

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Visual Pathologies: The Semiotics of the Patient and the Practitioner in Comics

Jonathan Comyn de Rothewelle

Abstract

Newspapers have been a stronghold news source for centuries covering a wide range of topics. Though reporting is meant to be unbiased and only fact, stories produced are inevitably entwined with the author's cultural values—news content ranging from sports to healthcare, including articles, advertisements, and editorial cartoons provide valuable insight into the lives of society. Voices, or narratives, are a huge part of how culture is created and maintained. In healthcare, patients can feel like their voices are not heard. In an attempt to bridge the gap between medical and humanities research and to gain insight into doctor-patient interactions, this analysis asks what ideologies and beliefs are present in medical contexts and how are they represented within the editorial cartoon. Recent studies suggest that mass media as societal discourse may frame or position participants within a society. In this theory of framing, culture is formed from discourse through a reflexive process. Using Kress and Van Leeuwen's research on meaning making, this study will perform a discursive analysis on medical-themed editorial cartoons from *Carpe Diem*, *Rhymes with Orange*, *The Lockhorns*, to *Bizarro*. Through this close reading, explicit and implicit cultural beliefs held about medicine, including practitioners and patients, have been revealed, including the portrayal of the doctor's power over the patient and patient distrust in doctors. Taking into consideration media theory and the analysis of the comics, medical associations and practices may find valuable insight from the opinions and beliefs of not just the authors of these comics but society as a whole, which may prove important as debates over healthcare are ongoing.

Keywords: discursive analysis, comics, graphic medicine, visual semiotics, medical discourse

1. Introduction

With medical and pharmaceutical costs rising and the politicization of healthcare, not a week goes by without mention of the industry in news reporting. New media aside, the print news has been a stronghold news source for centuries covering a wide range of topics. Though journalism is meant to be impartial to cultural values, news-content, including the editorial cartoon, can be filled with the implicit opinions of the author no matter the topic of the story or the medium used. The author's voices and opinions are at the forefront of mass media with potential to influence the masses. These voices are what define and maintain culture. On trend with current debates surrounding healthcare, the analysis presented in this work

asks what beliefs are present in medical interactions, how they are represented in mass media such as through editorial cartoons, and the implications that these beliefs have on society. This work uses a methodology that attempts to further relations between medical and humanities scholarship [1, 2].

2. Media and society

It was formerly assumed that mass media had a grand influence on the minds of its viewers with the ability to directly influence their actions [3]. Though recent theorists suggest that media plays a lesser role—rather than directly influencing people’s decision-making and actions, societal discourse may frame or position receivers versus producers, or in other words, it may build society by elevating certain roles [1]. In this theory, culture may be viewed as formed from discourse through a reflexive process.

Cultural discourse, such as news media, simultaneously influences and is influenced by culture [4] and may cause the social environment of the individual to slightly change. This could influence cognitive processing in individuals during opinion formation [3]. This theory of framing within cultural discourse follows suit with media communication models of cultivation and media ecology theory. Cultivation theory states that media may cultivate beliefs in viewers [5], while Moreno and Koff’s media ecology theory [6] posits that media is within every aspect of society, influences perceptions, and has an inescapable presence. Regardless of the depth of media’s grasp in society, it is known to have an influence.

3. From articles to comics

Mass media’s influence extends from television commercials, to podcasts, to editorial cartoons; how society feels about various issues is extended into various media. Coming from news-media, the editorial cartoon can be seen as a product of society [7]. Not only do editorial cartoons reflect the artists’ opinion on politics and pop culture, but they also reflect, describe, poke fun of, and document the experiences of the everyday person. Just as editorial cartoons are a product of society, they are also a product of their time; ideas and storylines represented reflect cultural beliefs. This extends to the experiences people have with healthcare. Unlike written language contained in articles, comics provide readers with a different way of understanding, coping with complex issues, and creating a deeper bond with the stories told and the information given [1, 8].

One way to further understand the ideologies and beliefs behind comics is to perform a close reading through a discursive framework. In the study of discourse, more than just language is considered—the study of discourse goes well beyond the sentence, including conversations, literature, storytelling, and written, spoken, and visual texts [1]. Through the examination of visual discourses, such as comics, the reader can interpret the way in which the author of the work positions characters within the visual text. These visual texts oftentimes point to the world views of the authors [4, 9].

In an attempt to further understand the view of the creators of a discourse, this analysis employs a visual semiotic framework. Within semiotics, the authors employ on the existence of the study of the sign and the meaning-making practices [10–12].

Meaning-making is the design apparatus combining all elements both visual and textual as well as their size, color, distance, and arrangement. This interplay of design elements simultaneously creating meaning, or perhaps more properly

worded, as telling a story, are what the viewer of a discourse interprets as according to Kress and Van Leeuwen's ongoing research and writings [2, 10, 11]. The interpretation may vary depending on the complexity and obviousness of the symbols, signs, and everything else represented. In the meaning-making process, viewers may interpret overt meanings through obvious symbols but also may interpret, subconsciously that is, the covert meanings, or stories, and a visual discourse displays [12].

Using this type of spatial display, art has the power to create deeper imagery and bond with the audience [1]. It is through the analysis of these elements that viewers will discover cultural values and beliefs influencing the visual text [7].

Language or narrative, as created by the ego, works to maintain and construct culture and is the lingua franca of human life. Medicine is to treat the human as a whole and as the body exists within a specific cultural narrative, the discourses of the culture in which the patient exists must be kept in mind. This means not treating the human body as simply a corpse on a cadaver cart, but resisting the medical gaze [13] and treating both the body and the ego [14]. The ego as lived through narrative is one of the few things that set humans apart from other flora and fauna. Whether it is dialogue between a patient and a practitioner, survivor stories, billing statements from an insurance company, or comics depicting medical contexts, language is hugely important in the treatment and cure of the human body.

4. Comics and graphic medicine

Graphic medicine, or comics depicting illness and medical narrative, is a form of storytelling in clinical settings through the use of paneled visual and text. These stories are not limited to that of the patient but can include the family's and practitioner's perspective as well [15]. The study and creation of graphic medicine was born out of a push toward the intersection of the humanities with the medical sciences as a medium with potential to lead clinicians toward a more empathetic approach to medical treatment [8]. Comics in medical contexts can help patients and families come to terms with hospital visits, illness, and trauma.

Aside from graphic medicine created in hospitals, comics with medical contexts, such as popular comics in newspapers, may be viewed as having a similar effect: an ability to create further understanding of difficult topics. This further understanding is partially created through the medium of pen and paper. Drawings are ineffable: they can speak to the human mind in different ways than language and can express things that language cannot. Comics have an accessible and informal approach to the presentation of their information—neither language nor image needs to be intricate to depict intricate meanings. Along with an informal approach, comics often remove the jargonous vocabulary of doctors and replace it with images that are compelling, easier to understand, and create a larger impact on the viewer [15–18].

The comics presented in graphic medicine are “also potentially far more complex, in that a narrative arc provides a scaffold within which an almost endless array of cultural values and preconceptions can be set up, questioned, reinforced, or negotiated” [1, 18]. These comics can present a range of storylines from sweet, to funny, to serious, and to depressing, all of which can appeal to a wide variety of audiences, and are potentially filled with cultural markers [19, 20].

5. Discourse and medical practice

For years, detached concern was an accepted approach to take in the medical field. Detached concern is a method in which doctors may be viewed as looking

beyond the patient's narrative and not considering aspects of identity when making diagnoses. In other words, detached concern is an ideology stating that physicians should not engage emotionally with, or be influenced emotionally by, patients [21]. Though envisioned with good intent, this method has been found to be dehumanizing and could be viewed as an aloofness on the job or a lack of caring from the patient's perspective which could further patient distrust [14]. Detached concern stems from the argument that an over-emotional physician's judgment would be clouded and therefore leaving them unable to make the best decisions for their patient. It could also be viewed as a method of burnout prevention for practitioners [16, 22]. Though detached concern is losing favor as an accepted form of practice, it can still be found in the medical field today even as medical care shifts toward developing the patient-practitioner relationship [14].

This idea that attachment, or perhaps viewing the patient with empathy, would negatively affect a physician's ability to diagnose could be interpreted as an extension of the medical gaze. According to Foucault [13], the medical gaze is the concept of separating the patient's ailment and body from their personality and identity, thus allowing the doctor to diagnose without regard to the patient's self. This medical gaze has been criticized as presenting the doctor fully as the decision-maker, or "the eye that knows and decides, the eye that governs" [13]. The mindset of the doctor being in total power could be interpreted as hegemonically positioning patients as the lesser individual in the interaction. This could be viewed as problematic when it comes to treating patients across a variety of cultures. For example, without considering the patient's identity, a doctor may perform a treatment deemed unacceptable or taboo in the culture of the patient; by listening to the patient's story, regardless of lack of medical knowledge, the practitioner could gain valuable insight into the patient's narrative, increase treatment efficacy, and decrease feelings of inferiority within the patient.

By interacting with the patient's narrative, the doctor becomes more invested in the relationship increasing treatment efficacy and patient satisfaction [23]. A big part of the patient's story that could be viewed through graphic medicine is the reclamation of the story that may have been diminished or dehumanized by long hospital visits or indifferent doctors [24]. Spending time in medical institutions can be frustrating, and patients' voices can be replaced by numbers, medical records, and diagnoses [24, 25]. The reclamation or retelling of the patient's story can be a therapeutic process in which the story-teller gets in touch with their own feelings and gets back on track to healthy recovery [26]. By reading graphic medicine, viewers can discover new ways of thinking about hospital visits and illness in order to gain an increased understanding of the patient experience [27, 28].

It is no surprise that in clinical settings, patients may feel powerless. This could be attributed to the all-seeing eye or the medical gaze of the doctor; the powerful apparatus is the doctor possesses that allowing them to diagnose, operate, and drastically change the patient's life without much input from the patient themselves [13]. In some cases, perceived unprofessionalism or insensitivity can cause environments where patients are not speaking up to get the care they need [29]. The professional-looking white laboratory coats were not always the status quo in the medical profession. They could have been adopted to visually distinguish the doctor over others within a medical setting. The white may represent purity or the doctor's vow to do no harm, and the coat itself positions doctors as scientists. Altogether, the outfit could be viewed as positioning physicians as authority figures with the hanging of medical school diplomas as the final mark of authority [30].

When it comes to trusting practitioners, patients are often stressed, vulnerable, and may grant more discretionary power to doctors than normal [31]. Trust is at the forefront of patient care. Without trust in a doctor, a patient may not reveal

the full extent of what they are experiencing, and it may prevent proper care. With a disproportionate power dynamic between doctors and patients, as well as the stressful setting of these interactions, it is no surprise that a lack of trust can be found within these interactions. However, trust is of huge importance and may go so far as to positively influence patient outcomes including enhancing the prescribed treatment [31]. Along with enhancing treatment by psychologically building trust, humor is known to play an important role in coping [32]. Humor can help patients come to terms with the psychological trauma that may be experienced in clinical settings.

Though it is not known if the authors of the following comics create specifically from their own illness experiences, these experiences can be viewed as originating from somewhere. Human thought is so nebulously intertwined with society that it would be nearly impossible for authors to eschew cultural context. With the importance of communication in medical contexts and the knowledge of graphic medicine as laden with cultural markers, medical comics have great potential to shed light into the life of the clinical experience.

It is with all this in mind that this study seeks a further understanding of comics and their role in the expression of the human experience in medicine. A random survey of popular cartoons from well-circulated publications was analyzed. The comics surveyed include *Bizarro* by Dan Piraro, *Carpe Diem* by Niklas Eriksson, *Dustin* by Steve Kelley and Jeff Parker, *Intelligent Life* by David Reddick, *Sherman's Lagoon* by Jim Toomey, *The Lockhorns* by Bunny Hoest and John Reiner, *Rhymes with Orange* by Hilary Price, and *Six Chix* by Bannerman et al. [33].

6. Critical comical analysis

Using Kress and Van Leeuwen's research on meaning-making [34], this study will focus on the three metafunctions: the representational, interpersonal, and compositional. The three metafunctions are resources that can be interpreted to find the meaning of a visual [35]. The representational metafunction encompasses all of the things represented in the images, including characters and non-human elements also known as represented participants (RPs) [1]. Usually connected by vectors, or strong lines, the participants within the image tell a story through hand gestures, gazes, and planes [34, 36].

The interpersonal metafunction focuses on how the creators convey meaning to their audiences through the elements of the representational. Various devices can be used by creators of images to connect with their viewers, including demand and social distance. Demand is the use of a character in an image to connect directly with a viewer by appearing to look directly at them [34]. The distance between two characters or elements take from each other can also inform the audience. Characters closer to each other or to the audience are building relationships, while characters further from each other or the audience are not [34].

Where the representational and interpersonal are somewhat sequestered from each other, the compositional examines elements together for effectiveness. Authors have the ability to use salience, or size and focus, iconic displays of emotion, including happiness, anger, and sadness to portray complex emotional situations. The compositional metafunction also looks at modality or whether or not the images are convincing in general [1]. This analysis gains inspiration from the related works of Kaplan-Weinger [34], Juricevic and Horvath [36], Kowalewski [37], and Dalbeto and Oliveira [38], to name a few. This research uses methods founded in the humanities to seek insight into the medical industry and the surrounding ideologies, as well as how these ideologies are conveyed in graphic

narrative. The following chart based on Kress and Van Leeuwen's [12] work on metafunctions, with inspiration from the previously cited visual analyses, will serve as the foundation for this study:

I. *Representational metafunction*: In the representational metafunction, who and what is being represented will be considered. Vectors and themes will be gathered from both human and non-human RPs.

II. *Interpersonal metafunction*: This metafunction will examine the interpersonal relationships created between the viewer and author by the use of visual demand and conceptions of social distance.

III. *Compositional metafunction*: This metafunction examines the piece as a whole considering the salience of the RPs and the information they provide, as well as modality and iconic displays of emotion.

With the consideration of the three metafunctions, the selected comics were analyzed in three rounds. During the first round of analysis, the representational metafunctions were considered. The represented participants, both human and non-human, were identified, vectors were highlighted and analyzed, and themes were interpreted. After the representational metafunctions of the comics were mapped out, the interpersonal metafunctions were studied. During this time, the represented participants were examined in relation to the viewer of the comics—the interpersonal relationship between the RP (or the represented participant) and the reader as created through social distance and visual demand was identified and analyzed. Finally, the compositional metafunctions were examined. The comics as a whole were studied to determine which RPs were most salient; facial displays of emotion were interpreted, and modality was considered.

For each of the metafunctions belonging to each of the comics, the author created a spreadsheet to organize the results side-by-side for a comparison. This comparison yielded the major themes as identified in this study.

About 24 comics were chosen for analysis from King Features Syndicate. As syndicated in around 5000 newspapers worldwide, the comics of King Features Syndicate have distinguishable breadth, potentially reaching millions of readers. After choosing a syndicate with extensive reach in order to use data that have measurable influence, the data pool was selected. On King Features' website, 24 comics were chosen at random using key words such as *doctor*, *nurse*, *medicine*, and *illness*, entered into an appendix, and assigned an arbitrary letter (a–x). To further randomize and refine this selection, an Excel algorithm was used to select four comics from the data pool. Each letter (a–x) was entered in a spreadsheet and assigned a random number. Through the Excel RANDBETWEEN function, each letter was given a number (1–24). The final step of the selection process used the Filter and Sort function to order the numbers (and the letters) from lowest to largest (between 1 and 24). The four lowest numbers were selected for a more thorough investigation as presented below.

7. Summary of findings

After a close reading of the four comics selected, the following themes have been identified: (a) the salience of the doctor over the patient, (b) the expression of vectors, (c) the salience of white coats and hanging diplomas, (d) patient distrust of medical professionals, (e) humor, and (f) the role of women in medical care. To merit analysis, discussed themes occurred at least twice within the comics analyzed.

a. Salience of the doctor over the patient

In many of the comics surveyed, the doctors were often portrayed in positions more salient than that of the patient. This presents a rather interesting dichotomy between the competing represented participants as those that created these cartoons are likely composing from the patient's perspective and have still chosen, whether consciously or not, to portray the doctor in a position of power over the patient.

b. Vectors from the doctor's gaze

One of the tools used in comics to give meaning, or tell stories, is that of vectors. Vectors are lines that are drawn—whether verbatim lines, or lines creatively displayed—and used to direct the reader's eye in order of importance. Of the comics analyzed, many vectors were drawn from the eye-level plane of the doctor. In many cases, the doctor is portrayed looking down upon the patient or looking through the deep sides of the eyes toward the patient. This could be interpreted as the doctor being portrayed as higher status than patients, or the doctor as being annoyed or unbothered by the patients.

c. Diploma and coat

From a critical perspective, the white laboratory coat and the framed and hanging medical diploma of the doctors can be seen as setting the tone of the interaction. Framing the interaction by positioning the doctor as the one with power as expressed through the coat and diploma could be compared to the scepter and cape of that of royal authority. By extension, without such agency-granting artifacts, the patient may be portrayed as inferior.

d. Patient distrust

Within the selected comics for analysis, many of the authors portray the patients as dumb or air-headed. This paints an interesting perspective as the authors likely have more experience from the side of the patient than that of the practitioner. Through the portrayal of patients as dumb or air-headed, the authors could be interpreted as expressing feelings of inferiority. These feelings of inferiority, as displayed through visual and textual evidence, may lead to distrust in the exam room and are supported through both visual and textual evidence. Doctors are often portrayed as aloof or even lazy when it comes to practitioner-patient interactions, which could be viewed as adding to patient misgivings. Nurses, however, are sometimes portrayed as compensating for these incoherencies by extending compassion to the patient, which the doctor does not.

e. Funny, Doc

Comics are known and often assumed to be humorous [39]. Some of the comics analyzed give way to humor. Though, perhaps these comics, while using humorous appeals, are actually showing readers something further. Humor is a known coping mechanism for many when experiencing increased stress levels during medical visits. These comics could be seen as appealing to humor as a means to make due with tough situations. That humor used in this way could suggest that medical experiences are stressful in and of themselves.

f. Women can be doctors too

Within this data pool, all doctors are portrayed as male. Though fewer instances of the portrayal of nurses occur, when nurses are depicted, they always appear as female. The viewer may interpret an implicit bias toward men in the role as physicians, though recent statistics show that the number of women enrolling in medical school is higher than men [40].

8. Meet the comics!

8.1 *Bizarro* by Wayno and Dan Piraro

Bizzaro is a highly satirical comic with larger than life characters and a bizarre worldview. Starting in 1985, this comic has been entertaining readers with explosives and thought-provoking dry humor. The author offers eccentric visualizations and commentaries on the oddities of our everyday life and culture; oftentimes poking fun of things, we may consider normal. To make commentaries on society and human interaction, the author places visual devices in the comics, including things such as The Eyeball of Observation, The Fish of Humility, and The Crown of Power to name a few. This comic has won many awards such as “best newspaper cartoon panel.”

In this frame (**Figure 1**) by Wayno and Piraro, the audience is invited to view what appears to be an exam room interaction. The authors use vivid colors which draw attention to the patient and a rather minimalistic style throughout the rest of the image. In this image, the viewer can see the patient sitting atop an exam table and a doctor standing next to them. The doctor is wearing a white laboratory coat with a stethoscope around their neck and a reflex-hammer in hand. The patient is dressed as a clown and above the scene is hanging what appears to be a diploma from a medical school.

In this image, the main represented participants include the doctor, the patient, the exam room, and the diploma. As it appears, the doctor is in the middle of an exam having just tested the patient’s gag reflex. In a word bubble, the doctor states, “Your gag reflexes are fine but we still need to get your jinks a little higher.” The major themes in this image include the salience of the white coat and diploma, and the portrayal of the patient as of a lesser intellectual level.

8.1.1 *Representational*

At first glance, the eye of the viewer may go straight to the patient then travel along vectors from the patient’s head, to the diploma, to the doctor. While the patient is where the eye seems to land at first glance, this could be viewed as the authors placing emphasis on how doctors may make patients feel belittled. Whether or not the patient is an actual clown or is portrayed as a clown in this image may not matter—clowns are traditionally used to denote people who are not to be taken seriously. For example, one might say about a friend who is perceived as unintelligent that they should go to clown college. Clowns are also often portrayed in media as clumsy, humorous, or dopey. This representation of the patient as a clown could be seen as serving to increase the gap between perceived intellectual levels between the doctor and the patient. The patient is displayed as sitting, as most patients are; sitting is a weaker social position than standing in many circumstances.

8.1.2 *Interpersonal*

The represented participants within this panel are represented in close social distance to each other; this could be interpreted as suggesting a closer relationship



Figure 1.
Bizarro by Dan Piraro and Wayno, published on February 24, 2018 [41].

between this doctor and patient even with the anticipated torment that comes with “jinks” testing. Though the two human RPs are close in proximity to one another, neither are directly addressing the reader of the strip. Even as not directly facing the reader, the reader may still interpret the patient’s face as an iconic facial expression of anger or perhaps more accurately, frustration. As far as modality goes, this image is purely fictional in its situation, though it may be argued to still have a sense of believability to it. The viewer of this comic might find it obvious that this situation would never happen in a medical setting, but at the same time, they recognize the frustration the authors may be trying to convey.

8.1.3 Compositional

Another important theme is the salience or positioning of the doctor’s diploma and laboratory coat. Represented participants in this frame are given the positions of power. The white laboratory coat is a symbol of power. It is known that doctors wear such coats to stand out among colleagues and patients [42]. This practice as is manifest in this comic form could be seen as drawing attention to the prestige associated with medical practice. The diploma could also be interpreted as a symbol

of power. The diploma is more salient in this frame than the white coat and is seemingly looming over the room. This framed document could be interpreted as an artifact that lends authority to the practitioner. The diploma also contains an eye peering toward the doctor, directing the reader’s attention to them. This could be interpreted as the authors suggesting that the doctor has the power of audience in this interaction. Along with the hidden eyeball, under the exam table is a stick of dynamite. This can be seen as contrasting the eye: stating that while eyes are on the doctor, the patient may find themselves in trouble.

8.1.4 Modality of the metafunctions

This comic by Wayno and Piraro uses the three metafunctions to tell a story that is anything but superficial. At the surface, someone reading the comic might see a funny exam room scene. But with a closer examination, themes of power dichotomies between practitioners and patients are represented. As we know from media and cultural studies, both culture and media are interdependent and constantly shaping one another. Whether or not the authors intentionally represented these themes to publicly disclose their opinions on medical practice, or whether they did so subconsciously, these themes have become present in this comic and are a byproduct of society.

8.2 Carpe Diem by Niklas Eriksson

From aliens, to pets, to demons, and to ghosts, you will never know what *Carpe Diem* will hold. Translated as “seize the day,” this comic is about a day in the life of a seemingly endless number of characters. Tackling issues such as iPhone versus Android, self-automated cars, and three-dimensional printers, the author offers commentary on contemporary life. Along with the contemporary is the ancient and the metaphorical—from cavemen, to Vikings, and to knights, historical humor can be found. And for figurative scenes, the commentary is no less humorous; it is simply coming from the mouths of fictional characters, such as the Grim Reaper, the Devil, dogs and cats, or even talking volcanos. This satirical panel has a far reach and has received international attention and awards.

In Niklas Eriksson’s comic (**Figure 2**), we see the first example as shown in this analysis of a doctor and what is arguably a nurse in the frame alongside the patient with the identifying factor being the nurse’s cap. This picture portrays a doctor attempting to read an X-ray and a nurse intervening. This panel uses pastel colors and is simplistic in illustration.

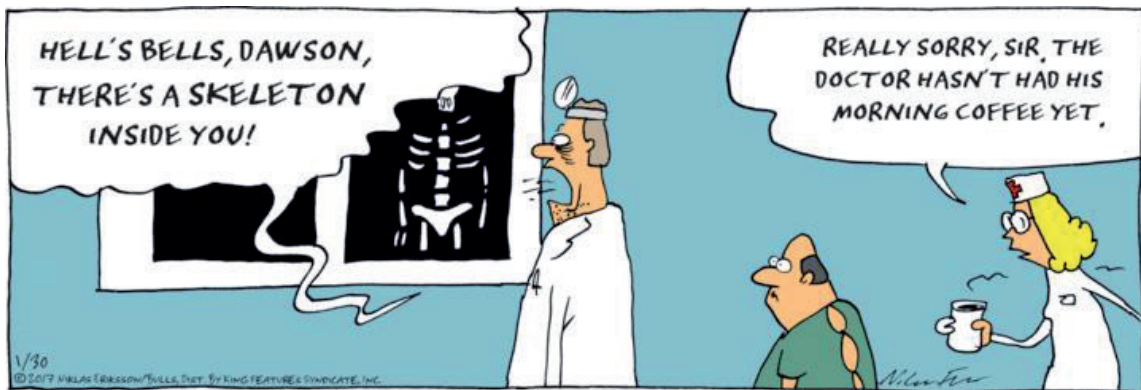


Figure 2.
Carpe Diem by Niklas Eriksson, published on January 30, 2017 [43].

The main represented participants in this image include the doctor, the patient, the nurse, and the word-bubbles. In this image, the doctor appears to be yelling at the X-ray atop of the X-ray film viewer and saying, “Hell’s bells, Dawson, there’s a skeleton inside you!” As the patient looks dumbfounded, a nurse is hurrying behind with a mug of coffee replying, “Really sorry, sir. The doctor hasn’t had his morning coffee yet.” This panel introduces the patient’s distrust of the doctor and the salience of the white coat.

8.2.1 Representational

In this panel, the doctor is arguably portrayed in the strongest position and claims authority through the framing-work done by their laboratory coat. Although the nurse is dressed in a similar white coat, her position of authority is questioned because of nurse’s cap which could be viewed as outdated and perhaps insulting that a nurse is portrayed in this particular uniform, and is arguably portrayed as female, may be interpreted as a reflection of society’s view of nurses in healthcare.

The patient in this image has the least powerful position as can be reckoned by their lack of height. Even as the doctor is portrayed as aloof, the patient too could be interpreted as being portrayed as rather goofy, dumbfounded, or inferior to the doctor who is calling the shots, no matter how off they may be. By illustrating the patient with such a mountainous head and bulbous nose, the author could be viewed as suggesting the patient’s inferiority through humorous assets.

8.2.2 Interpersonal

With a closer social distance, the author of this comic may be suggesting something about the relationship between the three human RPs. Compared with the other comics, the people in this image are portrayed from the waist up suggesting close proximity, which could be viewed as an invitation to gain a closer relationship with the RPs in this panel.

8.2.3 Compositional

Along with this close proximity, the author may be reaching out to the readers by using an iconic representation of anger in the doctor’s face. This representation is immediately recognizable, and the reader of this comic may quickly connect with this RP. This image is both believable and unbelievable. It may be interpreted as highly believable that a groggy doctor may make a mistake without caffeine, but could be viewed as implausible that a doctor could have such huge oversight.

The portrayal of the patient also gives insight into their feelings. With bulging eyes and a slightly opened mouth, the patient could be interpreted as dumbfounded at the doctor’s incoherence on the job. This portrayal may lend itself to the theme of patients distrust in medical professionals.

8.2.4 Modality of the metafunctions

In Eriksson’s work, readers can interpret the author as highlighting the perceived aloofness of doctors, the patient’s distrust of practitioners, the authority of doctors as partially maintained by the laboratory coat, and the positioning of doctors versus nurses. Arguably, the most prominent theme in this panel as can be interpreted by the viewer is that of patient distrust and the aloofness of medical professionals. The author of this comic uses coffee-humor and alludes to the doctor’s lack of caffeine as the source of incoherence. As the reader may interpret, even without coffee, a

doctor should not be so much aloof as to misread an X-ray in this way. The patient's bulging eyes give away their emotion as they stand behind the doctor.

8.3 *The Lockhorns* by Bunny Hoest and John Reiner

To make fun of married couples and the trials and tribulations they experience, the author illustrates sticky scenarios through two recurring characters: Loretta and Leroy Lockhorn. Whether it is Leroy rolling eyes after Loretta says something, or Loretta telling the therapist how Leroy never helps around the house, readers cannot help but relate to this couple's experiences. Leroy is a stark contrast to Loretta with a strong personality, stubbornness, and ability to sit for hours in front of a TV sleeping. When not worried about Leroy, Loretta is a shopping addict and spends more than any person should. Loretta loves to cook and helps Leroy's strong character type.

In this image (**Figure 3**) by Hoest and Reiner, readers view the inside of an exam room in a doctor's office. In the upper right, a doctor is portrayed holding an X-ray, and in the off-center left, the patient sitting on an exam table. The color choices of the authors are very minimal with two tones of a yellowish-beige being the most vivid. The scene of the exam room is represented with straight lines and angles and is altogether very uncluttered. The patient is wearing socks and a hospital gown and the doctor is wearing a laboratory coat.

The main represented participants in this frame include the patient, the doctor, the diploma, the laboratory coat, the X-ray, and the exam room. The patient as a represented participant in this frame is portrayed wearing a blue hospital gown, sitting down on an exam table, and looking sideways toward the doctor, and appears to be irate. The doctor as an RP in this image is portrayed facing away from and glancing at the patient from the side, wearing a laboratory coat, and holding an X-ray of what could be interpreted as a knee joint, and appears to be mid-sentence. The exam room as a whole is represented in a minimalistic or sterile way with one of the focal points being the framed med-school diploma. In terms of the lack of

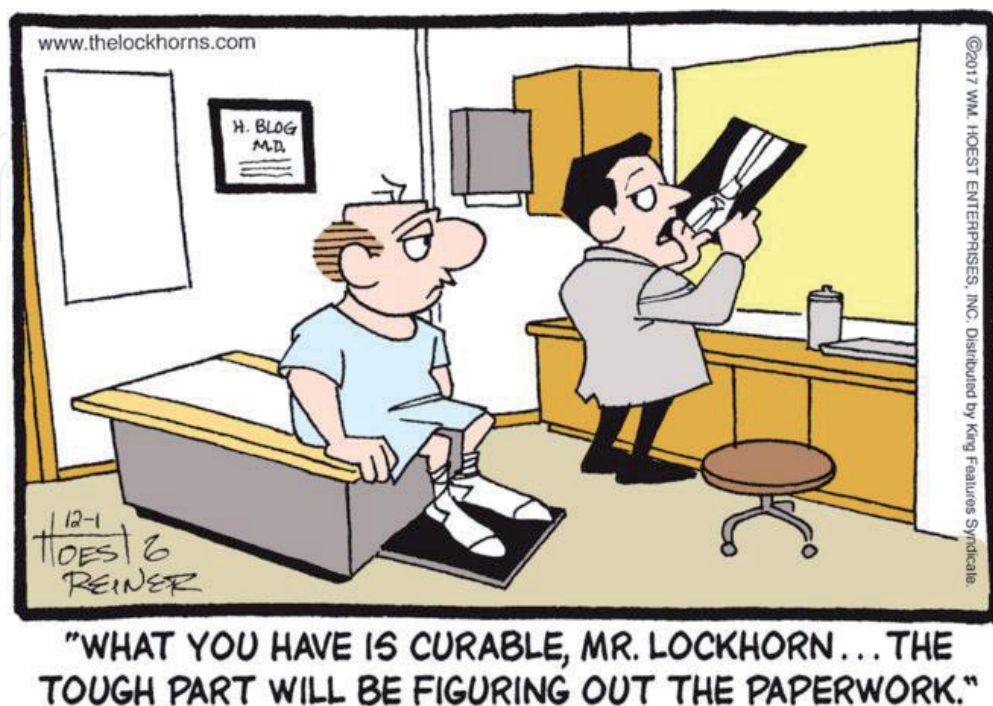


Figure 3.
The Lockhorns by Bunny Hoest and John Reiner, published on December 1, 2017 [44].

detail, or sterility of the scene, the authors could be portraying a sense of bleakness or an emotionally cold experience in a medical context. At the bottom of the frame, the doctor is saying to the patient, “What you have is curable, Mr. Lockhorn...the tough part will be figuring out the paperwork.” The themes identified in this frame include the salience of the diploma and the coat, vectors from the doctor’s gaze, and patient distrust.

8.3.1 Representational

In this image, the medical school diploma seems to dominate the horizontal plane. Framed with thick black lines and surrounded by empty white space, the eye tends to wander to the diploma. In this image, the laboratory coat is neither as salient as the diploma nor as salient in comparison with the other comics. In fact, the laboratory coat could be interpreted as grey in this image. While the diploma could be seen as hovering over the room as with the previous example, vectors are a stronger form at play within this image.

Looking over their shoulder and down the patient, the doctor could be interpreted as positioned or framed in a position of power via vectors. Not only standing is a more powerful position than sitting, the position in the upper right-hand corner places the doctor at a higher eye-level-plane than the patient. The reader might question why the authors have decided to portray the doctor speaking to the patient in this way while giving a diagnosis or speaking of a cure rather than turning around and addressing the patient directly. This could be interpreted as the doctor placing a higher-level importance on handling the X-ray and other tasks than the patient’s needs for an empathetic delivery of medical information.

8.3.2 Interpersonal

The two human RPs in this image are not portrayed in close proximity—this far distance between them suggests a degree of separation. While the doctor and patient are looking at each other, neither is creating visual demand with the audience of this image. However, through the iconic display of anger on the patient’s face, the reader is invited to empathize with the RP. Along with the distance between the two human RPs, the authors have chosen to show the reader the entire bodies of these characters; by doing so, the authors have presented the scene as further away, or perhaps given us the perspective of an outsider looking in, rather than being up close and a part of the conversation.

8.3.3 Compositional

Through the facial expression of the patient in response to the doctor’s comments, the reader may interpret the distrust of or frustration with medical care by the patient. The eyes of the patient may be viewed as frustrated or defeated upon the delivery of this news while already out of their comfort zone from being in the hospital. This may be viewed as a metacommentary on societal opinions of medical care in the United States and that of the authors, however, infinitely intertwined the two may be.

8.3.4 Modality of the metafunctions

Discursive analysis of this comic by Hoest and Reiner yields themes of patient distrust or dissatisfaction, positioning of the doctor at a higher level, and the authority of the medical-school diploma. While looking at this image in terms of

modality scope, considering all of the elements, the reader may interpret this image as highly plausible and likely to have happened.

8.4 Rhymes with Orange by Hilary Price

With over 400 non-recurring characters, the author still has not found anything that rhymes with orange. This high energy comic strip examines the universal truths of the ordinary: in-laws, driving, pets, children, and love. With recreations of daily life of its readers, this comic often points out just how weird, yet wonderful, humanity is.

In this comic titled *Modern Medicine* (**Figure 4**) by Hilary Price, readers are taken into a care unit. This comic has livelier colors than the previous with pastels of green, orange, and blue. The author pays little attention to extraneous detail with a focus on the image at whole. In the first frame of the comic, the title of this strip is introduced. At the bottom of the panel, the reader can see the doctor asking the patient “Can you give me a hand?” In the second panel, the reader of this comic gets a zoomed-out image of the scene. A doctor is in an exam room looking for their stethoscope which is apparently tangled up with headphones. The patient is sitting in their bed watching as the doctor says, “Shoot, my earbuds.”

The main represented participants in these two panels include the doctor, the white coat, the patient, the earbud-stethoscope knot, and the patient’s room. The doctor in these two panels is portrayed wearing a white coat with business attire underneath. The patient is portrayed as presumably elderly, with grey hair, and glasses. The room is portrayed rather bare, lending attention to the other RPs. Themes contained within these panels include the aloofness of the doctor, the salience of the laboratory coat, and humor.

8.4.1 Representational

Surrounded by a sea of green, the doctor’s laboratory coat seems to stick out as a prominent represented participant within this image. Combining the length of the two panels together, the doctor and their coat are in the true center of the comic. The center position lends power to this RP.

Another theme that can be seen across the data pool of comics, including this panel specifically, is the perceived or illustrated aloofness of doctors. As the reader follows the composition of the art, their eye moves from the foot of the bed up to the patient’s face who is looking at the knot. From vectors drawn, emphasis is placed on the knot that the stethoscope and earbuds are in. This knot could be interpreted as a symbol for the doctor’s mind while making rounds. Perhaps the author has been



Figure 4.
Rhymes with Orange by Hilary Price, published on January 16, 2018 [45].

a patient and felt, consciously or subconsciously, that doctors can be distracted by out-of-hospital issues. Along with distracted doctors comes distrust in healthcare and healthcare professionals. For example, if a patient was in pre-op and a doctor was seemingly distracted or not fully present, the patient could suffer higher levels of distress.

8.4.2 Interpersonal

The fact that the author has chosen to portray the doctor and the patient at a further social distance may suggest something toward the relationship between these two RPs. In the same way, the author has not utilized any form of directly addressing the reader of this comic to enhance viewing. However, with the analysis of facial expressions, the reader may get a strong sense of the situation. While not necessarily iconic displays of emotion through facial features, the reader could envision themselves as the patient or the doctor and imagine themselves in this context. This image has both believable and unbelievable aspects to it: that a doctor would keep a stethoscope in their pocket with earbuds rather than taking a different approach to avoid such tangled circumstances could be viewed as fiction; however, readers may look into this setting and empathize with how easy it can be to get earbuds tangled in a knot.

8.4.3 Compositional

These two comics have a sense of humor interjected into their illustration. The way the author portrays the expression on the doctor's face versus the expression on the patient's face could be interpreted as using humor in stressful situations to cope, or perhaps to relate to those who have felt in similar ways.

8.4.4 Modality of the metafunctions

This comic by price portraying a doctor entering a patient's room continues the trend of media portraying—or reflecting—societal distrust of practitioners, the use of white coats to position practitioners over patients, and humor as used in stressful situations.

9. Discussion and conclusions

Through this close reading of *Carpe Diem*, *Rhymes with Orange*, *The Lockhorns*, and *Bizarro*, explicit and implicit cultural beliefs held about medicine, including practitioners and patients, have been revealed through the study of signs and symbols and the meaning-making work they perform [10, 11]. It could be argued that these beliefs as conveyed through comics are more salient than those in the articles of the same newspapers as comics provide readers more tools for understanding than words do on their own [1, 34].

For example, the authors of the comics usually portrayed doctors in positions of higher power. As we know from Kress and Van Leeuwen [12] and de Rothewelle [1], and through the findings of Kaplan-Weinger's study of graphic medicine [34], the placement of a represented participant and the distance between represented participants within an image are meaningful. Through these four comics, the doctors were portrayed in positions of higher power. For example, just as Kaplan-Weinger analyzed the planes of characters represented in comics, it could be viewed that the doctors are portrayed on higher planes than patients and looking down upon

them when addressing the patients. These vectors painted with the eyes of doctors and patients serve as valuable insight. Also lending emphasis to the doctors in these comics are the artifacts that give them agency and power. Kress and Van Leeuwen [12] demonstrate that the salience of an object within an image is a meaning-making function used by authors. Kowalewski found that signs representing cultural ideologies created to lend a form of cognitive salience in the readership have impact [37]. In the same way, representations of medical school diplomas and white laboratory coats could be portrayed as signs or icons representing implicit cultural values and usually positioned in more salient forms than that of other RPs. These visual artifacts could be interpreted as visually separating doctors from nurses and patients within these comics. These two items serve as tangible artifacts that appear to lend power to the doctor's position.

Whereas the diploma and the laboratory coat lend power to the doctor's position, within this data set and the four comics on which the close reading was performed, the position of doctor or physician is always portrayed as a male-presenting role. According to Schiffrein [9] and Davies and Harré [4], identity is performed and co-constructed through positioning. By positioning doctors as above those who they treat, the authors may be reinforcing the idea of a doctor's autonomy. Kress and Van Leeuwen [12] also posit that proximity in relation to other humans can be used to interpret meaning. As is known from similar studies, such as that of Kaplan-Weinger [34], the closer two human RPs are portrayed to each other, the more likely they may be to become intimate, which is typically represented by a friendly conversation or a handshake. On the other hand, characters portrayed further from each other could be interpreted as seeking no interaction. In the comics, the doctors were usually portrayed in a distant proximity to the patient, which could be interpreted as a lack of interest by the doctor in becoming too close to the patient.

The analysis of these four comics in particular shows that they all portray patients as inferior to doctors. This could be viewed as an extension of a patient's distrust of doctors and a visual representation of how patients may be made to feel during interactions with doctors. Along with this distrust of doctors is what could be viewed as the portrayal of doctors acting aloof or pre-occupied at times when they could be more attentive to patients. These portrayals could be viewed as made through vectors and continued through the compositional metafunctions [2], including the use of written language. These portrayals of the doctors' and patients' opinions of each other could also be interpreted through facial features. The idea of patient's distrust of doctors is more of a metaphorical device painted by the visual text such as the ones Juricevic and Horvath found in their work. Whereas metaphors may not have a specific and previously defined sign and signified correlation, icons do [36]. Anger, sadness, and happiness are all posited to be iconic emotional displays, that is, whenever these faces are made, one immediately knows what the other is feeling [1]. This window to the feelings of the represented participants lends ease to the reader when empathizing with the portrayed characters.

A lesser theme in the four comics examined in this analysis is the lack of portrayal of female presenting doctors. The author pays no homage to a binary gender system, though realizes these comics were created in a society where such a system is upheld by the cultural majority. Just as Dalbeto and Oliveira [38] located cultural stereotypes of women of color through visual analysis, this study found stereotypes of women in medical practice; within the male and female stereotypes as represented in these comics, doctors are always portrayed by men, and nurses are always portrayed by women. In the four closely dissected comics, and throughout the entire data pool of 24 comics, the results remain the same. Humor is another less prominent theme as displayed throughout the comics and is trickier to grasp as the medium itself is traditionally considered to be humorous. However, these comics

could be interpreted as containing humor to cope with stressful situations during medical exams and hospital stays. For example, in *Carpe Diem*, it is humorous that the doctor has misidentified the X-ray, but it is also a scary situation as one wrong move in a procedure could be life-threatening. Perhaps it is the author's way of attempting to distress a portrayal of a situation, where a doctor is aloof on the job.

These comics are products of the society, and they were created in and may be found to reflect the ideologies of that society [7]. Cohn et al. [46] have found that the interpretation of visuals and rhetorical devices in comics is culturally dependent. Whereas all of the identified themes and ideologies presented in this analysis may yield great insight into the medical industry, they may not be the representative of the various cultures of the world. For example, the push toward a relationship-based approach to the doctor-patient relationship may be a product of United States culture and may not transfer over—the person reading these comics as distributed in India may not elicit the same responses. Just as we know that comics can help bridge the understanding of difficult topics and create a response in the readership [8], it is also known that if comics do a poor job at depicting their story, the reader can become all the more confused as Farinella points out [47].

As Grice [48] states, all communication must uphold four maxims to be effective: the maxims of quantity, quality, relevance, and manner. Viewing these comics outside of their original cultural context could be viewed as violating communicative maxims and would almost certainly be cause for different results. For example, in terms of the iconography of the white laboratory coat and the framed medical school diploma, the maxim of relevance might be violated in a culture that does not practice Western medicine. In other cultures, a doctor or a healer might be designated with a different type of attire and retained different types of artifacts on display to assert their knowledge.

Another consideration for these comics is the reflexive nexus that continues to construct culture by creators and receivers of discourse [4]. These comics have the potential to provide insight in what may be viewed in a positive light by creating change and improvement in medical care—or these comics may create a spiral effect that continues to sway popular opinion of medicine. For example, news media coverage of certain events is known to create an illusory truth effect [49]. This portrayal of what could be interpreted as negative ideologies surrounding medical care could continue to foster negative ideologies when medical associations and practitioners are moving in a different direction.

Whereas these comics may be a representation of the author's beliefs and a reflection of cultural beliefs in general, just as Dalbeto and Oliveira have found [38], these comics are in distributed newspapers worldwide and may have a sizable impact. After all, comics are a product of the culture they are created in, and the artistic choices of the authors offer valuable cultural insight and potential to influence readers [38]. It is no longer assumed that the media has such an intrusive influence on the life of the individual; it is suggested that this discourse may aid in the framing of represented participants [1, 3]. With the reflexive nature of media in mind, the co-construction of cultural discourses by authors and audiences [4], these media may be viewed as a reflection of cultural opinion and having the ability to influence cultural opinion [3].

Taking into consideration media theory and the analysis of the comics, medical associations and practices may find valuable insight into the opinions and beliefs of not just the authors of these comics but of society as a whole. According to Dalbeto and Oliveira [38], "a critical analysis of comics, and of any cultural asset, is necessary because [...] they are not free of ideologies." With this in mind, the themes of doctors as more powerful and more important than patients, doctors presenting as one of the two culturally accepted genders rather than the other, aloofness of

doctors on the job, and distrust in doctors and the medical system were interpreted. These themes could be interpreted largely as the reflections of societal opinions of medical practice and could be taken as pointers to improve patient satisfaction by reducing stress through building doctor-patient trust [5, 6]. Comics pull readers in and help them to imagine themselves in the situations pictured; therefore, practitioners may find comics as a powerful tool for improving patient care and understanding the patient's experience [34].

10. Limitations and future research

This research purposely works with a small sample size from one news syndication to make data manageable. To establish a farther-reaching analysis of how medicine is represented in editorial cartoons and the influence these cartoons have on culture, a larger sample size from multiple sources could broaden the results. To facilitate a scope this large, a data-analytic technology to aid research would be necessary. Along with a larger scope, it is known that images may mean different things in different cultures and thus would be worthy of dissection from a cross-cultural standpoint [46].

Acknowledgements


This work was made possible with the advice of my colleagues at Harry S. Truman College and Northeastern Illinois University. Permissions granted by King Features Syndicate. Thanks to those who helped copy edit.

Author details

Jonathan Comyn de Rothewelle
The Department of Communication and The Reading Center, Harry S. Truman
College, Chicago, United States

*Address all correspondence to: jcomynderothewelle@gmail.com

IntechOpen

© 2019 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

References

- [1] de Rothewelle JC. Comics and medical narrative: A visual semiotic dissection of graphic medicine. *Journal of Graphic Novels and Comics* [Internet]. 2018 Oct;1-27. DOI: 10.1080/21504857.2018.1530271
- [2] Kress G, Van Leeuwen T. *Multimodal Discourse: The Modes and Media of Contemporary Communication*. Oxford, UK: Oxford University Press; 2001
- [3] Borah P. Media Effects Theory. *The International Encyclopedia of Political Communication* [Internet]. Hoboken, New Jersey: John Wiley & Sons, Inc.; 2016 Jan. pp. 1-12. DOI: 10.1002/9781118541555.wbiepc156
- [4] Davies B, Harre R. Positioning: The discursive production of selves. *Journal for the Theory of Social Behaviour* [Internet]. 1990 Mar;20(1):43-63. DOI: 10.1111/j.1468-5914.1990.tb00174.x
- [5] Gerbner G, Gross L, Morgan M, Signorielli N, Shahnahan J. Growing up with television: Cultivation process. In: Bryant J, Zillmann G, editors. *Media Effects: Advances in Theory and Research*. Mahwah, NJ: Erlbaum; 2002. pp. 43-67
- [6] Moreno MA, Koff R. 11. Media theories and the facebook influence model. In: *The Psychology of Social Networking* [Internet]. Vol. 1. De Gruyter Open; 2015 Jan. DOI: 10.1515/9783110473780-01
- [7] Brienza C. Producing comics culture: a sociological approach to the study of comics. *Journal of Graphic Novels & Comics* [Internet]. 2010 Dec;1(2):105-119. DOI: 10.1080/21504857.2010.528638
- [8] Williams ICM. Graphic medicine: comics as medical narrative. *Medical Humanities* [Internet]. 2012 Jan;38(1):21-27. DOI: 10.1136/medhum-2011-010093
- [9] Schiffrin D. *Approaches to discourse*. Blackwell Textbooks in Linguistics. Oxford: Blackwell; 1994
- [10] Kress G. Multimodality: Challenges to thinking about language. *TESOL Quarterly* [Internet]. 2000;34(2):337. DOI: 10.2307/3587959
- [11] Thibault PJ. Editorial: Social semiotics. In: *The Semiotic Review of Books*. Vol. 4. Ontario, Canada: University of Toronto Press; 1993. p. 1
- [12] Kress G, Van Leeuwen T. *Reading Images*. Routledge; 2006 Mar. DOI: 10.4324/9780203619728
- [13] Foucault M. *The Birth of the Clinic*. Routledge; 2002 Nov. DOI: 10.4324/9780203406373
- [14] Halpern J. What is clinical empathy? *Journal of General Internal Medicine* [Internet]. 2003 Aug;18(8):670-674. DOI: 10.1046/j.1525-1497.2003.21017.x
- [15] Green MJ. Graphic storytelling and medical narrative: The use of comics in medical education. In: *The Graphic Medicine Manifesto*. University Park, Pennsylvania: The Pennsylvania State University Press; 2015
- [16] Czerwicz MK. *Taking Turns: Stories from HIV/AIDS Care Unit 371*. University Park, Pennsylvania: The Pennsylvania State University Press; 2017
- [17] Chute H. Comics as literature? *Reading graphic narrative*. PMLA [Internet]. 2008 Mar;123(2):452-465. DOI: 10.1632/pmla.2008.123.2.452
- [18] Bateman JA. *Text and Image*. Abingdon, United Kingdom: Routledge; 2014 May. DOI: 10.4324/9781315773971
- [19] Smith ST. Who gets to speak? The making of comics scholarship. In: *The*

Graphic Medicine Manifesto. University Park, Pennsylvania: The Pennsylvania State University Press; 2015

[20] Squier SM. The uses of graphic medicine for engaged scholarship. In: *The Graphic Medicine Manifesto*. University Park, Pennsylvania: The Pennsylvania State University Press; 2015

[21] Halpern J. *From Detached Concern to Empathy*. Oxford, UK: Oxford University Press; 2001 Jun. DOI: 10.1093/acprof:osobl/9780195111194.001.0001

[22] Lampert B, Unterrainer C, Seubert CT. Exhausted through client interaction—Detached concern profiles as an emotional resource over time? *PLoS One* [Internet]. 2019 May;14(5):e0216031. DOI: 10.1371/journal.pone.0216031

[23] Laub D, Felman S. Bearing witness or the vicissitudes of listening. In: *Testimony: Crises of Witnessing in Literature, Psychoanalysis, and History*. New York, London: Routledge; 1992. pp. 57-74

[24] Frank AW. *The Wounded Storyteller*. Chicago, United States: University of Chicago Press; 1997. DOI: 10.7208/chicago/9780226067360.001.0001

[25] Godfrey, A, Mould, E. But who is this story for?: Representation and responsibility in autobiographical comics [video podcast]. 2014. Available from: <http://www.graphicmedicine.org/new-podcast-andrew-godfrey-emma-mould/>

[26] Billington J. *Is Literature Healthy?* Oxford, United Kingdom: Oxford University Press; 2016

[27] Green MJ, Myers KR. Graphic medicine: Use of comics in medical education and patient care. *British*

Medical Journal [Internet]. 2010 Mar;340(mar03 2):c863-c863. DOI: 10.1136/bmj.c863

[28] Shwed A. *Crisis Averted in Infinite Lives: Utilizing Comics as Clinical Art Therapy*. New York, United States: Intima; 2016

[29] Tsuda M. *De-stigmatizing Mental Illness through Graphic Medicine*. SKMC. Philadelphia, Pennsylvania: Jefferson Digital Commons; 2019

[30] Jones VA. The white coat: Why not follow suit? *JAMA* [Internet]. 1999 Feb;281(5):478. DOI: 10.1001/jama.281.5.478-jms0203-5-1

[31] Goold SD. Trust, distrust and trustworthiness. *Journal of General Internal Medicine* [Internet]. 2002 Jan;17(1):79-81. DOI: 10.1046/j.1525-1497.2002.11132.x

[32] Bellert JL. Humor. *Cancer Nursing* [Internet]. 1989 Apr;12(2):65-70. DOI: 10.1097/00002820-198904000-00002

[33] According to Reed Brennan Media Associates. Available from: <https://www.rbma.com/about-us/>

[34] Kaplan-Weinger J. Addressing loss and resilience: Informing patient care through comic narratives. *Atrium: The Report of the Northwestern Medical Humanities and Bioethics Program*. Evanston, Illinois: Northwestern Center for Bioethics; 2012;(10)

[35] Stoian C. Analysing images: A social semiotic perspective. *Scientific Bulletin of the Politehnica University of Timisoara Transactions on Modern Languages*. 2015;14(1):23-30

[36] Juricevic I, Horvath AJ. Analysis of motions in comic book cover art: Using pictorial metaphors. *Comics Grid: Journal of Comics Scholarship* [Internet]. 2016 Apr;6(1). DOI: 10.16995/cg.71

- [37] Kowalewski H. Heart is for love: Cognitive salience and visual metonymies in comics. *The Comics Grid: Journal of Comics Scholarship* [Internet]. 2018;8(1). DOI: 10.16995/cg.117
- [38] Dalbeto L do C, Oliveira AP. Oh my goddess: Anthropological thoughts on the representation of Marvel's Storm and the Legacy of Black Women in comics. *The Comics Grid: Journal of Comics Scholarship* [Internet]. 2015 Jun;4(1). DOI: 10.5334/cg.bd
- [39] Overholser JC. Sense of humor when coping with life stress. *Personality and Individual Differences* [Internet]. 1992 Jul;13(7):799-804. DOI: 10.1016/0191-8869(92)90053-r
- [40] Johnson M. The healthcare future is female. *Athena insight: Athena health*. 2018 Feb;14. Available from: <https://www.athenahealth.com/insight/healthcare-future-female>
- [41] Piraro D, Howath W. Doctor with reflex hammer and clown on exam table. Online image. King Features Syndicate; 2018. Available from: <https://comicskingdom.com/bizarro/2018-02-24> [Accessed: 29 December 2018]
- [42] Farraj R, Baron JH. Why do hospital doctors wear white coats? *Journal of the Royal Society of Medicine* [Internet]. 1991 Jan;84(1):43. DOI: 10.1177/014107689108400116
- [43] Eriksson N. Doctor misinterprets x-ray. Online image. King Features Syndicate; 2017. Available from: <http://comicskingdom.com/search?page=14&q=doctor&utf8=✓> [Accessed: 29 December 2018]
- [44] Hoest B, Reiner J. What you have is curable Mr. Lockhorn. Online image. King Features Syndicate; 2017. Available from: <http://lockhorns.com/comics/december-1-2017/> [Accessed: 29 December 2018]
- [45] Price H. Modern medicine. Online image. King Features Syndicate; 2018. Available from: <http://rhymeswithorange.com/comics/january-16-2018/> [Accessed: 29 December 2018]
- [46] Cohn N, Murthy B, Foulsham T. Meaning above the head: combinatorial constraints on the visual vocabulary of comics. *Journal of Cognitive Psychology* [Internet]. 2016 May;28(5):559-574. DOI: 10.1080/20445911.2016.1179314
- [47] Farinella M. Of microscopes and metaphors: Visual analogy as a scientific tool. *The Comics Grid: Journal of Comics Scholarship* [Internet]. 2018;8(1). DOI: 10.16995/cg.130
- [48] Grice HP. Logic and conversation. In: Cole P, Morgan JL, editors. *Syntax and Semantics, Speech Acts*. Vol. 1975, 3. New York: Academic Press; 1975. pp. 41-58
- [49] Fazio LK, Brashier NM, Payne BK, Marsh EJ. Knowledge does not protect against illusory truth. *Journal of Experimental Psychology: General* [Internet]. 2015 Oct;144(5):993-1002. DOI: 10.1037/xge0000098