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The Art of Medicine – visualising medicine from Vesalius to MRI

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Abstract

Medicine over the last 60 years has become increasingly scientific to the detriment of the artistic qualities which had been considered part of the medical profession from Hippocratic times until quite recently. This situation has been changing and more emphasis is being placed on the teaching of medical humanities to students. To support this libraries are developing specialised collections of relevant art and literature. One such outstanding example is the “Lux Humana” collection at the National Library of Health Sciences at the University of Helsinki. However the use of the visual arts in teaching anatomy has never been questioned and is essential for students and indeed patients to grasp the complexities of the human body. There are many fine examples of the medical illustrators’ art and this artistic quality has continued into the era of multimedia where products such as A.D.A.M. have become one of the standard tools for teaching anatomy. In radiology particularly a sense of the visual is key and unsuccessful attempts have been made to replace this sense with computerized image analysis. Some attempts have also been made to use visual images to clarify patient information and as a navigation tool of the body. However do medical students possess or even need to possess an appreciation of art and do they see any difference between radiological images and the medical illustrators art? This paper will attempt to address the question and look at some of the examples of classic anatomy texts and how radiological images are now being used as works of art.

Introduction

The New York University School of Medicine defines medical humanities as including “an interdisciplinary field of humanities (literature, philosophy, ethics, history and religion), social science (anthropology, cultural studies, psychology, sociology), and the arts (literature, theater, film, and visual arts) and their application to medical education and practice.”

Furthermore they also say “The humanities and arts provide insight into the human condition, suffering, personhood, our responsibility to each other, and offer a historical perspective on medical practice. Attention to literature and the arts help to develop and nurture skills of observation, analysis, empathy, and self-reflection -- skills that are essential for humane medical care.”¹

Amongst the above list of disciplines that comprise medical humanities can be found the visual arts which have links to medical practice dating back several centuries. Both in the diagnostic and therapeutic areas the visual arts are essential to the teaching of medicine as aide memoire for the medical practitioner.



Figure 1: Ancient Chinese acupuncture chart

In the therapeutic areas we have many examples of herbals, acupuncture charts from traditional Chinese medicine and some very beautiful and detailed thangka from Tibetan Medicine amongst other works. Recent therapies include art therapy and also the use of colour to induce healing and health.



Figure 2: Ancient Tibetan therapeutic thangka

In the diagnostic area, the most obvious area for use of the visual arts however has always been in the teaching of anatomy where many fine examples of the illustrator's art exist. One of the most famous texts and the one that took medical illustration to a higher plane is the "*De Humani Corporis Fabrica*" created by Andreas Vesalius in 1543². This book changed the face of medicine as it actually depicted the human body taken from a series of dissections rather than from a Galenic descriptive viewpoint. The series of "flayed men" are portrayed in classical poses set in a landscape. This work set the standard for anatomical texts and many other fine works were produced over the following centuries. Of interest to librarians is the fact that several of the pages have been digitized in a joint National Library of Medicine/British Library project and are freely available on the Web using the "Turning the Pages" software.³



Figure 3: Illustration from Andreas Vesalius "*De Humani Corporis Fabrica*"

In the late 19th century the discovery of X-rays changed the face of anatomy teaching entirely and although anatomical textbooks continue to be produced they can now be enhanced with x-ray, CT and MRI images. Some products also make use of the new multimedia technologies available such as A.D.A.M. which has been available for a number of years and has grown into a major product offered to both the medical profession and the public. The National Library of Medicine has also done much work with its “Visible Human project”⁴ spawning many offshoot projects aimed at teaching anatomy.

In some cases the art of anatomy has come full circle and artists are now using the human body as a form of visual art. Gunter von Hagen in Germany has controversially “plastinated” human bodies and turned them into installation art which has been exhibited widely⁵. A lesser known artist is the UK’s Angela Palmer who etches MRI scans onto Perspex sheets and then reconstructs in three dimensions or creates video journeys through the human body.⁶

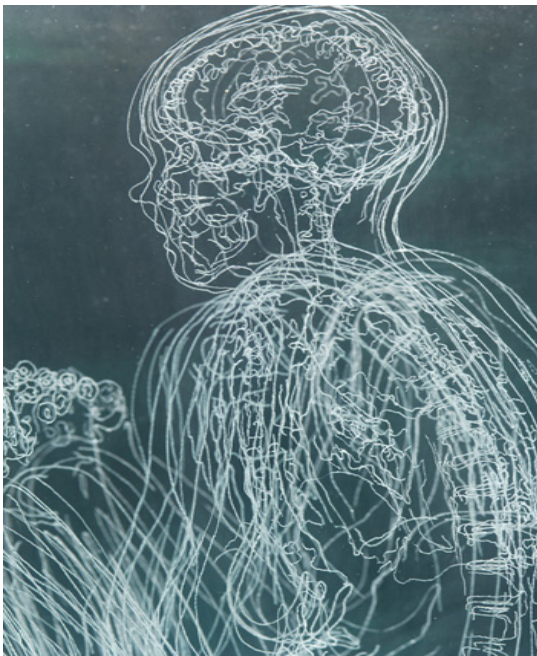


Figure 4: Angela Palmer Self Portrait

Methodology

The authors of this paper wanted to discover if medical students thought that an appreciation of art was useful to them in their studies and thereby if a medical humanities course was indeed required. We also wanted to find out if they felt that visual images conveyed ideas better to patients and whether computers would replace doctors in the interpretation of radiological images?

We designed a questionnaire which was made available to medical students in Bucharest, Romania. We chose Romania as we had easy access to medical students who provided the subjects of the study. Medical students in Romania are able to study medical history as an optional module but, as yet, medical humanities are not taught per se.

We asked the following questions:

1. Do you think that visual images are essential for medical training?
2. Do you think that appreciation of art is useful for medicine?
3. Do you think that visual images convey information better to patients? Do you think that using visual information for conveying clinical ideas to patients is a better way than just their verbal communication?
4. Do you think technology will replace human interpretation of images? Do you think computers will replace doctors in radiological diagnosis?
5. Do you think that radiological images are artistic?
6. Did you study the History of Medicine? If yes, did this make a difference in your medical training?

Results

We issued 50 questionnaires and 44 were returned which gave a response rate of 88%.

Students were targeted from all years of the course as follows:

Year II	Year III	Year IV	Year V	Year VI	Year III Residency
1 of 44(2.2%)	13 of 44(29.6%)	11 of 44(25%)	7 of 44(16%)	10 of 44(22.8%)	1 of 44(2.2%)

Question 1: Do you think that visual images are essential for medical training?

YES	NO	Didn't answer
42 of 44(96%)	1 of 44(2%)	1 of 44(2%)

Question 2: Do you think that appreciation of art is useful for medicine?

YES	NO	Didn't answer	I don't know
31 of 44(71%)	10 of 44(23%)	1 of 44(2%)	2 of 44(4%)

Question 3: Do you think that visual images convey information better to patients? Do you think that using visual information for conveying clinical ideas to patients is a better way than just their verbal communication?

YES	NO	Both	It depends on the patient	It depends on the information
34 of 44(77%)	3 of 44(7%)	2 of 44(5%)	4 of 44(9%)	1 of 44(2%)

Question 4: Do you think technology will replace human interpretation of images? Do you think computers will replace doctors in radiological diagnosis?

YES	NO
3 of 44(7%)	41 of 44(93%)

Question 5: Do you think that radiological images are artistic?

YES	NO	Both	It depends on who is looking at them	I don't know
13 of 44(30%)	25 of 44(57%)	2 of 44(4%)	3 of 44(7%)	1 of 44(2%)

Question 6: Did you study the History of Medicine? If yes, did this make a difference in your medical training?

YES	NO	Yes, but it had no importance
12 of 44(28%)	30 of 44(68%)	2 of 44(4%)

Conclusions

The response rate to the questionnaire was quite high which showed that students were interested in the questions we were asking. The questionnaires supported our hypothesis that visual images are important in the teaching of medicine with comments such as indispensable and invaluable being used. One respondent commented that from the preceding years of study they remembered only the images.

The majority of respondents felt that an appreciation of art was useful in medicine and comments pointed out that medicine was an art too and that it stimulated the visual senses which improved observational skills.

The use of images in conveying information to patients was also considered helpful by 77% of the respondents although there were some comments about the sort of patient and information. Comments were generally positive and the respondents thought that images helped patients to understand difficult medical terms although one commented on the time spent with patients wasn't enough to use images. One respondent felt that images might scare the patient and so would be detrimental. It would be an interesting further study to see how the responses varied between countries and cultures.

There was an overwhelming negative response to the concept of computers carrying out diagnosis and most comments noted the holistic approach to diagnosis where a computer would not know the clinical conditions of the patient or the subtleties of diagnosis. Again this would be an interesting study to see if there were differences between countries and cultures.

Many of the respondents did not feel that images were artistic and comments were generally negative. Most felt that they were only a way to diagnosis and were generally shades of grey. It could be that the question was too blunt and that a question about the use of images as art might have been more positively received.

The history of medicine question produced some positive feedback from those students who had studied the module. Comments included the value in appreciating the clinical examination and for background to particular techniques.

Overall there was a feeling that the visual arts did assist medical students with their studies and that they were also useful in explaining problems to patients. It would be interesting to see how they would react to the art of von Hagen and Angela Palmer.

References

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