Super-specialization leads to higher surgical standards?*

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"What is truth?" said jesting Pilate, and would not stay for an answer.

"What is super-specialization?" asked an enlightened student not long since, and though she stayed for an answer, I could give none. A not inconsiderable handicap, given the title of this essay. Before we super-specialize we have to specialize, so perhaps examining specialization would be an appropriate beginning.

In my preliminary reading I was particularly delighted to find an account of the birth of industrial specialization attributed to Victor Hugo in his epic novel *Les Misérables*. Supposedly, the transition from medieval to modern production in the early 19th century is portrayed. In the old system, each worker was responsible for a job from beginning to end; the pottery worker would shape the clay into the proper form, paint the decorations, glaze the clay and bake it in a kiln. Hugo's hero noticed that some workers were better at glazing pots than shaping them. This was the basis for the introduction of a new philosophy of production. Instead of having each worker do all the parts, individual workers were selected to specialize in only one part of the process. The result was an overall improvement in total production, and the division of labour into specialized areas is the basis of modern production. Despite close study of the novel, I have been unable to identify this account in the text.

Certainly Father Madeleine brought about revolutionary changes in production at the factory in Montreuil-sur-mer but this was through the idea of substituting shellac for resin and making bracelet clasps from bending metal rather than soldering them; nevertheless the tale makes a point.

We can juxtapose this view of specialization with the idiosyncratic view of the astute medical commentator, Richard Asher, who suggested that the real reason for specialization was to satisfy the egocentricity of those who did not feel decidedly conspicuous enough working within the framework of their established field.

In the former case the process of specialization is directed from without whereas in the latter case the process of specialization is self-determined. What happens in reality, in medicine, is something between the two. An individual or a small group of individuals start to move in a new direction, develop new techniques, new interests and new standards and, as the success of their results becomes recognized and accepted, so another specialty is born.

Specialization

Specialization has been around in medicine for quite some time. In the 1870s and 1880s, St Thomas's Hospital in London and Massachusetts General Hospital in the USA set up departments of ophthalmology, dermatology, laryngology and neurology. It is of interest to note that the first neurologist appointed to the outpatient department of the Massachusetts General Hospital was given the somewhat disparaging title of "electrician". However, while accepted reluctantly by leaders of the medical professions in both countries, the movement towards specialization was well under way.

The field of surgery remained fairly limited until during and after the First World War when the surgical specialties began to develop. In 1918, Frognal House and the grounds at Sidcup were designated as a Central Military Hospital specializing in facial and jaw injuries. Here Gillies and Kilner set up the first Plastic Surgery Unit in the UK. The objective was to treat wounded servicemen using surgical techniques which were developed to transfer skin and restore contour.

While the pool of injured and disfigured servicemen continued, the Unit flourished but, when the supply became exhausted, so did the value of the Unit. Between the wars, the idea of a special and necessary service was kept alive by using recon-

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structive techniques developed on the servicemen
to tackle congenital and traumatic deformities in
the civilian population. It was not until the Second
World War that Plastic Surgery really established
itself and the specialty became formalized with the
inaugural meeting of the British Association of
Plastic Surgeons held on 20th November 1946. By
1948, following the institution of the National
Health Service, the profession as a whole appreci-
ated that certain deformities were treated best by a
specialist group of surgeons, plastic surgeons.

So what began as a visionary move by a few
enthusiastic, energetic, capable individuals was
finally endorsed by the entire profession.

Super-specialization and beyond
I have mentioned specialization, but the title of this
essay refers to super-specialization. The danger of
vogue terms is that so often they are not readily
defined and as such embody a certain degree of
imprecision and confusion in their use. Reading
the medical literature I find the terms specialization,
sub-specialization and super-specialization are used
somewhat loosely and I feel it is incumbent upon
me to explain my use of the terms before proceeding.

I believe they are purely relational, implying a
narrowing but concomitant deepening of a field of
interest. We can regard a specialty as a specific and
defined area of interest. When we talk about a sub-
specialty we are talking about an aspect of the
scope of the specialty which is pursued to the
exclusion of all other aspects. A super-specialty,
however, is a special interest but one which is not
pursued exclusively and responsibilities still exist
within the broader scope of the mother specialty.

Specialization is an inevitable result of the
increasing complexity of an evolutionary discipline
such as medicine. Developing like a tree, growing,
budding, branching, specialties will give rise to
super-specialties which will in turn become sub-
specialties. A sub-specialty will become a specialty
when it is no longer identified as part of the scope
of another specialty. Thus neurosurgery might once
have been considered a sub-specialty of general
surgery but nowadays few general surgeons would
contemplate intracranial surgery, and neurosurgery
is identified as a specialty in its own right. The
process of evolution is driven by many forces among
which is the humanitarian ideal to improve contin-
ually upon the results of medical care. Conventional
wisdom would suggest that higher surgical stand-
ards are going to ensue from such progress.

Super-specialization is inevitable, but what I
perceive as the concern behind this essay title is
whether forcing the process is for the overall good.
Are there drawbacks to super-specialization? Is
this the only way to raise surgical standards and
how do we assess such standards?

Surgical standards
 Ideally, I think surgical standards should be
measured by results of surgery. These are, after all,
what matter to the patients. But the concept of
surgical audit is enough to induce severe palpita-
tions among trained surgeons let alone those
undergoing training. At present, in the UK, the
only real assessment of surgical standards occurs
after the completion of a period of recognized
training. Whether this is of any value in predicting
the quality of practice throughout the subsequent
professional lifetime of an individual surgeon is
open to debate. The history of these assessments
goes back for over 100 years. At that time, aspiring
surgeons were assessed by an examination of
knowledge and capabilities. The responsibility for
this examination had fallen upon autonomous
institutions of great antiquity which had developed
over several centuries into professional bodies of
high academic standing. At the turn of the century
the reputation of the Royal Surgical Colleges of the
British Isles was deservedly high with the mainte-
nance of surgical standards through the process of
a severe and rigorous Fellowship examination with
a high failure rate. Possession of the Diploma was
the hallmark of a trained surgeon. However,
nothing in the world is static or immutable and,
within 50 years, although the nature of the
Fellowship examination had changed relatively
little, the principles and practice of surgery had
undergone considerable advances. Thus by the
1950s far from being the hallmark of a trained
surgeon, the Fellowship Diploma was a sine qua non
for a junior training position in the more prestigious
hospitals.

It was about this time that criticisms of the
Fellowship examination in relation to the surgical
sub-specialties began to be heard. Orthopaedic
surgeons, in particular, felt that the examination
was very much orientated towards General Surgery
and there was no satisfactory form of objective
assessment of the training and professional com-
petence in their own specialty. Similar criticisms
were heard from representatives of other sub-
specialties and, after much debate, the Royal
College of Surgeons of Edinburgh instituted a
Higher Specialty Examination. The first examina-
ever, since the 1940s there has been an exponential growth in sub-specialties so that by 1987 there were 49 additional pathways to certification, giving a total of 81 specialty boards. Sir William Osler, who became regius professor of medicine in Oxford in 1907, observed that “The extraordinary development of modern science may be her undoing. Specialism, now a necessity, has fragmented the specialties in a way that makes the outlook hazardous.”

If we are going to pursue the path of additional certification then what are the implications for individual surgeons’ practices? Competition for cases can be bad enough between specialities but what is going to happen within a speciality between the super-specialist and the enthusiastic generalist? Medico-legal considerations will tend to support the position of the super-specialist at the literal expense of the generalist. The overall impact on the speciality will have to be considered, as a tendency to move towards super-specialization may leave the less attractive elements of a specialty neglected. In addition, because of the increasing complexity of contemporary medicine, super-specialization is hardly ever synonymous with simplification or rationalisation. Invariably, to establish a super-specialist service will require a considerable economic outlay and, when faced with fiscal constraints, sacrifices will have to be made in other areas. What this means in practical terms is that the concentration of funding, staff and resources in a particular interest may be of considerable benefit to a small number of patients but result in a larger number of patients being deprived of treatment which is probably less exciting medically, scientifically or politically.

Super-specialization can also distort the exposure of medical students and postgraduate trainees to the general spectrum of practice in any specialty. Unless suitable rotations can be arranged, the resulting experience may lead to a poor contribution to general professional training.

Specifically Plastic Surgery and super-specialization
Plastic Surgery is not a politically strong specialty in the UK in terms of its influence or bargaining power, and it commands limited resources. To move towards increasing super-specialization would mean concentrating the resources in the larger centres. This would seriously undermine the service commitment of general Plastic Surgery which remains virtually undeveloped in many district general hospitals within the UK. The full-time employment of well-trained general plastic surgeons in more DGHs would have a considerable

**Super-specialization: the drawbacks**

It has taken many years and much effort to arrive at some objective assessment of surgical standards in “general” Plastic Surgery. If we are now going to entertain super-specialization, how are we going to assess and monitor the surgical standards of the super-specialist? Should there be additional certification procedures? It is instructive to look at the experience in America where specialist certification has a longer history. The first American Medical Specialty Board was the American Board of Ophthalmology which held its first examinations in 1916. In the ensuing 70 years, 31 other primary medical specialty boards were established. However, since the 1940s there has been an exponential growth in sub-specialties so that by 1987 there were...
effect in raising overall surgical standards. It is not just a question of exposure to the surgical techniques of plastic surgeons. One of the joys of the specialty is to work with surgeons from other specialties and to realize that the presence of an expert in repair and reconstruction inspires confidence when dealing with the unpredictabilities of malignant disease and trauma.

We have to be aware of the growing restlessness of many surgeons within the specialty. When we look at the scope of Plastic Surgery today, as described in the revised training recommendations from the SAC in 1985, it is difficult to find a common thread linking the various aspects of the specialty. Perhaps “plastos” refers to the surgeons, not the surgery. For the pioneers, there were no territorial limits to the specialty. Where current surgical methods were unsatisfactory, the plastic surgeon would apply craft and ingenuity to develop new techniques. But once the techniques were refined, what was or is there to stop other specialties from adopting them?

It is evident from reading editorials and comments in specialist journals from both sides of the Atlantic, that Plastic Surgery and plastic surgeons are very much in the throes of an identity crisis. The very diversity of the scope of Plastic Surgery is now regarded as a potential and fundamental threat to the survival of the specialty. At such a stage, to contemplate super-specialization within the specialty in the UK appears to be a somewhat self-indulgent escapism. In the short term, higher individual surgical standards may ensue, but in the longer term we may be hastening the disintegration of the specialty.

**Plastic Surgery: the cutting edge**

We need to establish a new power base for Plastic Surgery such that we can incorporate sub-specialization into the organizational scope of the specialty without jeopardizing the integrity of Plastic Surgery as a whole. In this way, super-specialization will not be a self-destructive step. The foundation of this power base must be knowledge. The establishment of clinical academic departments of plastic surgery within the UK is a priority of utmost urgency which will potentially have far greater impact on raising surgical standards than super-specialization per se. Christopher Booth, speaking at a Green College lecture this year, suggested that the academic department might be the hub of a wheel which encompasses the NHS specialty and sub-specialty units, and be responsible for training programmes. This would facilitate the rotation of the general plastic surgical trainees through the sub-specialties before they choose between general plastic surgical practice in a DGH or further training in a particular sub-specialty. The clinical academic departments should be unapologetically elitist, allowing multidisciplinary academic research of the highest calibre to proceed together with active involvement in clinically based research.

If Surgery is the knife, then Plastic Surgery is the cutting edge. Plastic surgeons have refined surgical craft to extremely high levels and the specialty should be flattered that other surgeons want to acquire its techniques. Plastic surgeons are making excellent research contributions in the fields of surgical anatomy and physiology, but this vital research aspect of the specialty is relatively unexploited and must be widened. There is a need for a strong Plastic Surgery presence in the basic sciences. Immunology, molecular biology, cell biology and biochemistry are all essential elements of contemporary surgical research. The specialty needs to be actively involved in developing clinical applications for new technologies: lasers, microprocessors, genetic engineering. We need to explore information technology to help integrate clinical experience and surgical research and make the accumulated wisdom of the specialty more readily available. Finally, we are entering an era of increasing accountability and audit. The continuous assessment of surgical standards is going to become a reality for all surgeons. To determine objective standards of surgical practice is a daunting process but one which each specialty has to face. This may also be part of the research responsibilities of clinical academic centres.

Yes, super-specialization does lead to higher surgical standards. However, where Plastic Surgery is concerned, we first have to resolve an identity crisis. If the general field of Surgery is going to make an incisive impact in the next century, then it needs a strong and unified specialty of Plastic Surgery. For what good is a knife without its cutting edge?

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