Osler Library and Osler Library Board of Curators Essay Contest

Observation:
The Importance of Art in Medicine

There was a time when a well-rounded physician had a good grounding in the humanities as well, and we lost that as more teaching time focused on understanding medical science and technology. The whole process of art appreciation is getting to notice things that you otherwise wouldn't. When I walk into emerg, before the patient and I have exchanged a word, I see the neck muscles are contracting every time they take a breath, and very subtly, that the nostrils are flaring. It's telling me the patient is in respiratory distress, and I might have to make a split-second decision. You need the powers of observation to detect that.

- Brian Goldman, ER doctor at Mount Sinai Hospital Toronto (1)

Susan Mengxiao Ge

260463723

October 1, 2013

Mentor: Dr. Jonathan Meakins

McGill University, 2013

Art is the projection of our experiences and memories. It has the power to record reality as well as fantasy, but despite its final appearance, it is based on what we know of the world around us. Thus, the observation of our environment is essential to the creation of art. Whether purposefully or by pure accidental choice of models, artists have captured the human body through the pursuit of conveying human experience—that is, the human body whose appearance, shape, and sounds reflect the state of our health. Before modern medical advances, most illnesses were diagnosed through the initial observation and the subsequent physical examination, but with the wealth of technology we have accumulated, some of the human connection has been lost behind the machinery. By analyzing several pieces of artwork, I would like to bring to light the minute details artists were able to capture, the significance of observation to medical practice and what doctors can learn from art.

The foundation of any type of art is the ability to reflect and capture the real world. Observational art is drawing or painting from life so as to convey and interpret people and objects as faithfully as possible. Artists must see all the details of a scene and reproduce it. How good the drawing is, depends entirely on the artist's ability to observe and their skill in putting those details on their chosen medium. It sounds quite simple, but sketching a recognizable portrait for example, is not an easy task, as every bump, crease and shadow has to be in the right place. Only after an artist has mastered observational art, can he move on to more abstract forms while still being able to convey the people, objects and emotions of the real world. Even well known abstract painters such as Piet Mondrian started from traditional painting before evolving to his better-known abstract style. Mondrian goes from the impressionist *Mill in the Evening* painted in 1905 to the more cubist *The Gray Tree* in 1911,

and then finally to the completely abstract *Composition with Blue* in 1937. (2) There is an evident and gradual shift from the real to the abstract in Mondrian's work as he developed his own artistic style.

Due to the need for art to accurately represent the human body in its many postures, both stationary and in motion, artists have needed to observe the body more deeply than the surface to understand its intricate inner workings. When dissection was strictly forbidden, both artists and doctors snuck out to examine human corpses for a closer look. To accurately represent the human body, artists needed to know how the human body works both inside and out; and to treat patients, doctors needed this knowledge as well. Understanding and observing the human body has always been an essential process for artists. Today, with increasing performance-based and conceptual art forms, the acquisition of life-drawing skills has lost its traditional importance. Nevertheless, observation remains an integral part of the creative process. Now it is often of a more social nature compared to the purely physical nature of classical art.

Observation skills are also important in medicine, often providing immediate insight to the patient's presenting problem. Neuroscientist Wilfred Trotter said, "Knowledge comes from noticing resemblances and recurrences in the events that happen around us". (3) When we observe something, not only do we see it as it is, but we can recognize patterns. We are able to analyse the context of what we see, make connections that associate one observation with another, and ultimately come to a conclusion. A picture is worth a thousand words and learning how to *see* what you are looking at could be more important than

knowing everything about the illness but missing all the signs. In the medical profession, the observations made from the moment the patient enters the examination room can provide vital clues to the initial diagnosis and help tailor the doctor's questions to the patient's specific situation. The four steps of physical exam are: inspection, percussion, auscultation and palpitation. Of these, inspection, or in other words, observation, is the one most often overlooked. One only has to walk into any emergency room to see how doctors rush to make assumptions and run tests rather than sitting with, listening to and examining the patient, causing medical error and misdiagnosis to run rampant in the medical field. Observation is such an essential tool in patient care and treatment, just like how it is vital to the creation of art.

The nature of artists' work makes them excellent observers. They can faithfully capture everything they see, and with that skill, they subconsciously record all the manifested conditions of their models without any basis in diagnostic medicine. In Jusepe de Ribera's painting of *Saint Jerome Reading* (Fig. 1), St. Jerome's knees look normal whereas, in the *Martyrdom of Saint Bartholomew* (Fig. 2) we can clearly see Saint Bartholomew's enlarged arthritic knees. If we then compare *Saint Jerome Reading* and the *Martyrdom of Saint Bartholomew* to *Saint Jerome and the Angel* (Fig.3), we can see that in *Saint Jerome and the Angel*, Saint Jerome has arthritic knees much like the knees of Saint Bartholomew and completely different from the knees of Saint Jerome from *Saint Jerome Reading*. This was evidently done by accident; Ribera was simply drawing from his models. Facial examination confirms he most likely used the same model for his *Saint Bartholomew* and *Saint Jerome and the Angel* whereas he used a different model for *Saint Jerome Reading.* (4) Without realizing

it, victim to his own sharp observation, Ribera was able to convey the medical conditions of his models. Equipped with medical knowledge and a keen eye for detail, many important pieces of information can be extracted from these works of art to help in the understanding of patients and the diagnosis of disease.

Fig. 1 (top left) – Jusepe de Ribera *Saint Jerome Reading* (1624)

Fig. 2 (right) – Jusepe de Ribera *Martyrdom of Saint Bartholomew* (1624)

Fig. 3 (bottom left) – Jusepe de Ribera *Saint Jerome and the Angel* (1626)

Source:
Felton C, Jordan WB editors. Jusepe de Ribera lo Spagmnoletto. Fort Worth: Kimbell Art Museum; 1982; P.73,76

In Piero di Cosimo's *A Satyr Mourning over a Nymph* (Fig. 4), there is a young woman who is supposed to be Procris, killed accidentally during a deer hunt by a spear. Yet in the painting, we see no evidence of a spear wound. Instead, we see her arms covered in long cuts as if she was defending herself from a knife-wielding assailant. Her left hand is also contorted in a position with wrist flexed and fingers curling inwards, known as "the waiter's tip", which indicates an injury to the spinal cord at the level of C3 and C4. (5) If you look carefully, there is also a bloody cut on her neck. From the pictorial evidence, it seems like this girl struggled with and ultimately died by the hand of an attacker with a knife. To paint Procris, di Cosimo probably used the corpse of a girl as a model, and because as an artist, he had no understanding of medicine and injury, he portrayed the model in his painting exactly as he saw it. Without intending to, di Cosimo was able to capture this girl's true injuries. In this way, someone with medical knowledge can extract a likely theory of cause of death.

Fig. 4 - Piero di Cosimo, *A Satyr Mourning over a Nymph* (1495)

Source:
http://ayay.co.uk/arts/italian_renaissance/classical_masters/piero-di-cosimo-a-satyr-mourning-over-a-nymph.jpg

Another painting that reveals a medical diagnosis is *The Old Woman* by Quinten Massys (Fig. 5). To the untrained eye, this painting simply looks like the portrait or even caricature of an old woman, but if you study the specific facial characteristics of the woman, the exaggerated ugliness could not have been a coincidence because the pattern of facial deformations; the bossing forehead, the prominent cheek bones, the enlarged maxilla, the increased distance between mouth and nose and the classic smile; are all consistent with leonine facies of Paget's disease that causes large misshapen bones due to accelerated bone remodeling. (6-8)

Fig. 5 - Quinten Massys *The Old Woman* (1513)

Source: http://upload.wikimedia.org/wikipedia/commons/3/36/Quentin_Matsys_-_A_Grotesque_old_woman.jpg

A more elusive diagnosis can be found in Peter Paul Rubens' *The Three Graces* (Fig. 6). At first glance, nothing about the painting appears to stand out medically, but the Graces display several symptoms associated with benign hypermobility syndrome. The Grace in the center has scoliosis of the spine as well as a positive Trendelenburg sign where, while putting all the weight on one leg, the buttock of the opposite leg descends instead of raises. The Grace on the left has flat feet and hyperextension in the 4th and 5th fingers of her right hand and evidence of double-jointedness. All three Graces also seem to have spine lordosis and lax upper eyelids. Individually, each model for *The Three Graces* could have had any number of problems but we know that Rubens used as models, his second wife Hélène Fourment and her two sisters. (9) Rubens used the three sisters in several other paintings where they display more subtle symptoms associated with the lax ligaments and joints of hypermobility syndrome. We can also notice that there is no evidence of benign hypermobility syndrome in Rubens' work before the year 1630 when he married Hélène Fourment so the signs we see cannot be, as some critics believe, attributed to Rubens' particular style of painting. (10) Hypermobility Syndrome is an autosomal dominant genetic disease so, knowing the relation of the Graces, we are able to make a connection between all their observed symptoms and make a diagnosis. (11,12)

Fig. 6 - Peter Paul Rubens *The Three Graces* (1639)

Source:
http://upload.wikimedia.org/wikipedia/commons/f/f5/The_Three_Graces%2C_by_Peter_Paul_Rubens%2C_from_Prado_in_Google_Earth.jpg

What is interesting is that the medical diagnoses contained in both paintings, were unknown to even the doctors of time. Paget's Disease was described as a new disease about 120 years ago, but Massys' painting from 1513 shows that it existed much earlier than that. (7) Similarly, Hypermobility Syndrome was first described in 1967 whereas *The Three Graces* was painted in 1638, centuries before. (13) Today, only because of these detailed records kept by hyper-observant artists, are we able to diagnose disorders that we didn't even know existed hundreds of years ago. Now that we do know about these conditions and their manifestations, with the help of an artist's eye, it should be relatively simple for doctors to recognize these signs in real clinical patients.

Not only were artists able to capture abnormalities in physical traits, they could also capture associated impairments in movement and mental states. In Carravagio's *Bacchus* (Fig. 7), he depicts a model with Alcohol Use Disorder (AUD). The flushed cheeks, swollen eyelids and red tinged hands are characteristics often seen in alcoholics. Moreover, the dirty fingernails of Bacchus' hand may indicate an alcohol related nutritional deficiency. It is particularly interesting to note the trembling left hand, as suggested by the subtle ripples in the wine glass, which may be indicative of impaired motor movements in AUD. (14) Even Bacchus' blank sleepy stare exemplifies the mental state of one who has drunk too much. It was well known that Carravaggio was an alcoholic himself and so it is unsurprising that he portrayed alcoholism in his paintings. It is even believed that Bacchus is a self-portrait of Carravaggio himself. In a later painting, *Young Sick Bacchus* (Fig. 8), Caravaggio paints himself in a more advanced state of disease with clear signs of jaundice. (15) He captures the physical, neural and psychiatric manifestations of Alcohol Use Disorder as well as the

progression of the disease over time. A progression he should have been familiar with considering his love for alcohol. Caravaggio mastered the skill of observation.

Fig. 7 - Michelangelo Merisi da Caravaggio *Bacchus* (1596)

Source: http://commons.wikimedia.org/wiki/File:Michelangelo_Merisi_da_Caravaggio_-_Bacchus_-_WGA04088.jpg

Fig. 8 – Michelangelo Merisi da Caravaggio *Young Sick Bacchus* (1593)

Source: http://commons.wikimedia.org/wiki/File:Young_Sick_Bacchus-Caravaggio_(1593).jpg

Unlike artists, doctors have lost the skill of observation. With all the expensive tests available these days to help doctors make diagnoses, the necessity of observation has decreased and so the skill is slowly disappearing. Less and less time is spent speaking with the patient and increasingly more time and money is being spent doing tests that could have

been avoided with a careful examination and interaction with the patient. Diagnoses are missed because of the dependence on tests rather than investigation through the senses. In the TED talk, "A Doctor's Touch" by Dr. Abraham Verghese, he gives the example of a woman who had come to the emergency room after going to several other institutions that were unable to diagnose her. After a CAT scan for suspected blood clots, it was found that she had bilateral palpable breast tumours that had metastasized all over her body. Yet somehow, no one ever looked closely at her breasts or performed a full physical exam, which would have easily revealed her condition. (16)Rembrandt is noted for his artistic accuracy. In his *Bathsheba at her Toilet* (Fig. 9), generally accepted to show advanced breast cancer with axillary lymph node involvement, you can clearly see the skin discolouration, and the asymmetrical lump in her breast extending to her axilla. (17,18) If someone had looked

Fig. 9 – Rembrandt Harmenszoon van Rijn *Bathsheba at her Toilet*

Source: http://www.lib-art.com/imgpainting/9/7/15879-bathsheba-at-her-bath-rembrandt-harmenszoon-van-rijn.jpg

closely at the woman mentioned by Dr. Verghese there should have been similar changes visible. Dr. Verghese goes on to explain that this happens all the time in medicine. Tests and imaging has now replaced observation and physical exam. The technological advances that were made to improve patient care have instead impeded the doctor-patient relationship by replacing the doctor's need to observe. With technology, relationships have become increasingly rooted in the virtual world. People now collect friends in social networking sites instead of meeting up with them in person. The interpersonal relationship between patient and doctor has suffered similarly. The personal touch of the doctor and the direct communication through touch, movement and language has been lost. There needs to be a move from the virtual world back to the concrete human world where doctors treat the patient instead of the mass in the CT scan. Doctors must remember that patients are neither machine nor professionals. Each patient's signs manifest differently and each patient feels differently even if they have the same symptoms. Patients usually can't articulate what is wrong. They don't know what symptoms are manifestations of disease and what symptoms are normal. They naturally adapt to abnormal posture and gait and overlook changes in skin discolouration, mood and weight, blaming it on other factors. That is why doctors, who know what signs to look for, need to take notice of these subtle clues during the initial exam. In most cases, these targeted observations are more reliable, faster and cheaper than blindly running tests and scans. Artists objectively document everything as they see it and were able to describe many medical conditions before doctors knew they existed. Being trained in medicine, a doctor should be a better observer of medical signs compared to them. Doctors know what to intentionally look for and can associate the details observed with particular

patterns of disease. Having studied various artworks that have captured the human body, we can see that there is a lot doctors can learn from artists.

We can relearn the skill of observation from artists through the study of their artwork. E.O. Wilson once said, “Powers of observation can be developed by cultivating the habit of watching things with an active, enquiring mind”. (3) One study investigated how training students to be “visually literate” by analyzing different pieces of artwork and connecting them to clinical skills, could improve students’ ability to “reason physiology and pathophysiology from visual clues”. (19) They found that students who participated in the visual literacy class increased the number of observations made and improved the details of their descriptions on a visual skills examination, with students who attended 8 or more classes obtaining a better score compared to those that attended 7 or less. (19) Many medical schools such as Cornell and Yale have actually integrated into the curriculum courses to train medical students in the art of observation in order help students develop skills such as observation that are harder to learn in formal lectures. (20,21) McMaster University in Hamilton, Ontario tried an experimental course called “The Art of Seeing” to help students improve their observational and diagnostic skills. According to students at McMaster, not only does formal art training improve their observation to see the whole clinical picture, it also helps them become more emotionally attuned to their patients and more aware of their own biases when making analyses with preconceived notions in mind. (1,22,23) Dalhousie University and the University of Alberta offer similar courses to medical students as well. (1) There is even a Canadian Journal, “Ars Medica” that integrates medicine with the arts and humanities. (1,24) People have started to realize the importance of art in

the practice of medicine and how observation skills obtained through a formal art education can make a great doctor. More and more there is a positive move towards integrating art into medicine.

Observation and an intimate understanding of the human body is a key component of both medicine and art. Artists are excellent observers but doctors need to improve on this important skill. The modern medical system emphasizes imaging, lab tests, and genetic markers over the importance of the doctor-patient interaction. Due to the technology available to *look into* the patient, doctors have lost the ability to *see* the manifestations of illness from simply observing the external appearance and demeanor of the patient. This void in the area of observation can be filled by the study of art. A piece of artwork holds both the physical and emotional back story of the people depicted in it if one knows how to look. Artists have mastered the skill of detailed observation and, without the knowledge of any medicine, have captured a variety of conditions and illnesses in their work. Doctors can benefit from artists by training their eye to see these subtle details presented by the artist; details that capture not only the physical, but also the emotional aspects of the people depicted. Delving deeper into an artist's work, one can find a specific narrative about the people presented in the artwork. These are some of the same things a doctor needs to uncover about their patient in order to identify the chief concern and find the best treatment. The skill of observation learned from artists can thus be brought to the clinical setting where observation plays an important role in both diagnosing and understanding the underlying concerns of the patient. Ultimately, doctors need to learn how to *see*.

Word Count: 2 996

Works Cited

(1) Belluz J. Out of the hospital and into the museum. Maclean's. 2010 November 11;Arts.

(2) WikiPaintings: Piet Mondrian [Internet] Available at: http://www.wikipaintings.org/pl/piet-mondrian.

(3) Beveridge WIB. The Art of Scientific Investigation. New York: W.W.Norton and Company; 1950.

(4) Felton C, Jordan WB, editors. Jusepe de Ribera lo Spagmnoletto. Fort Worth: Kimbell Art Museum; 1982.

(5) McKie R. The fine art of medical diagnosis. The Observer. 2011 September 11;Culture.

(6) Christopher Cook. A Grotesque Old Woman. BMJ 2009;339:b2940

(7) Dequeker J. Paget's Disease in a Painting by Quinten Metsys (Massys). BMJ 1989 December 23;299(6715):1579-1581.

(8) Seton M. Clinical manifestations and diagnosis of Paget disease of bone [Internet]. 2013. Available at: http://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-paget-disease-of-bone

(9) Dequeker J. Benign familial hypermobility syndrome and Trendelenburg sign in a painting "The Three Graces" by Peter Paul Rubens (1577–1640). Annals of the Rheumatic Diseases 2001 September 01;60(9):894-895.

(10) Hansen SE. Scoliosis and Trendelenburg sign in a painting by P P Rubens. Annals of the Rheumatic Diseases 2002 February 01;61(2):182-182.

(11) Simpson MR. Benign joint hypermobility syndrome: evaluation, diagnosis, and management. J Am Osteopath Assoc 2006 Sep;106(9):531-536.

(12) Grahame R, Hakim AJ. Clinical manifestations and treatment of the hypermobility syndrome [Internet]. 2013. Available at: http://www.uptodate.com/contents/clinical-manifestations-and-treatment-of-the-hypermobility-syndrome#H2

(13) Kirk JA, Ansell BM, Bywaters EG. The hypermobility syndrome. Musculoskeletal complaints associated with generalized joint hypermobility. Ann Rheum Dis 1967 September;26(5):419-425.

(14) Haass-Koffler CL, Kenna GA. Bacchus by Caravaggio as the Visual Diagnosis of Alcohol Use Disorder from the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Front Psychiatry 2013 August 8;4(86).

(15) Aronson JK, Ramachandran M. The diagnosis of art: Caravaggio's jaundiced Bacchus. J R Soc Med 2006 September;100(9):429-430.

(16) TEDtalk. Abraham Verghese: A doctor's touch. 2011 September;Video.

(17) Braithwaite PA, Shugg D. Rembrandt's Bathsheba: The Dark Shadow of the Left Breast. Ann R Coll Surg Engl 1983 September;65(5):337-338.

(18) Bourne RG. Did Rembrandt's Bathsheba Really Have Breast Cancer? Aust N Z J Surg 2000;70(3):231-232.

(19) Naghshineh S, Hafler JP, Miller AR, Blanco MA, Lipsitz SR, Dubroff RP, et al. Formal art observation training improves medical students' visual diagnostic skills. J Gen Intern Med 2008 Jul;23(7):991-997.

(20) Berger L. By Observing Art, Med Students Learn Art of Observation. NY Times. 2001 January 2;Health.

(21) Jones DP, Peart K. Class Helping Future Doctors Learn the Art of Observation [Internet]. April 10, 2009. Available at: http://news.yale.edu/2009/04/10/class-helping-future-doctors-learn-art-observation.

(22) Med students use art to improve skills [television broadcast]. The National:CBC; 2010. Available at: http://www.cbc.ca/player/News/TV+Shows/The+National/ID/1703826143/.

(23) Pecoskie T. Improving patient care with art. The Spec. 2010 December 2;Local.

(24) Ars M. Ars Medica [Internet]. 2013; Available at: http://ars-medica.ca

Bibliography

Abastado P, Chemla D. A portrait of a female body: Rubens and Helena's legs. Med Humanit 2008 Dec;34(2):84-87.

Anderson E. When Doctor's Make Bad Calls. The Globe and Mail. 2012 February 24;Health.

Anderson J, Barnes E, Shackleton E, Gormley A. The Art of Medicine. Chicago, USA: University of Chicago Press; 2011.

Bordin G, D'Ambrosio LP. Medicine in Art. California, USA: The J. Paul Getty Museum; 2010.

De Lint JG editor. Rembrandt. The Hague: J. Philip Kruseman.

Rousselot J editor. Medicine in Art: A cultural History. Milan: McGraw-Hill Book Company; 1967.

Sierra Valenti X. Medicine and Disease in Baroque Art. Actas Dermosifiliogr 2007 Oct;98(8):570-573.

Zigrosser C editor. Ars Medica. Philadephia: Philadelphia Museum of Art; 1955.