Locked-in Syndrome and an Epistemology of Lockdown

Nicolo M. Masakayan

ABSTRACT

This paper explores the conceptual resemblances and metaphorical relation, between the medical condition known as locked-in syndrome and the state of being in lockdown or quarantine. These parallelisms will be examined under the lens of epistemology, or the philosophical study of knowledge. In particular I will use locked-in syndrome as a metaphor for our lockdown situation using the concepts of epistemic bubbles and echo chambers. The term "locked-in syndrome" refers to a serious neurological condition wherein patients are essentially conscious but almost completely paralyzed. A more technical definition is given by Patterson and Grabois:

> The syndrome is manifested by quadriplegia, lower cranial nerve paralysis, and mutism with preservation of only vertical gaze and upper eyelid movement. Consciousness remains intact and the patient is able to communicate intelligibly using eye blinking. The "locked-in" patient is literally locked inside his body, aware of his environment but with a severely limited ability to interact with it (1986, 758).

Patients suffering from locked-in syndrome are literally and figuratively locked within themselves. Almost the entire body cannot move, but the mind is still active and conscious. Patients often want to cry out or speak, but the required muscles are unable to move. They can think but cannot efficiently express themselves. They can sense but struggle to project their sensibilities. People wonder if patients suffering from locked-in syndrome are still "in there" or are still conscious. Patients suffering from locked-in syndrome wonder if people are aware that they still exist.

The condition appears in various works of literature, which is not surprising given its unique characteristics. In Alexandre Dumas' *The Count of Monte Cristo*, the character Monsieur Noirtier de Villeforte is described as a paralyzed individual who can only communicate by blinking his eyes. Williams (2003, 413) observes that this alludes to "classic locked-in syndrome," which is "characterized by total immobility except for vertical eye movements and blinking, combined with preserved consciousness."

A few pages into his most famous work entitled "The Diving Bell and the Butterfly," Jean-Dominique Bauby provides another well-known description of locked-in syndrome:

> Paralyzed from head to toe, the patient, his mind intact, is imprisoned inside his own body, unable to speak or move. In my case, blinking my left eyelid is my only means of communication (1997: 4).

MASAKAYAN Locked-in Syndrome and an Epistemology of Lockdown

These descriptions can make us think of a somewhat similar situation that is happening on a global scale. Due to coronavirus restrictions imposed by their governments, scores of people around the world are "locked-down" under some form of quarantine since the first quarter of 2020. Social gatherings are banned and movement is restricted, essentially resembling a kind of paralysis on a social level. At first glance, the comparisons between locked-in and locked-down seem trite, trivial, or strained. However, there are similarities between them when ones thinks of the two situations within the context of the record-breaking quarantine period in the Philippines. This paper will look into these parallelisms under the lens of epistemology, or the philosophical study of knowledge. In particular, it will relate locked-in syndrome with our lockdown situation using the concepts of epistemic bubbles and echo chambers.

This papers' analysis does not intend to show that locked-in syndrome is identical to state lockdowns. Instead, the former will be used as a metaphor for the latter, and the analysis seeks to show how they relate to issues concerning epistemic environments.

The epistemology of a lockdown

As Filipinos settled into the first months of the lockdown in Luzon, a lot of the collective experiences of the nation resonated with two interesting concepts from contemporary epistemology. These two concepts are epistemic bubbles and echo chambers.

An epistemic bubble is described as "a social epistemic structure in which some relevant voices have been excluded through omission" (Nguyen 2018a, 142). Epistemic bubbles can be artificial or natural: they can exist through our own design (such as when we consciously attempt to avoid contrary ideas in order to feel more assured of what we believe), or they can just occur from the way we operate in the world (such as when market forces induce a privileging of certain views in order to gain more capital). An example of an epistemic bubble is when almost your entire circle of friends think like you, and you do not interact with anybody outside of your circle: you have the same political, religious, and philosophical views. The absence of contrary or contradictory views "illegitimately inflates our epistemic self-confidence" (Nguyen 2018a, 142). In other words, our misguided confidence in our being right is based solely on the fact that we do not encounter dissenting views.

Epistemic bubbles can sprout during the lockdown because we are stuck at home with our families or friends. This can be a kind of "forced" epistemic bubble, which occurs because there are structural impediments like the quarantine (or even the algorithm that controls your social media feed) which prevent us from encountering dissenting views. If you are a die-hard supporter of the current administration, and you live in a house full of other die-hard supporters, and your social media news feed shows nothing else but pro-government propaganda, it will be difficult to change your mind on controversial issues surrounding the government's handling of this pandemic. You may be convinced by the truth of your beliefs mainly because they have not been tested critically by opposing viewpoints.

Online epistemic bubbles are no less restrictive. Social media platforms such as Instagram and Facebook utilize user-preference-based algorithms to supposedly enhance the news feed of their users. Instagram, for instance, selects content to be shown on the users' news feeds by analyzing their usage history and the popularity of posts (O'Meara 2019, 1). This can result in a loop, wherein the more one views certain content, the more it is shown in the news feed, which then leads one to view that type of content even more. For instance, one views or engages (by commenting or sharing) social media posts about the government's supposed efficient handling of the pandemic. The curating algorithm is designed to show more posts about the said topic in the news feed of the said user. This in turn leads the user to consume even more of the said content, which creates and reinforces an online epistemic bubble.

Epistemic bubbles during the quarantine have a mild resemblance to lockedin syndrome. In both scenarios, you are metaphorically "stuck inside your own head." Your ability to communicate with others is severely limited if you are a locked-in patient. One key similarity with people under lockdown is that locked-in patients, though they cannot talk to others, can still encounter other views, depending on their available environment. The same can be said for those existing in an epistemic bubble: once the lockdown ends or restrictions are eased and we encounter more people and other views, the epistemic bubble "bursts."

When people become too attached to their epistemic bubbles, their situation devolves into what epistemologists call "echo chambers." An epistemic echo chamber is "a social epistemic structure in which other relevant voices have been actively discredited" (Nguyen 2018a,142). In the die-hard progovernment household example, it is possible that they are open to changing their minds about the government's handling of the pandemic. Their narrow-mindedness is possibly just a product of the unavailability of alternative viewpoints because of the quarantine. However, if they begin to develop and sustain beliefs that routinely undermine alternative ideas, then they start to form epistemic echo chambers. For example, if the family starts undermining and discrediting sources of alternative views (ex. neighbors, alternative sources, etc.), what was previously an epistemic bubble has turned into a much more dangerous echo chamber.

Nguyen (2018a, 149) asserts that echo chambers are more dangerous than epistemic bubbles because they "are excellent tools to maintain, reinforce, and expand power through epistemic control." Power through epistemic control can be achieved by regulating what and how people think and believe. It is in this sense that we can point out other parallels between locked-in syndrome and the lockdown. Locked-in patients can easily descend into epistemic echo chambers if they fall under self-serving caregivers or physicians who have agendas to mislead and obfuscate reality. For instance, self-serving caregivers may convince or brainwash their captive locked-in patients that they are no longer loved by their families. They may do this by over-emphasizing certain facts such as the number of visits the patient receives (or lack thereof). This false belief can be enhanced by the careful filtering of information that reaches the patient. But why would anybody do this? Apart from possible sadist tendencies, we can imagine a doctor or caregiver who has something to gain from the ignorance of a locked-in patient. The situation described above is similar to, but also significantly different from, what Alvin Goldman describes as "epistemic paternalism." For Goldman (1991, 119), "communication controllers" practice epistemic paternalism "whenever they interpose their own judgment rather than allow the audience to exercise theirs." However, Goldman clarifies that in epistemic

paternalism the communication controllers actually have an interest in helping out the audience and their "epistemic prospects" (1991, 119). Goldman gives the example of editing or "simplification" done in television and radio broadcasts for clarity and brevity as justifiable epistemic paternalism because the reduction in the amount of information is offset by error/confusion-avoidance (1991, 123). The crucial difference between epistemic paternalism and the epistemic control of self-serving communication controllers is the intention behind the acts of censorship, curating, and editing. Those who practice epistemic paternalism supposedly consider the epistemic welfare of the audience, while self-serving communication controllers wilfully oppose the epistemic welfare of the audience. This is nonetheless problematic, since self-serving epistemic control can be done in the guise of epistemic paternalism, and it is debatable whether paternalism is even a worthwhile stance to take.

Individuals under lockdown can unwittingly tumble into epistemic echo chambers when they become susceptible to officials or politicians with selfserving agendas. Influential politicians can employ communication controllers who can manipulate the information received by the populace in order to establish self-serving epistemic control. In this light, we can view the events of the previous year and inquire if they are prologues to longterm epistemic control. For example, why was ABS-CBN, the nation's biggest private media company, effectively shut down in the midst of the pandemic? Is the ban on mass gatherings a prelude to a ban on mass organization and mass movement?

The cancellation of the ABS-CBN franchise was a hallmark decision in terms of silencing a significant non-government source of news and information (and even entertainment). Few private media companies, can boast the same scope and reach of media coverage as ABS-CBN. It has been described as the Philippines' "largest media conglomerate" (Ignacio 2013, 549), "leading media and entertainment organization" (Villamejor-Mendoza 2019, 94) and "largest broadcast network" (Teehankee 2021, 132). Because ABS-CBN is perceived as critical of the government, it is difficult not to look at its franchise cancellation as a silencing of a major dissenting voice, or at least a venue for dissent and source of alternative views. It has been noted that ABS-CBN "has long had a long and combative relationship" with the Duterte

administration (Feldstein 2021, 146), and Duterte saw the network's closure as a victory against "oligarchs" (Teehankee 2021, 132). Feldstein (2021, 146) notes that although the non-renewal of ABS-CBN's franchise "came as a shock," the underlying intent of this move is to "silence the critical media and intimidate everyone else to submission."

Likewise, mass gatherings are not prohibited per se, because people still pool together in state-sanctioned activities and venues like the distribution of the government's ayuda to the masses or in poorly organized vaccination centers. However, lockdowns and their accompanying restrictions may have a significant effect on mass action. The deliberate coming together of individuals to discuss, profess, and critique principles and ideas, such as what we find in religious services, mass demonstrations/mobilizations, and educational discussions may be affected by restrictions on social gatherings. This challenge was actualized and enhanced by declarations made by President Duterte during his televised address on April 1, 2020. Duterte had no qualms in ordering law enforcers to "shoot dead" those who would "defy lockdown orders" (Capatides 2020). The message was clear: defy government restrictions and you will suffer grave consequences.

When an epistemic community is "healthy," there is a constant interaction between contrary and contradictory ideas, and a steady collaboration between mainstream and alternative voices. An epistemic bubble negates this interaction, and prevents the review and refereeing of accepted ideas. On the extreme end, "echo chambers can create runaway credence levels for approved *individuals*" (Nguyen 2018a, 150). This means approved individuals, say, a popular politician or influential celebrity, can achieve overwhelming levels of trust and credibility due to the obliteration of contrary or alternative voices. This is why a hard lockdown, coupled with the silencing of dissenting voices, opens the possibility of greater epistemic control. In other words, it will be easier to monitor and influence how people think.

It is difficult to assert that we are already in a fully dystopian society with an absolutely hostile epistemic environment. Simply put, Philippine society in the midst of this pandemic is still several steps away from 1984-levels of epistemic hostility. However, the current trend of silencing and discrediting alternative voices is a legitimate worry. The high approval ratings of some of

the nation's top politicians, despite the mishandling of this pandemic, could also be a symptom of this trend. These are the signs that should be identified and recognized, to resist total epistemic control and its disastrous consequences.

A locked-in patient can be influenced in a similar way. Suppose the patient is able to watch television, but the only channel available is FOX News. The patient is constantly bombarded by the ideology of that particular media company, and has no other source of information available. Patients in this situation may also not have the ability to avert their gaze or close their eyes. Imagine, however, that the hospital suddenly upgrades its cable plan and the patient's television receives several other channels. Twice a day, an orderly changes the channel and enables the patient to access other sources of information. That is essentially similar to the shattering of an epistemic bubble.

Suppose however, that other locked-in patients are not so fortunate. They also have the same cable news channel broadcasting 24 hours a day in front of their eyes, but other people in the hospital conspire to prevent them from accessing the other channels. After the orderly cleans the room and changes the channel momentarily, a sadistic or self-serving member of the hospital staff switches the channel back. The staff member also, for good measure, delivers a harangue against the other channels, in the hopes that the patients will hear (and they do).

The patterns leading to epistemic control are hard to miss when we look at the Filipino lockdown experience, which contains evidence of growing epistemic control from the government. If Filipinos do end up in an echo chamber during this pandemic, what are their chances of breaking free from it?

Breakthrough

The last aspect of this locked-in/lockdown comparison is the possibility of escape or breakthrough. For locked-in patients, the breakthrough is the gradual return of bodily movement. For locked-down communities, the escape is the slow easing of restrictions and a return to the freedoms of prepandemic life.

Suppose however, that the lockdown has progressed to the level of an overarching epistemic bubble or echo chamber. In this situation all alternative voices have been silenced, and all opportunities for dissent have been eliminated. Imagine that the lockdown had dragged on long enough for the construction of such hostile epistemic environments. What sort of breakthrough or escape can we reasonably expect from such environments or communities?

While it is sensible to think that escaping an epistemic bubble is possible (as with the inadvertent changing of the channel in the hospital example), it is much harder to think of escaping an epistemic echo chamber. For starters, how will individuals discover that there is an artificial monopoly of ideas in their epistemic community when alternative ideas are silenced efficiently? Individuals belonging to such a community may be blissfully unaware of the manipulated reality that is cast in front of them. This brings up another reason why severely restrictive lockdowns should not be allowed to drag on indefinitely. Apart from negative economic and psychosocial effects, prolonged hard lockdowns can also affect the epistemic lives of communities and individuals. If the lockdown provides the fertile soil for echo chambers to develop, the passage of time entrenches these hostile epistemic environments. In such a scenario, individuals within the locked-down community may unwittingly accept the lockdown as their fate, even if reality says otherwise.

For example, suppose that the government of a small country imposes a strict lockdown and silences its critics simultaneously. The government gradually develops an echo chamber where the current politicians get favorable approval ratings because of the absence of alternative views and opposition. The lockdown drags on because the government is mishandling the pandemic and cannot afford to reopen society, but everybody accepts this matter-offactly because it has become the norm. The government realizes that the lockdown, as well as the concurrent echo chamber, is an efficient tool for both epistemic and political control. How will escape remain possible in this scenario? Escape will likely happen in such an example when the mechanism that maintains the echo chamber flounders and malfunctions. Some high ranking and powerful officials may break away from the ruling party and expose the workings of the echo chamber, and the structures of epistemic control gradually but irreversibly crumble away via the disintegration or implosion of the ruling party. The population eventually discovers the stranglehold the government has on the media and the methods used by state-funded organizations to silence critics. The nation discovers the hitherto lack of alternative views and opposition when the media gradually liberalizes or regains its freedom.

Another possible escape route is the escape from the lockdown itself. Depending on what sort of lockdown is in place, however, this route can be perilous. In this sense, the analogy with a locked-in patient's escape from the confines of paralysis is poignant.

In less totalitarian scenarios, the mechanisms of epistemic control and manipulation can be taken down once a change in government occurs. An election in the midst of the pandemic and lockdown is difficult, but it poses a unique opportunity for change, not only in the way the country is led, but also in the epistemic environment. The post-Trump United States is a good example of this scenario. Post-Trump, for instance, experts such as scientists are finally given epistemic justice and their voices, as experts in the pandemic, are amplified. Promoting experts to challenge the echo chamber, however, is still fraught with difficulties. Levy (2018, 127) notes that the markers of expertise can be mimicked to, mimic expertise. When people become aware that this kind of deception is possible, it can have the opposite effect on the echo chamber: ordinary people's trust in experts is reduced, and the task of distinguishing reliable from unreliable sources becomes difficult (Levy 2018, 127-128).

A change in government also does not guarantee the breakdown of echo chambers. At the very least, changing administrations could simply mean replacing of old echo chambers with new ones. The previous opposition party that replaced the old ruling party may construct their new echo chambers, full of the principles, ideas, and views that are essential to their political survival. What is essential, therefore, is that the newly-installed government is one that is wilfully opposed to the construction and maintenance of echo chambers for the epistemic control of its citizens.

A less extreme case warrants a less extreme kind of escape. Nguyen (2018b) notes that escape can also occur "when the echo-chambered individual starts to trust somebody on the outside." This assumes, of course, that the echo-chambered individual has access to somebody on the outside in the first place. In lockdowns and quarantines, this can be difficult. A "person on the outside" may mean anyone from a person in a less restricted part of the country to someone from a different country.

For example, Jose rabidly hates a particular politician who is working independently to help address the pandemic in the Philippines. The lockdown has severely restricted his access to alternative viewpoints, and the information that he receives about the network is severely filtered by the influence of trolls and online influencers. However, a longtime friend invites him to join an online group of volunteers assisting the politician in question. Jose initially scoffs at the idea, but agrees to it out of respect for his friend. He is exposed to the kinds of people working for the politician, and he also learns the principles behind the work of the politician. Gradually he realizes that his hatred is unfounded, and that he was merely being manipulated by his echo chamber. This example is consistent with what Nguyen (2018b) notes about escaping these kinds of echo chambers: the escape or breakthrough happens not because the individuals are exposed to "some institutionally reported fact," but because a personal encounter with a trusted person from the outside (or the other side) "pierced" the echo chamber. The problem of course is that in heavily fortified echo chambers the chances of encountering such a trusted outsider are slim.

What lies ahead for a person who has escaped an echo chamber? If we view such individuals as people who now have knowledge (or true belief at least), they will be faced with new responsibilities. Cassam (2019, 117) for instance, asserts that one is not "entitled" to one's knowledge or true belief unless one is willing to rebut challenges against one's beliefs. This means "escapees" are now faced with the responsibility of rebutting the false claims that polluted the echo chambers they once inhabited. If we go by Cassam's principle, it is only when you challenge the echo chamber yourself that you are finally worthy of the knowledge (or epistemic freedom) that you now possess. In other words, once an individual has escaped an echo chamber and acquired knowledge, it is incumbent on that individual to challenge the echo chamber and possibly dismantle it.

Problems with the Metaphor

As mentioned earlier, the metaphor of the locked-in syndrome to demonstrate our political condition inside quarantine-induced echo chambers is not a snug fit, and this paper does not intend to make a direct comparison. However, there are some crucial issues that need to be fleshed out in order to understand the relationship between locked-in and lockdown better.

One difference between locked-in and lockdown can be seen in the ability of individuals to express themselves. One can point out that patients suffering from locked-in syndrome have extreme difficulty in expressing themselves (they literally cannot speak or move) while individuals in lockdown can still express themselves and make choices and decisions. We can view the protest actions that still manage to come out during the lockdown as evidence for this significant distinction.

There are some weak points to this criticism, starting with locked-in patients being unable to express themselves. As noted in the beginning, locked-in patients sometimes still retain some ability to move their eyelids. Although it is difficult to understand what locked-in patients are saying with their blinking, it is nonetheless possible. Self-expression, therefore, is possible in both locked-in syndrome and the condition of being in lockdown. This is, however, not the most crucial similarity. What is important is what happens after prolonged experience of locked-in and lockdown. As discussed earlier, locked-in patients can eventually be convinced to accept an alternate reality made up by their caregivers. This can happen regardless of the patients' minuscule ability to express themselves: one may no longer wish to protest or express oneself after one acquiesces to this alternate reality. The same can be true for individuals inside echo chambers. Initially they may have the ability to decide and make decisions, but their autonomy is eventually compromised by the lack of alternative views and voices. They may become so convinced about the filtered reality that is fed to them that their ability to express themselves and make decisions makes no difference whatsoever: they may as well be just like the locked-in patient who has been successfully brainwashed by the self-serving hospital staff.

Another problem that is worth looking into is this: if the government already had a tendency to silence critics even before the lockdown, how do we know that echo chambers are more pervasive during the lockdown? In other words, if the structures of an echo chamber were already being constructed prepandemic, how can we say that the lockdown aided in its construction?

To answer this, let us again use the ABS-CBN example. In pre-pandemic Philippines, both the ABS-CBN network and the national audience had more options to express views and seek alternatives. The ABS-CBN's radio and television broadcasts may be paralyzed, but they would still have other entertainment and media outlets. They can still sponsor live shows and concerts, and they can still produce movies and documentaries. The company can also generate revenue from its theme parks and specialty shops. The stringent quarantine restrictions on work and travel effectively neutralized these options, leaving the company with limited resources to operate. In other words, the neutralization of ABS-CBN as a source of critical information was made more efficient by the lockdown. Likewise, a pre-pandemic population may still experience the effects of the ABS-CBN shut down, but to a lesser degree compared to during the lockdown. Individuals could be exposed to more alternative views before the pandemic whenever they went to work, school, church, or traveled to other countries. The timing of the ABS-CBN franchise non-renewal, therefore, was especially significant for epistemic control. It was a classic "double-whammy" for the audience because a major source of alternative views was neutralized at a time when seeking alternative views was difficult. The same holds true for the ABS-CBN company: it lost its franchise at a time when their supposed "fallback" options were also negated. In sum, the lockdown magnified the effects of the silencing of alternative sources of information, reducing impediments to the construction of echo chambers.

Conclusion: Paralysis on a larger scale

This short discussion of epistemic bubbles and echo chambers aimed to show that some form of paralysis unites the concepts of "locked-in" and "lockeddown." Locked-in syndrome affects families and other relationships, although there is only one obviously paralyzed individual—the locked-in patient. In contrast, a lockdown is paralysis on a massive and social scale. When one thinks of the utter helplessness that locked-in patients experience, one does not normally think of national quarantines. This paper argued that one should. When one thinks of the reduced, or lack of, epistemic control that a locked-in patient experiences, one ought to be reminded of the similar kind of helplessness that affects a society on lockdown.

Acknowledgments

The writer would like to thank the anonymous reviewer for raising critical points in the discussion, specifically the problems concerning the use of the metaphor of locked-in syndrome to represent the lockdown experience.

MASAKAYAN Locked-in Syndrome and an Epistemology of Lockdown

REFERENCES

- Bauby, Jean-Dominique. 1997. *The Diving Bell and the Butterfly*. New York: Vintage Books.
- Capatides, Christina. 2020. "Shoot them dead": Philippine President Rodrigo Duterte orders police and military to kill citizens who defy coronavirus lockdown.' *CBS News*. April 2, 2020. https://www.cbsnews.com/news/rodrigo-dutertephilippines-president-coronavirus-lockdown-shoot-people-dead/ (accessed February 19, 2022).
- Cassam, Quassim. 2018. Vices of the Mind: From the Intellectual to the Political. Oxford: Oxford University Press.
- Feildstein, Steven. 2021. The Rise of Digital Repression: How Technology is Reshaping Power, Politics, and Resistance. New York: Oxford University Press.
- Goldman, Alvin. 1991. "Epistemic Paternalism: Communication Control in Law and Society." *The Journal of Philosophy*. 88 (3): 113-131. https://doi.org/10.2307/ 2026984
- Ignacio, Emily Noelle. 2013. "The Challenge of On-line Diaspora Research." In Steven Gold and Stephanie Nawyn (eds.). *Handbook of International Migration*. London: Routledge.
- Levy, Neil. 2018. "Taking responsibility for health in an epistemically polluted environment." *Theoretical Medicine and Bioethics*. 39:123–141. https:// doi.org/10.1007/s11017-018-9444-1
- Nguyen, C. Thi. 2018a. "Epistemic Bubbles and Echo Chambers." *Episteme* 17 (2): 141-161. https://doi.org/10.1017/epi.2018.32
- Nguyen, C. Thi. 2018b. "Escape the Echo Chamber." https://aeon.co/essays/why-itsas-hard-to-escape-an-echo-chamber-as-it-is-to-flee-a-cult. Accessed January 31, 2021.
- O'Meara, Victoria. 2019. "Weapons of the Chic: *Instagram* Influencer Engagement Pods as Practices of Resistance to *Instagram* Platform Labor." *Social Media* + *Society*. October-December. 1-11. https://doi.org/10.1177/ 2056305119879671
- Patterson, James, and Martin Grabois. 1986. "Locked-In Syndrome: A Review of 139 Cases." *Stroke*. 17 (4): 758-764. https://10.1161/01.str.17.4.758
- Teehankee, Julio. 2021. "The Philippines in 2020: COVID-19 Pandemic Threatens Duterte's Populist Legacy." *Asian Survey* 61 (1): 130-137. https://doi.org/ 10.1525/as.2021.61.1.130

DR Vol. 64 No. 2 (2020) Dànas/[R]ánas: COVID-19 Special Literary Issue

- Villamejor-Mendoza, Maria Fe. 2019. "Philippine Private Sector Engagement Beyond Climate Change Awareness." In Walter Leal Filho, Bettina Lackner, and Henry McGhie (eds.). Addressing the Challenges in Communicating Climate Change Awareness Across Various Audiences. Cham: Springer.
- Williams, A. N. 2003. "Cerebrovascular Disease in Dumas' The Count of Monte Cristo." Journal of the Royal Society of Medicine. 96: 412-414. https://10.1258/ jrsm.96.8.412