

The art of observation, from visual artworks to medical diagnosis: initial experience at Sapienza University of Rome

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Abstract

Even though arts represent a teaching tool, these have not traditionally been part of European medical education. Clinical diagnosis involves the observation, description and interpretation of visual data. These skills can be stimulated and trained by observing visual artworks. Nevertheless, how do we learn how to look? During the last years we are developing a project introducing Arts within the medical core curriculum, from clinical anatomy to pathology. Firstly, selected artworks are shown during traditional lessons as clinical triggers or enhancers; on the other hand, art clinically-focused exhibitions can be planned in the faculty/hospital. Secondly, we are experimenting a series of asynchronous video tutorials and mini-videos covering a wide range of clinical anatomy-related topics which are posted either in a social network and/or in an internet site. These videos include short introductory remarks and legends and cover a long time span. Artworks are chosen in order to be narrative in nature and rich in detail, thus stimulating reflection and self-discussion. Finally, thanks to a collaboration between Sant'Andrea University Hospital and a museum we piloted an innovative

experience with small-group interactive sessions focusing on the analysis of selected original paintings. This non-traditional format brings a new lens through which students can learn valuable visual skills, thus training the so called “clinical eye”, enhancing visual literacy. An art-based approach to teaching observational skills should be included continuously within the medical curriculum.

Keywords: art, human anatomy, medical education, medical humanities, paintings, visual skills.

Introduction

*“The more one looks,
the more one sees.”*

Abigail Housen, a pioneer Art educator¹

Even though Arts represent a teaching tool since 1902, mainly thanks to the pioneering work of Alfred Lichtwark,² Arts have not traditionally been part of European medical education. As we know, clinical diagnosis involves the observation, description and interpretation of visual data (the so called imaging: radiography, magnetic resonance imaging, computed tomography, positron emission tomography, etc.). These skills can be stimulated and trained by analysing visual artworks, such as classical representational paintings or sculptures. But how do we learn how to look? In fact, there are several obstacles to be

passed: medical learners’ empathy levels decline dramatically during medical school;³ research methodology becomes always more complex; there is a reduced interest in patient’s physical examination as well as increased costs for -often useless- medical instrumental analyses.⁴

Many universities in the world offer mostly elective museum-based courses focusing on observational skills and the art of seeing. Among these, Harvard University, USA (“Training the Eye: Improving the Art of Physical Diagnosis”);^{5,6} Yale University, USA (“Enhancing Observational Skills”);⁷ Weill Cornell Medical College, USA (“The Art of Observation”);⁸ McMaster University, Canada (“The Art of Seeing”);³ Bond University School of Medicine, Australia (Medical

Humanities Workshop; Medical Humanities Week, and “Art is Good Medicine” community Art exhibit);¹ and Karolinska Institutet, Sweden (“Visual Art Program” for Nursing).² In Italy, the University of Bologna offers an elective course called “Ars medica (l’arte di curare)” addressed to both medical and nursing students*. During the last years, Sapienza University of Rome is developing a pilot project at Sant’Andrea University Hospital introducing Arts within the medical curriculum, from clinical anatomy to pathology. Herein, there is a brief description of our ongoing experience.

How to (easily) learn to observe

- Selected artworks are shown during traditional lessons as clinical triggers or enhancers, in particular, at the beginning of large chapters (i.e. the organ senses, the endocrine system, the musculoskeletal system, and so on) within the course of “Human and clinical anatomy” for first- and second-

year medical students. These artworks –mostly classical and representative paintings or sculptures– are chosen either directly from online world museums’ collections, Google Arts & Culture (formerly Google Art Project), an online platform through which the public can access high-resolution images of artworks housed in the initiative’s partner museums, or from Wikimedia Commons, an online collection of freely usable media files. A good practical example is represented by one artwork of the famous Flemish painter Pieter Paul Rubens, *The Three Graces* (1630-1635, Museo del Prado, Madrid, Spain; Fig. 1) in which several anatomical abnormalities or pathologies may be identified following an accurate analysis of the “clinical signs”. Besides the evident overweight, the S-shaped scoliosis and the hyperlordosis of the three Graces, the Grace on the left shows a lateral deviation of the nipple (maybe Mondor’s disease?); hyperextension of the right metacarpal

*www.unibo.it/sitoweb/guido.cocchi/avvisi/87cd172c

joints (the so called “swan neck” sign); flat feet; right hallux valgus (note that the start of a bunion is seen in her right big toe), and signs of rheumatoid arthritis. The central Grace, in turn, shows cellulite (panniculosis deformans) and, interestingly, a positive Trendelenburg sign (i.e. the hip abductors are unable to control the dropping of the pelvis when the opposite leg is raised so the pelvis tilts down instead of upwards). Finally, if we focus on the Grace on the right, her left external upper breast quadrant is likely to show signs of an open ulcer; redness of the surrounding skin; ipsilateral nipple retraction; reduction of the left breast volume, and enlarged ipsilateral axillary lymph nodes, all signs that may lead to the presence of a locally advanced breast cancer. The three Graces were sisters, therefore, they shared genetic traits and, together with the other clinical signs observed, favour the working diagnosis of familial benign hypermobility syndrome, a benign genetically determined disorder of connective tissue, characterized by hyperlaxity of the joints, and in some cases associated with varicose veins,

Figure 1. The Three Graces by Peter Paul Rubens (1635, Museo del Prado, Madrid). The circles evidence the several possible pathologies. This is a black and white image taken and modified from a public domain reproduction (Wikimedia Commons).



flat feet, functional scoliosis, and arthritis.⁹ Another similar example in classical painting is represented by an artwork of Lucas Cranach The Elder,

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The Three Graces (1530, private collection), wherein the position adopted by the three graces is evidently unnatural.

- Art exhibitions can be organized along the aisles of the faculty/hospital, including high resolution, large format reproductions of famous prehistoric, classical as well as contemporary artworks. For example, in 2008 an art exhibition entitled “Foemina, the breast in art and medicine”, representing the breast along Art history, was organized in such a way that both the medical and non-medical communities were free to look at it. This special exhibition was an original project of the Osservatorio Nazionale sulla Salute della Donna [National Observatory on the Health of the Woman] integrating medicine and humanities and helping women suffering of breast pathologies to feel more confident and more close to their hospital and physicians.
- Use of video tutorials and mini-videos. With the technical assistance of the Teleteaching Unit “G. D’Addona” of our university, since 2014 we are preparing a series

of asynchronous (pre-registered) video tutorials covering a wide range of clinical anatomy-related topics. These videos are posted either in a social network, i.e. a public page of facebook entitled *Arte e anatomia: l’arte di osservare* [Art and anatomy: the art of seeing]) and/or in an Internet site, using a YouTube channel (the videos can be visualized by directly writing the name of the Unit or the author’s name). Videos include short introductory remarks and legends (available for the moment only in Italian) and cover a long time span, including Prehistory, the Classical period, Late Middle Ages, the Renaissance period, and Modern times. Artworks are chosen in order to be narrative in nature and rich in detail, thus stimulating reflection and self-discussion. Besides, mini-videos of a very short duration (20-50 seconds) are posted directly in the Facebook page. The author interacts with learners through public or private comments to the videos. A list with examples of topics, diseases and proposed artworks is shown in Table 1.

Table 1. Examples of topics associating art and anatomy and related suggested artworks.

Topic & disease	Period	Artist	Artwork
Anatomy & Medicine			
Madness	c. 1494	Hieronymus Bosch	<i>The Extraction of the Stone of Madness</i>
Surgery	1628	Rembrandt	<i>The Foot Operation</i>
Dissection	1632	Rembrandt	<i>The Anatomy Lesson of Dr. Nicolaes Tulp</i>
The Ages of Man			
Childhood, adulthood and senescence	1835	Caspar David Friedrich	<i>The Stages of Life</i>
Marriage	1434	Jan van Eyck	<i>The Arnolfini Portrait</i>
Ageing	17th century	Rembrandt	Self-portrait series
Death	1793	Jacques-Louis David	<i>The Death of Marat</i>
The Musculoskeletal System			
Dwarfism	15th century	Andrea Mantegna	<i>The Camera picta</i>
Gigantism	Contemporary	Ron Mueck	<i>The Mask II</i> (self-portrait)
Poliomyelitis	18th Dynasty (1403-1365 BC)	Egyptian Art	<i>Egyptian stele thought to represent a polio victim</i>
Talipes equinovarus	1642	José de Ribera	<i>The Clubfoot</i>
Hallux valgus	15-16th centuries	Albrecht Bouts	<i>Christ at the feast of Simon the Pharisee</i>
Scoliosis	1625-30	Pietro Paolini	<i>Bacchic Concert</i>

Continue

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Topic & disease	Period	Artist	Artwork
Prognathism	1533	Lucas Cranach The Elder	<i>Portrait of the Emperor Charles V</i>
Genetic syndromes	1656	Diego de Velázquez	<i>Las Meninas</i>
Paget's disease	c. 1513	Quentin Matsys	<i>The Ugly Duchess</i>
Connective tissue disorders	1534-40	Parmigianino	<i>Madonna with the Long Neck</i>
The breast			
Obesity	c. 25,000 BC	Austria	<i>Venus of Willendorf</i>
Aesthetics	130-100 BC	Alexandros of Antioch	<i>Venus de Milo</i>
Abnormal position	1487-90	Hans Memling	<i>The Virgin nursing the Child Christ</i>
Ageing	1507	Albrecht Dürer	<i>Avarice (Old woman with a purse)</i>
Hirsutism	1631	José de Ribera	<i>Magdalena Ventura with her Husband and Son</i>
Mastectomy	1630-33	Francisco de Zurbarán	<i>Santa Águeda</i>
Advanced local cancer	1636	Rubens	<i>The Three Graces</i>
The thyroid			
Goiter	1435-38	Rogier van der Weyden	<i>Virgin and Child in a Niche</i>
Goiter	1460	Andrea Mantegna	<i>Virgin and Child</i>
Artists' disease			
Thyroglossal duct cyst	1463-65	Piero della Francesca	<i>Polyptych of the Misericordia</i>
Goiter	1512	Michelangelo	<i>The Creator separating light from darkness</i>
Icterus (jaundice)	1594	Caravaggio	<i>Young Sick Bacchus</i>

Topic & disease	Period	Artist	Artwork
Cataracts (before and after surgery)	19-20th centuries	Claude Monet	Water lilies series
Poliomyelitis, spinal surgery, pain	1944	Frida Kahlo	<i>The Broken Column</i>

- Visits to an Art gallery or a museum. Thanks to a collaboration between Sant'Andrea University Hospital and a Roman museum (Galleria Borghese), an innovative experience took place during the academic year 2014-2015, with small groups of third-year medical students, faculty members and art educators. Within the program of the integrated course of "Medical-scientific Methodology and Humanities", an elective activity was proposed. Free interactive sessions were organized focusing on the analysis of assigned classical paintings, followed by discussion in the gallery's didactic room after the guided visit. Afterwards, students made an autonomous visit to the Art collection, looking for pathognomonic signs. Finally, a more structured discussion with

hypothetical diagnoses was prepared by the learners in a conclusive meeting, with a short slide presentation of the single artwork selected. Students were organized in small groups in front of a couple of faculty members and art educators.

- Teaching the teachers. Seminars, courses, exercises, can be organized without much complexity in order to form medical educators. In our case, for example, the Committee for Medical Pedagogy organizes periodically different seminars and courses addressed to medical teachers within the context of a tutorial on medical humanities "Imparare e Vedere, imparare e decidere: l'Arte per la formazione medica" [Learning and see, learning and decide: Art in medical formation].

Discussion

These non-traditional formats bring a new lens through which medical students can learn valuable visual skills, thus training the so called “clinical eye”. Artworks represent both a powerful resource to understand the natural course of diseases and a useful teaching tool for refining visual skills and building visual literacy, the ability to find meaning in imagery, which in medicine translates into the ability to reason physiology and pathophysiology from visual clues.⁶ Video tutorials as well as mini-videos, in turn, represent an interesting teaching and learning complement to traditional theoretical knowledge within medical students’ education. On the other hand, free guided visits to a museum increase awareness of emotional and character expression through illustrated human bodies in artworks: the so called, mindfulness, that is to say according to Harvard’s University professor Langer,¹⁰ a state of mind that is open to new information, actively engaged in the present, aware of multiple perspectives, and recognizes the impact of the context on perception. Students

communicate collaboratively, disagree respectfully, observe objectively, navigate uncertainty, and use teamwork to find a collective –not single– truth. Thanks to the rich information regarding health and disease given by the paintings and related discussions, there is a skills enhancement. Students learn a broader conception of humanness and acquire a more complete and real “picture” of the patients (visual literacy), thus improving diagnosing skills.

In conclusion, an Art-based approach to teaching observational skills should be included continuously within the medical curriculum, particularly within a “spiral” one. It is our duty to stimulate also “sceptical” colleagues to be involved in medical humanities. Such an approach may favour critical thinking, opening the mind to alternate ways of seeing, enhancing learners’ abilities to more deeply observe and to better understand real clinical situations.

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