Manchester: University of Manchester Press, 1951), 53.

¹² Robert D. Anderson, European Universities from the Enlightenment to 1914 (Oxford: Oxford University Press, 2004), 193.

¹³ Henry E. Roscoe, *The Life and Experiences of Sir Henry Enfield Roscoe* (London: Macmillan, 1906), 103.

¹⁴ Pickstone, Medicine and Industrial Society, 186.

were socially inferior to liberal arts students.¹⁵ To help increase trust, the 1858 Medical Registration Act made medical schools subject to the General Medical Council, which controlled and monitored the training of doctors and their standard of ethics. This meant that there were common standards for medical schools that prevented respected institutions being undercut by schools with less demanding standards.¹⁶ The basis upon which the human body was understood and treated was also being transformed as scientific methods were applied to the research and treatment of disease.¹⁷

By the 1870s, medicine's reputation was beginning to improve, however not sufficiently for the Owens College trustees to feel entirely comfortable for a merger with a medical school. Nonetheless, following advice and a careful calculation of the risks, they agreed to the amalgamation based on two strategic benefits. First, medical schools tended to attract a relatively large and steady flow of students and therefore incorporation of the medical school would offer the College greater financial security. Second, as the College began competing with other new institutions in the north of England, its increased size and larger range of subjects would increase its prestige.¹⁸

The formal incorporation of the Royal School of Medicine as Owens College's medical faculty in 1874 was timed to coincide with the opening of a new building.¹⁹ It was to be located on the site that Owens College had recently purchased for a large expansion of its facilities along Oxford Road.

^{15 &#}x27;Proposal for the Incorporation of the Royal Manchester School of Medicine with the College', Proceedings of Council Document Book, 16–17, The Owens College, Special Collections of the John Rylands Library, OCA/15/1/10; Keir Waddington, 'Mayhem and Medical Students: Image, Conduct, and Control in the Victorian and Edwardian London Teaching Hospital', *Social History of Medicine*, 15 (1) (2002), 46–47.

¹⁶ Butler, 'A Transformation in Training', 118.

¹⁷ Steve Sturdy, Roger Cooter, 'Science, Scientific Management and the Transformation of Medicine in Britain c. 1870–1950', *History of Science*, 36 (1998), 426–430.

¹⁸ Joseph Thompson, *The Owens College: Its Foundation and Growth and its Connection with the Victoria University, Manchester* (Manchester: J. E. Cornish, 1886), 420–426.

¹⁹ Pickstone, Medicine and Industrial Society, 186.

THE 1874 MEDICAL SCHOOL

The 1874 medical school was commissioned and constructed concurrently with the new Owens College buildings. The commission for all the new buildings was given to Alfred Waterhouse, the wellknown and prolific Victorian architect, who had also designed the Manchester Town Hall and the Natural History Museum in London. Whilst some British architects developed individual specialisms during the second half of the nineteenth century, Waterhouse retained a general practice.²⁰ His approach called for the main University buildings to be executed in stone in the grand Gothic Revival style that had become favoured for University buildings of this period. The interior included many spaces for science, and Waterhouse collaborated with the professors to develop laboratory designs that met their requirements for teaching and research and which were often informed by the type of facilities they had seen elsewhere, often in Germany. The chemist Henry Roscoe is a case in point. He had trained with Robert Bunsen in Heidelberg and put great effort into establishing the University's focus on research and its facilities.²¹ The quantitative and qualitative chemistry laboratories that he designed in partnership with Waterhouse were lit, ventilated and equipped to the latest standards and so pleased was he with the result that he later refused a move to Oxford because of the inferior facilities on offer there.22

The location chosen for the medical school building on the Owens College site points to the College's ambivalent attitude toward the reputation and academic credentials of medicine. The building was situated apart from the grand and elegant main buildings in a rather humble location at the back of the site, next door to a brewery and stable yard.²³ In addition, despite sharing the same architect, the

²⁰ Colin Cunningham, 'Waterhouse, Alfred (1830–1905)', Oxford Dictionary of National Biography, ed. by Henry Colin G. Matthew, Brian Harrison (Oxford: OUP, 2004); online edition, ed. by David Cannadine (2010): http://www.oxforddnb.com/view/article/36758 [accessed 12 January 2017].

²¹ Roscoe, The Life and Experiences of Sir Henry Enfield Roscoe, 47–49.

²² William Whyte, Redbrick: A Social and Architectural History of Britain's Civic Universities (Oxford: Oxford University Press, 2015), 110.

²³ Thompson, The Owens College: Its Foundation and Growth and its Connection with the Victoria University, Manchester, 425.

new medical school was constructed in plain brick and given a much simpler and more practical style.

The interior layout of the 1874 medical school reflected contemporary thought about medical education and practice. Anatomy was seen as the foundation of medical knowledge throughout the 19th century and was its most important constituent subject area, and therefore, the largest and most prominent spaces in the building were dedicated its study. On the ground floor, the building had a large anatomical theatre with sloping, horseshoeshaped seating so the students could observe the demonstrator's table. On the first floor, there was a dissecting room that ran the length of the building, and an anatomy museum that occupied a double-height space with a glass roof to enable students to study specimens and samples.

The floor plans reveal the careful thought given to the circulation of the professors and their students that prioritised those higher in the hierarchy and helped maintain an impersonal distance. The professors had separate spaces for preparing their lectures and their own entrance to lecture theatres enabling them to avoid their students and retain all the elusiveness of an actor entering and exiting the stage.²⁵

The building also provides evidence of the trend towards teaching students in the sciences underpinning medical knowledge through laboratory learning. ²⁶ For example, the first floor included a pathology laboratory to allow students to determine normal and abnormal function through experimentation. ²⁷

The 1874 medical school provides a snapshot of a discipline on the cusp of change. The building was largely designed to satisfy the need to teach anatomy and dissection, but there is also evidence that attention was being paid to the sciences upon which medical knowledge and practice was increasingly based. However, the

²⁴ Steve Sturdy, 'The Political Economy of Scientific Medicine: Sincere, Education and the Transformation of Medical Practice in Sheffield, 1890–1922', *Medical History*, 36 (1992), 135.

²⁵ Ground Floor Plans, Royal Institute of British Architects Archive [RIBA], PA1926/WATA[94] 230.

²⁶ Mezzanine and 1st Floor Plans, Medical School, Owens College, RIBA, PA1919/WATA[94] 46.

²⁷ Mezzanine and 1st Floor Plans, RIBA, PA1919/WATA[94] 46.

building's location indicated that medicine was not yet accepted as a university subject or trusted by society.²⁸

1894 EXTENSION

The significant momentum behind the scientific turn in medicine during the final decades of the 19th century is reflected in the 1894 extension.²⁹ Whilst only twenty years had passed since the original project, the need for new facilities for teaching scientific principles, conducting research, and housing new fields and specialisms resulted in a building that more than doubled the size of the original.

As it became apparent that students needed to be taught a range of subjects in order to understand the human body and its diseases, new laboratories and lecture theatres were included in the design. On the first floor, multi-purpose lecture theatres were installed to enable the teaching of subjects beyond medicine, anatomy and pathology. Significantly, large new laboratories would allow students to be taught through practical lessons.³⁰ On the second and third floors, histology and toxicology, which were emerging as separate subjects, were provided with separate teaching laboratories.³¹ Finally, dedicated spaces for professors' research were provided as the search for new knowledge, rather than just teaching and practice, became an expected part of their role.³²

The influence of the medics who were scientifically-orientated and driven by research is evident in the design.³³ The chemist Henry Roscoe, who had worked with Waterhouse on his own chemistry laboratories, was heavily involved in the design of the medical school

²⁸ Medical School Elevations, RIBA, PA1919/WATA[94] 48.

^{29~} Sturdy, Cooter, 'Science, Scientific Management and the Transformation of Medicine in Britain c. $1870-1950^{\circ},\,426-430.$

³⁰ First Floor Plan, RIBA, PA1926/WATA[94] 231.

³¹ Second Floor Plan, RIBA, PA1926/WATA[94] 232.

³² Third Floor Plans, RIBA, PA1926/WATA[94] 233.

³³ Report of the Medical School Accommodation Committee, The Owens College Proceedings of Council Document Book, 86, Special Collections of the John Rylands Library, OCA/15/1/10.

and its facilities.³⁴ Likewise, Julius Dreschfeld and Thomas Harris, both German-trained Manchester physicians, worked to ensure that the laboratories in the extension would be high-quality and well-equipped to enable them to pursue specialist research interests whilst still practising and teaching medicine as generalists.³⁵

The form of the 1894 extension was dominated by scientific need. In contrast to the 1874 medical school, which had a rather quaint feel, the 1894 building was a factory of science. The building's design focussed on scientific teaching and research with laboratories equipped to the same high standards dictated by Roscoe for his own chemistry facilities. Technology, such as a pulley system to power the kymographs for measuring pressure, was installed. The building's internal devotion to science was evident externally through its dominant 6-storey tower, necessary for ventilation, and the large percentage of the external elevations given over to windows for light. Such was the focus on science that the local press observed 'it seems that unlike the original building, the objective was utility rather than impressiveness and, were it not for some distracting features, such as the parapets and gables, the windows might have been an architectural blemish'.³⁶

As medicine became more scientific and research based, its prestige as an academic discipline grew and the number of students enrolled to study medicine increased concurrently. In 1874, medical students made up 28% of the institution's students and this grew steadily to 34% by the time the 1894 extension opened. As a result, the dean of the Medical School became a new powerful figure in University politics and reflected in the medical school's architectural layout.³⁷ To access the dean's large office, visitors passed through an intimidating anteroom, and the office itself was strategically located to enable the dean to keep an eye on his staff in their common room and his students next door.³⁸

³⁴ Memorandum as to Medical School, The Owens Extension College, Minute Book of the Proceedings of the Council, 152, Special Collections of the John Rylands Library, OCA/9/1.

³⁵ Pickstone, Medicine and Industrial Society, 190.

^{36 &#}x27;Owens College: Opening of the New Medical Buildings', *The Manchester Guardian*, 3 November 1894.

³⁷ Charlton, Portrait of a University, 164-165.

³⁸ Ground Floor Plans, RIBA, PA1926/WATA[94] 219.

1973 MEDICAL SCHOOL

In 1973, the University opened a new medical school building next to the Manchester Royal Infirmary to replace the 1874 and 1894 buildings on Coupland Street. The new building represented significant changes in thinking about the type of accommodation a medical school required.

First, there had been a large growth in the number of students which had been stimulated by medicine's higher professional status, greater demand for medical services and government initiatives to increase the number of doctors.³⁹ The 1968 Royal Commission on Medical Education resulted in a recommendation that the University of Manchester should increase its intake from around 85 students a year in the late 1950s to around 250 by the mid-1970s. It was recognised that such an increase would require a new medical school building and the report suggested that the new accommodation should be coterminous with research facilities and that there should be ready access to patients. The idea in this siting was to enable the students to have easier and closer interaction with the hospital and for the medical school and hospital to collaborate in research.⁴⁰ As a result, a new medical school was to be constructed next to the Manchester Royal Infirmary.

During the 20th century, medicine had established itself as academically robust and a desirable profession. As a result, in contrast to the 1874 building, which had been discretely located at the rear of the University's site, the new medical school was placed prominently on the main road around which the University's buildings were clustered. The location, coupled with the size necessary to accommodate all the teaching and research facilities of the medical school, meant that the building would make a bold statement.

The Medical School's executive dean was responsible for overseeing the new building and worked closely with the commissioned architect, Harry Fairhurst. Together, they extensively researched medical school buildings around the world and found inspiration in medical buildings in Scandinavia and North America. They were

³⁹ Owens College Calendars 1873–1904, GB 133 OCA; University of Manchester Calendars 1904–1975, GB 133 UOP/1, University of Manchester Official Publications Collection, University of Manchester Special Collections.

⁴⁰ Calman, Medical Education: Past, Present and Future: Handing on Learning.

impressed with the U.S. skyscraper hospital designs, but since there was less pressure on land in Manchester, such a design was not necessary. Nonetheless, the resulting 'groundscraper' was enormous by contemporary standards and the site required the demolition of several city blocks. When construction was completed in 1973, it was the largest medical school in Europe and the largest university building in the U.K.⁴¹

Gone were many of the features from the 1874 and 1894 buildings. The hierarchical features of the old building were replaced with open and inclusive spaces and the 1973 medical school was designed to employ an entirely different approach to education and research. Unlike its predecessor, the building was designed to allow for internal changes to its layout according to curricular or research needs. ⁴² Rather than having supporting walls and fixed room layouts, the building employed support columns at regular intervals which allowed divides between spaces to be easily adjusted and meant the building had a large amount of adaptive space.

In an effort to be as flexible as possible, the building employed a version of the multidiscipline laboratory, which had been pioneered in the USA. These were equipped so as to allow around 30 students to carry out almost all their work in one place because each lab included all the equipment for laboratory study, as well as dry areas and spaces for their workbooks and reading material.⁴³ British medical schools being constructed in the 1970s were encouraged to adopt the American multidisciplinary laboratory concept.⁴⁴ But the 1973 medical school changed the principle to multi-user laboratories. The concept shared many of the characteristics of multidisciplinary laboratories by including all the services and facilities necessary for any type of teaching or research, but multi-user labs had the benefit of scale and adaptation. They were essentially enormous laboratories occupying huge floor areas where, at first, even the corridors were disposed of as dead spaces and were integrated

^{41 &#}x27;The New Medical School, 1973', GB 133 MMC/5/7/5, Owens College/University of Manchester Medical School, Special Collections of the University of Manchester (1973).

⁴² Oral history interview with Harry Fairhurst and Bill Beswick.

⁴³ Edra Spilman, 'The Multidiscipline Laboratories', *Journal of Medical Education*, 33 (2) (February 1958), 168.

⁴⁴ Pete N. Campbell, 'Multi-discipline Laboratories for Medical Students', *Biochemical Education*, 7 (3) (July 1975), 55.

into the labs instead. Rather than students staying in one place, the multi-user labs allowed students and staff to move to areas that could easily be equipped for particular types of work and adapted to different sizes as needs required. The intention was that they could accommodate an entire year group of up to 250 students during the term and be adapted to research purposes when not needed by students. The result was a departure from the highly customised spaces for particular specialisms and subject areas and a move towards a building that could easily be adapted as research and teaching necessitated.⁴⁵

The building's plant and services were also designed to provide flexibility. It had been found that too little servicing in one area hindered fitting out older buildings for particular purposes, or too much servicing in other areas meant noise and vibration rendered areas unsuitable for sensitive research or teaching. To overcome this, two separate buildings were constructed side-by-side and linked by a cork layer. 46 Functions involving noise or vibration, such as plant rooms, centrifuges and air conditioning were placed on one side of the building that then provided services to a central area which contained laboratories. In this way, any of the services required in a laboratory could be supplied without the need for structural alterations to the building. The side of the building furthest away from the plant rooms was lightly serviced and it was here that offices and study areas were located.⁴⁷ This innovation allowed the medical school to be first in the U.K. that could accommodate new Computer Aided Tomography because of its vibration-minimising building.48

Despite its range of innovative features, the building and its designers did instil their own assumptions about the nature of medical education. The building was designed to allow for the education of the 'whole' doctor with the intention that students would literally pass from pre-clinical to clinical areas on their route through the building.⁴⁹ It was assumed that the route of medical education from

⁴⁵ Oral history interview with Harry Fairhurst and Bill Beswick.

⁴⁶ Oral history interview with Harry Fairhurst and Bill Beswick.

⁴⁷ Oral history interview with Harry Fairhurst.

⁴⁸ Oral history interview with Professor Ian Isherwood.

⁴⁹ Oral history interview with Harry Fairhurst and Bill Beswick.

pre-clinical study, in which students learn the fundamental sciences behind the structure and functioning of the human body, to clinical study, in which students are taught the methods of diagnosing and treating the human body, was a timeless feature of medical education. However, this assumption was incorrect. In the 1990s the Medical School abandoned the pre-clinical and clinical approach and adopted a problem-based learning model where students study pre-clinical and clinical aspects in unity. Moreover, as the biological sciences gained a more prominent place university research and teaching, the building's use was extended to include students and staff from a wide range of disciplines and the building's design around the 'whole doctor' became meaningless.

CONCLUSION

The medical education buildings in Manchester demonstrate that they are rich resources for understanding institutional, disciplinary and societal change. In them we can observe evolving knowledge, pedagogical change and new approaches to the way in which buildings should support the needs of research and teaching. The 1874 medical school demonstrated that, despite changes in how medical students were taught over preceding decades and the advances in medical knowledge, anatomy and dissection were still considered to be at the core of medical education. Furthermore, despite the improving academic and social status of medicine, the building's location on the site hinted at its prior poor reputation. The 1894 extension was a large and bold expression of the rise of scientific medicine. Spaces were created for teaching the sciences that underpinned medical knowledge and practice; new research suites were constructed for advancing medical knowledge and treatments and the building incorporated new technologies. By 1973, medicine had secured its place in academia and society and the effort of the designers went into making functional and efficient spaces for medical research

^{50 &#}x27;The New Medical School, 1973', Special Collections of the University of Manchester.

⁵¹ Oral history interview with Bill Beswick.

⁵² Paul A. O'Neill, 'The Role of Basic Sciences in a Problem-Based Learning Clinical Curriculum', *Medical Education*, 34 (2000), 608–613.

and education. As a group, these buildings offer us an important resource for understanding the evolution of medical education and research and society's changing relationship with medical practice.

James Hopkins: The Disciplinary Development of University Buildings: Medicine and Manchester

Keywords: University of Manchester; medical school architecture; Enlightenment; Owens College; Alfred Waterhouse; Harry Fairhurst

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