

'Challenging the process' involves looking for opportunities to change the status quo, implementing innovative solutions, experimenting and taking risks, and recognising failures as opportunities from which learning can arise. 'Inspiring a shared vision' is about leaders articulating their dreams of what the future will be like and enlisting others into those dreams through personal magnetism, quiet persuasion, and exciting people around them. 'Enabling others to act' involves collaboration and the building of teams by the active involvement of others. Such collaborative working involves mutual trust and the development of others in a way that makes them capable and powerful. 'Modelling the way' is associated with being a role model, removing bureaucracy when it limits action, and putting up signposts to help people see the way forward, so creating opportunities for victory. 'Encouraging the heart' is about recognising and valuing the achievements of people, and making them feel like heroes.

Leaders need to demonstrate more than one or two of Kouzes and Posner's leadership behaviours when leading, and the behaviours identified should not be seen in isolation because they impact upon each other. However, it is possible for a leader to be stronger in some of the identified behavioural traits than others.

A definition of a profession

Downie² defined some important characteristics of a profession. These included:

- The requirement for a well defined skill-base proceeding from a profession-generated knowledge base;
- Being educated rather than simply being trained;
- Being independent of external influence;
- Being bound by a code; and
- Having autonomy and freedom to act.

In some respects, current events, particularly within healthcare, have started to evolve this traditional definition of a profession; for example, there is a move away from being an expert (the well defined skill base) to being engaged in effective continual professional development. Additionally, self regulation and autonomy is being modified to accountability, openness and external regulation.

Radiography: 1895-1980

Within a short time of their discovery, x-rays were being used for medical purposes and, soon after their application to medicine, there was a requirement for 'equipment operators' to be employed to produce the medical images required by doctors. These 'equipment operators' evolved subsequently into radiographers. In 1910, the first radiographer hospital training programme commenced³ and in 1917 the first formal teaching programme began⁴. In 1920, the [UK] Society of Radiographers was founded

and in 1935 the journal *Radiography* was established as the journal for British radiographers and their practice. Other early radiographic literature began to emerge; for example, Positioning in Radiography by KC Clark⁵. The development of the radiographic knowledge base followed slowly behind the clinical evolution and, surprisingly, the rate of knowledge development did not appear to keep pace with advances in clinical roles. The year 1925 saw the culmination of the long-running dispute between radiographers and radiologists over the division of labour. The outcome prevented non-medical members of the Society of Radiographers from reporting, a decision which forced the Society of Radiographers to change its Articles of Association accordingly and, so determined the occupational boundaries of radiography⁶ and the direction of radiographic practice for decades to come. This division was reaffirmed from time to time over the years, with comments appearing in the literature to remind the profession of its core business of image acquisition. A typical example was the comment by Furby⁷ who wrote:

"Some consider the inclusion of pathology in the [radiography] curriculum as having an element of danger in that there would be a tendency for the operator to attempt interpretation"

By the 1970s comments began to appear that attempted to challenge and extend the traditional core role of radiographers, with Swinburne's article⁸ on pattern recognition for radiographers the most well-known. Regardless of such emerging challenges, what was quite clear was that by the 1970s

radiographers had well defined roles in medical image acquisition, using a range of scientific principles and technologies. Reflecting this, a range of post-basic/post-qualifying education courses started to appear from the early 1970s and, by the mid to late 1980s, a growing number of radiographers were becoming more assertive in challenging the boundaries of their clinical roles. As a consequence, major advances in professional development started to ensue.

Analysis 1895-1980: Professionalism

Applying Downie's characteristics of a profession, it is clear that radiography had met some of the criteria by the end of this time period. It had a clearly defined skill base, although examination of the literature indicates that this was provided predominantly by other professional groups. Radiographers were being trained and associated underpinning theory was being addressed within the training programmes. However, the mechanisms of learning as inferred from the syllabi produced by the Society and later the College of Radiographers revolved around rote learning and recall of factual knowledge. As such, critical thinking and research skills were not evident, which is a deficiency in Downie's terms. Radiographers did have a code of practice that defined what they could and could not do, and regulation was evident by the end of the period with the establishment of the Council for Professions Supplementary to Medicine in 1960. Continual professional development began to be discussed in the latter part of the early years but autonomy and freedom to act were severely limited as can be seen in the codes of conduct and the professional literature during this period. Overall, by 1980, it was evident that radiography did not meet all of Downie's characteristics of a profession. However, by comparison with the early 1920s it was clear that great advances had been made, with some characteristics being met completely.

Analysis 1895-1980: Leadership

Leadership of the profession during this period can be examined by applying the five leadership behaviours identified by Kouzes and Posner.

Challenging the process:

The discovery of X rays and their use in medicine was, arguably, the first and greatest example of 'challenging the process' in radiography. Since then, frequent opportunities have arisen where leaders have moved radiography forward, including the introduction of radiographers in the early days of the 20th century and the focusing of the profession to the core responsibilities of image acquisition in 1925, through to the introduction of the concept of CPD in the 1970s. The events of 1925 have previously been viewed as inhibiting rather than innovative but it could be argued that these enabled the continued formation of the well defined core image acquisition role that radiographers have today.

Inspiring a shared vision:

The foundation of the Society of Radiographers and its subsequent work led the way in envisioning the future of radiography, inspiring others to believe in and take forward this future. The journal *Radiography* formed the medium through which leaders could inspire others in large numbers and its peer reviewed status increased its credibility. KC Clark's book 'Positioning in Radiography' was, and still is, a vision of excellence in radiographic positioning. Its accessibility meant that all radiographers had the potential to excel and so optimise their contributions to patient care.

Enabling others to act:

The foundation of training and, later, education programmes enabled standards to be set, attained and exceeded. These programmes formed the cornerstone for the development of the profession and enabled individuals to identify with and own their skills as radiographers.

Modelling the way:

KC Clark published one of the first books by a radiographer. In this, she set the example of excellence in radiographic positioning, with clear aims and expectations. The publication was so successful that Clark updated and republished it on several occasions and, since her death, the book continues to be updated and republished by other authors regularly.

Encouraging the heart:

The Society of Radiographers, through *Radiography*, recognised the contributions that leaders were making and celebrated them visibly by publishing their research findings and opinions within this journal.

A decision which determined the occupational boundaries of radiography.



Medical imaging is on the cusp of fundamental change.

Radiography: 1980-2007

The past thirty years has witnessed major advances in medicine, including in medical imaging. During the period, medical imaging became capable of resolving minute detail, through modalities such as high resolution computed tomography (CT) and magnetic resonance imaging (MRI). Highly sensitive methods are now available for imaging physiology, through both 'traditional' nuclear medicine methodologies and through the rapidly emerging field of positron emission tomography (PET). Modalities like ultrasound and MR have particular values because of their lack of radiation. Notwithstanding such advancements, the use of X-rays continues to have an important place in imaging. The creative use of medically-orientated technologies, particularly applied to physiological imaging, has enabled the mysteries of complex organs such as the brain to be unlocked. Exquisite functional and anatomical maps of these organs at rest, under stimulus, and insulted by a range of different pathologies are now available. Not content with these advances alone, there has been a rapid move towards hybrid imaging which allows functional and anatomical images to be co-registered at the point of image formation. Common examples of hybrid imaging include PET-CT and SPECT-CT (single photon emission computed tomography and CT), and it is expected that PET-MR will become a routine clinical reality soon. Again, medical imaging is on the cusp of fundamental change and the next 50 years is likely to be the age of genomics. As a consequence, molecular imaging

will enable the detection and treatment of disease before patients become symptomatic, driving change in the delivery of healthcare and minimising the need for surgery and biopsies considerably. In this respect, PET-CT and PET-MR will grow in importance, as will optical imaging. Clinical roles of radiographers have evolved rapidly during this period, too, and particularly since 1990. The work of Price⁹ and others provides documentary evidence to support this claim. Certain 'first post' radiographer roles have been derived from radiologist roles and have become embedded in pre-registration, qualifying education programmes at first degree level. Advanced clinical roles, again derived from the medical profession, have been developed within a postgraduate education framework. Accompanying this shift to under- and post-graduate education has been a growth in radiographer research skills and awareness with consequent growth in radiographer-performed research. As radiographer education moved into the higher education sector in the UK, research and critical analysis skills became mandatory, and part of the skills required of radiographers. It is important to understand what has brought about the changes to radiographer roles, particularly given that advancement of the profession beyond the image acquisition process was inhibited previously. Policy documents from various sources and new legislation were important catalysts for role advancement. Classic examples include: the National Health Service and Community Care Act 1990¹⁰, under which Hospital Trusts could

be created. These employers then became the decision makers in regard to those they employed and what the professional roles of their employees encompassed. In 1998¹¹, the Society of Radiographers, together with the Royal College of Radiologists, issued a joint statement that indicated a clear direction for radiology/radiography services to further enhance the career aspirations of radiographers. This identified that by engaging in role advancement for radiographers, patients could be offered better services. In 2000 the Department of Health¹² released 'A Health Service for all the Talents – Developing the National Health Service Workforce', giving further emphasis to new ways of working that utilise advanced roles. In fact, the Department of Health and professional bodies in radiology/radiography issued many policy and guidance documents to encourage the growth of advanced roles for radiographers, as well as other non-medical professional groups.

The response to these national initiatives was massive interest and growth in new roles, alongside which came more rigorous and demanding codes of conduct for radiographers and the much increased possibility of clinical negligence claims. The accountability of radiographers increased enormously, therefore. Whilst top-down initiatives had their place in the development of advanced roles their widespread adoption would not have occurred if radiographers had not demonstrated that the new roles were effective. Dissemination of information through conferences and journals was very important in assisting the evolution of clinical roles. An example, in 1994, was the article by

Loughran¹³ illustrating that radiographers can report x-ray images to a good standard. Figure 1 illustrates the timing of Loughran's publication in relation to the uptake of this role nationally. This was first noted in 2003¹⁴.

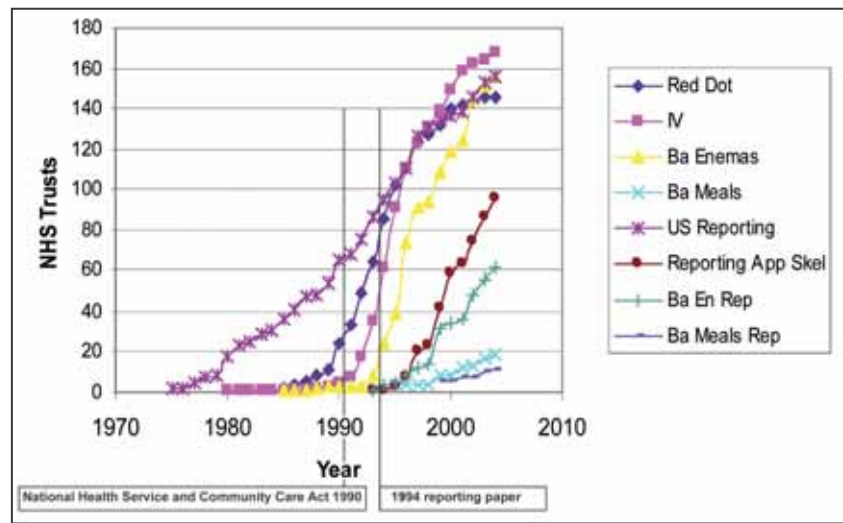


Figure 1 Adoption and diffusion of advanced roles

On examining Figure 1, it becomes clear that Loughran and co-workers were implementing the radiographer reporting role well before most others. Additionally, the paper was published very early in the take up of this new role for radiographers. Shortly after publication, there was rapid growth of university-based courses addressing this specific practice (radiographic reporting) and consequent rapid growth of the role. It is not clear how much importance publications of this type have in the advancement of clinical roles but it is reasonable to assume that they do have some effect. Anecdotal evidence also supports this view. A similar argument could be applied to legislation. Again this is demonstrated

in Figure 1 which shows rapid growth of advanced roles after the implementation of the National Health Service and Community Care Act¹⁰ in 1990.

It is essential that policy makers recognise that the changes they desire are brought into being by local trail-blazers.

Accompanying advanced roles and pre-requisite requirements to hold first and higher degrees, the knowledge base of radiography began to develop at a significantly faster rate than previously. Importantly, this knowledge base development has been increasingly under the leadership of radiographers and, in the period from 1980 onwards, a considerable number of books and journal articles have been published with radiographers as first and co-authors. The journal *Radiography* established itself as a well respected, international peer reviewed journal and other journals specifically for radiographers also appeared and established themselves. Additionally, radiographers published in other journals, including those primarily with medical and nursing readerships.

Analysis 1980–2007: Professionalism and Leadership

Reviewing Downie's characteristics of a profession² as applied to radiography, it is clear that the knowledge base of the profession has increased significantly, partly from research findings contributed from outside the profession and partly by radiographer-generated research. Evidently, too, the radiographer-generated evidence base is growing in its extent and in its relationship to practice. Indeed, the requirement to base evidence upon practice has become increasingly important and this is associated closely with professional accountability. In the late 1980s/early 1990s, there was a major shift from a predominantly hospital-based training

system to university-based education and training programmes. Since 1980, too, there have been several revisions to the profession's code of practice and the most recent¹⁵ is far reaching in terms of practice and competence to practice. As the most recent code demonstrates, autonomy and freedom to act have increased considerably, especially for advanced and consultant practitioners. Radiographers continue to have professional regulation and, overall, it is evident that radiography has moved a considerable distance along the path of becoming recognised fully as a profession.

It is also interesting to apply Kouzes and Posner's five leadership behaviours to the development of radiographic profession during this most recent period.

Enabling others to act:

Obtaining the Diploma of the College of Radiographers (formerly Membership of the Society of Radiographers/Diploma of the Society of Radiographers) enabled individuals to study for the Higher Diploma of the College of Radiographers. However, few radiographers did so and a significant shift in focus became necessary to support the further academic progression of the profession. This came towards the end of the 1980s when the College of Radiographers determined to move away from offering its own diploma level qualification and championed first degree level education as the route to qualifying and registering as a radiographer. This enabled radiographers to enter higher education and progress to higher degree level education, and to bring into radiography the additional values associated with being a graduate profession.

The massive developments in technology during the period, together with associated funding, also created a climate which, at least for the politically aware, was highly enabling. Hence, healthcare policy in recent times, too, could be said to be an enabler for the development and expansion of radiography and the roles of radiographers. More likely, however, is that those who interpret policy into practice are the real enablers.

Challenging the process:

Government policy is often conceptual, necessitating adaptation and interpretation according to variables such as local need and existing local structure. The interpreters of policy challenge views and opinions, and even fundamental beliefs at times. Traditional roles, imaging modalities, and places where imaging takes place have all been challenged in recent times to better meet patient need. Challenge of the magnitude seen in medical imaging since 1980 is not without risk and, while a 'no blame culture' is gradually being engendered into organisations and professions, mistakes due to misjudged risk-taking can still, unfortunately, lead to punishment rather than learning. Unfortunately, too, this results in some perpetuation of the traditionalism and hierarchy that held back the profession in earlier times.

Inspiring a shared vision:

The current holistic view of the National Health Service (NHS) as described in government policy is, undoubtedly, influencing the vision of the radiography profession; discipline could not have progressed as it has if the NHS had not evolved.

Taking education from the diploma to first degree level showed mature vision and courage; it was, probably, one of the biggest steps in the profession's move from 'training' to 'education'. The document published by the College of Radiographers and the Royal College of Radiologists 1998¹¹ was itself visionary but, importantly, it built on the political climate of patient focus, and patient-focussed care. If the document had considered only the development of the professions, it may not have been as well received and implemented.

Encouraging the heart:

In the period 1980–2007, much more emphasis has been placed on those who achieve, not least by celebrating their successes. Annually now, the best clinical radiographers as identified by their peers and recognised by their profession are celebrated at the Houses of Parliament; the journal *Radiography* acknowledges its best research paper, and peer-reviewed conferences award

prizes. Additionally, individuals are encouraged by publishing their work in journals and books, and by being invited to speak about their work nationally and internationally.

Modelling the way:

The Society of Radiographers sets out standards that it expects radiographers to follow, and acts to remove or clarify bureaucratic and other barriers to practice development and the continuing development of the profession. Loughran and his radiographer colleagues were innovators; they forged the way ahead, then described the path for others, much as a guide might do through uncharted territory.

Effective professional development and leadership – looking ahead

There is no doubt that leadership has played a highly significant part in the development of the radiography profession. This is much in evidence at the national level and this article has featured some of the mile-stones in the profession's development. However, this development of the profession could not have occurred without there being clear professional leadership at the more local level. Leaders at the local level are more difficult to identify through the historical record and the current literature, but they are essential to improving service delivery at the NHS/patient interface where they share their vision of excellent care, and lead and implement change through others. The role of such radiographers cannot be over-stated and it is essential that this professional

leadership at local level (as well as leadership at regional and national levels) must be sustained to enable the continuing development of both services provided and the roles of radiographers within those services.

It is acknowledged that investment in leadership development is somewhat random. It is also the case that radiographers, like other professions, need support and education to develop the skills of leadership or, to recognise such skills in themselves and others. A number of nationally and internationally recognised programmes exist to address leadership development needs, and the profession has set out its own core expectations of its leaders¹⁶ but these alone are insufficient to secure professional leadership and, through this, secure continuing development of the profession and its contribution to healthcare. Rather, it is essential that governments and healthcare policy makers recognise that the changes they desire (or decree) in relation to the delivery of healthcare are brought into being by local leaders and trail-blazers in the healthcare professions, including radiography. The energy and skills of professional leaders should be harnessed to deliver the healthcare service required for the 21st century; advancement of the professions and clear investment in and support for professional leaders is in the clear interests of the NHS and the patients it is meant to care for.

Conclusion

Leadership and the development of the profession of radiography have gone hand in hand over the past hundred

years, or so. Indeed, leadership has been crucial to the profession's development, and particularly so in the later decades. In terms of what is to come, excellence in professional leadership will be critical to support the need to develop the profession yet further, and make it fit to enter the molecular imaging and gene therapy era. Current and emerging leaders at local level will be essential – they need to invest significantly in their own development; leaders at regional and national level are vital – they must continue to enable, challenge, inspire and encourage, as well as to model the way.

Peter Hogg is the course leader in MSc Nuclear Medicine at the University of Salford.

Dianne Hogg is the leadership facilitator at East Lancashire Primary Care Trust.

H Brian Bentley is retired and holds honorary academic appointments at the University of Leeds and the University of Salford.

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