Asymmetry in Online Social Networks[1].
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2019 AAP Conference, University of Wollongong, NSW

ABSTRACT

Varying degrees of symmetry can exist in a social network's connections. Some early online social networks (OSNs) were predicated on symmetrical connections, such as Facebook 'friendships' where both actors in a 'friendship' have an equal and reciprocal connection. Newer platforms -- Twitter, Instagram, and Facebook's 'Pages' inclusive -- are counterexamples of this, where 'following' another actor (friend, celebrity, business) does not guarantee a reciprocal exchange from the other.

This paper argues that the basic asymmetric connections in an OSN leads to emergent asymmetrical behaviour in the OSN's overall influence and connectivity, amongst others. This paper will then draw on empirical examples from popular sites (and prior network research) to illustrate how asymmetric connections can render individuals 'voiceless'.

The crux of this paper is an argument from the existentialist viewpoint on how the above asymmetric network properties lead to Sartrean bad faith (Sartre, 1943). Instead of genuine interpersonal connection, one finds varying degrees of pressure to assume the Sartrean 'in-itself' (the en soi) mode-of-being, irregardless of the magnitude of 'followers' one has.

Finally, this paper poses an open question: what other philosophical issues does this inherent asymmetry in modern social networking give rise to?

1.0. INTRODUCTION

Online social media sites (hereinafter referred to as Online Social Networks, or OSNs) have been in existence for almost two decades[3]. In present times, such OSNs are ubiquitous: featuring, and used by, political campaigns, celebrities, marketing, etc. OSNs are a rich source

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[1] This manuscript has been briefly revised from its originally presented form, to further clarify of the terminology used, based on feedback received by the audience at AAP2019 whom I'm indebted to.
[2] I would like to especially acknowledge the contribution of Professor David Green, an authority on complex networks, whose review of this manuscript has vastly improved its content from a network science perspective. Any and all remaining errors are my own.
[3] Based on Wikipedia Contributors (2019) <https://en.wikipedia.org/wiki/Timeline_of_social_media>, if we take the invention of web-based popular social media sites such as Friendster as a starting point. Though this can be debated, as earlier Bulletin Board Systems and other similar text-based chat platforms can be considered social networks.

of data for analyses ranging from targeted advertising[4] to predicting (and influencing) election outcomes[5].

Large scale analyses of the 'big data' within social networks themselves - as a giant dataset of attributes, properties, *metadata*, etc - are prevalent in today's industrial and academic research[6]. However, besides being a large source of 'big data' for targeted analyses (demographics, voting preferences, user likes/dislikes), one aspect of inquiry worth visiting focuses on the core of such OSNs - the network of connections amongst the actors[7] themselves.

Such studies have their roots in 'traditional' structural social network analyses - focusing on the inherent *structure* of the social network - whereby actors (people) are observed in their daily routines and their connections to each other mapped out using a graph. Such work long pre-dates the advent of electronic online social networks, and will be discussed in detail in Section 2.0. Structural analysis of OSNs gave rise to suitable areas for philosophical inquiry, such as in network-based social epistemology (Sullivan et al. 2018)[8] and ethics in a network (McPhail 2007). Borrowing from Sullivan et al's (2018) review of the philosophical literature, several studies of network-based epistemology in the past ten years include (Zollman 2007) and (Zollman 2012) which draws heavily upon ideas on structural analyses of social networks.

Compared to OSNs in ca. the early 2000s, an interesting characteristic of modern OSNs is that they permit *asymmetric* connections between actors. For context, modern OSNs such as Instagram and Twitter have the 'follow' feature, which allows the establishment of a one-sided connection between a particular user to another (but not necessarily the other way). Hence, in this paper, the *asymmetry* of such modern OSNs are a key feature of inquiry.

In this paper, I will argue that the asymmetric properties (from basic asymmetric connections between two actors) leads to emergent asymmetrical behaviour in the OSN's overall influence and connectivity, amongst others. I will illustrate this argument with empirical studies as well as observations from contemporary OSNs in society. From the existentialist canon of 'authenticity', I will argue that asymmetric OSNs promote Sartrean bad faith rather than genuine interpersonal connection. Finally, I will conclude this paper with an open question -- *what other philosophical implications can result from such inherent asymmetry?* -- with reference to modern philosophical inquiry on asymmetric network connections.

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[4] See e.g. Facebook's Marketing platform https://en-gb.facebook.com/business/marketing/facebook.
[5] The recent Cambridge Analytica controversy, wherein political parties engage Cambridge Analytica "to extract vast amounts of private information about vast numbers of people from its system, and that entity had passed the data along to someone else, who had used it for political ends." (Wong, 2019), is a clear example.
<https://www.theguardian.com/technology/2019/mar/17/the-cambridge-analytica-scandal-changed-the-world-but-it-didnt-change-facebook>
[6] See e.g. (Ghani et al. 2018)
[7] We define 'actor' as a node in the network, or simply put, a(n oftentimes human) participant.
[8] Sullivan et al's (2018) work on this will be referred to several times in this paper, as some epistemic features of the network are closely related to my arguments from a social graph analysis of *influence*.

2.0. A PRIMER ON REAL-WORLD INTERDISCIPLINARY SOCIAL NETWORK STUDIES

Long before electronic OSNs constituted a representation of (and the actual data for) the network itself, studies of human social networks have roots in 'traditional' social network [structural] analyses.
In such pre-OSN studies, actors (people) are observed in their daily routines, and their connections to each other are painstakingly mapped out using a graph. An early pioneering example is Moreno's mapping of 'human interrelations' to study human health and mortality, almost 80 years to date (Moreno 1934).

Other seminal works, in rough chronological order, include: mapping actors' relationships using an 'algebraic' approach (Heider 1946); an expansion into Heider's work using a framework of 'structural balance' (Cartwright and Harary 1956); human social behavior as a form of exchange (Homans 1958); and the eponymous 'BKS' series of authoritative, four-part, real-world social network studies (Bernard et al. 1979). Such studies encompassed multiple disciplines - from epidemiology to sociology to anthropology to psychology - and continues to this day for various applications (Alhajj and Rokne 2018).

3.0. SYMMETRIC VS ASYMMETRIC RELATIONSHIPS

From the introduction in Section 1.0, I have highlighted that many modern-day OSNs are predicated on asymmetric relationships between users. The nuances of this asymmetry, as distinguished from symmetrical social networks, is discussed below.

3.1. Symmetrical Relationships

An interesting property of real-world social networks studied in classical, real-world social network studies (Section 2.0) is that, to a certain degree, the networks are fairly symmetric. Consider (Bernard et al. 1979)'s study of four social networks in the real-world[9]:

- Case 1 - 'Office': "a small social science research firm with 45 employees" was studied, where experimenters walked through the office and physically recorded "dyadic contact[s]" between members (Bernard et al. 1979)
- Case 2 - 'Tech': "from a graduate program in technology education at West Virginia University" encompassing 37 personnel (staff and grad students); where "all occurrences of persons in verbal contact" were noted (Bernard et al. 1979)

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[9] Bernard et al (1979) actually provided their social network data as a matrix of numbers, rather than a visualisation of a social network graph common in modern OSN studies. Still, from the descriptions of the four social networks they studied, it is clear that it is not asymmetrical in nature.

- Case 3 - 'Hams': "a group of [54] amateur radio operators, commonly called 'hams'" where calls/conversations between operators were recorded (Bernard et al. 1979)
- Case 4 - 'Frat': "a college fraternity in Morgantown, West Virginia… [where] 58 occupants had been living together for at least three months". An experimenter "not[es] every group in conversation" (Bernard et al. 1979)

From all four cases of *traditional (real-world) social network analyses*, the nature of having both members participating in a *dyadic* social connection renders their connection *symmetric*. Extrapolating this across the entire network, we can say that if a *connection is present between two actors*, such a connection is *symmetric.*

Consider a real-world social network, where a person A is friends with person B. Both A and B share a roughly *symmetric* connection - in terms of influence, esteem, etc. This can be visualised in graph notation as **Definition 1** below:

$$A \longleftrightarrow B$$

where bidirectional arrows illustrate the symmetry of the connection.

When OSNs came into the fore, early networks adopted the same *symmetric property*. Consider the following:
- As a precursor to web-based social networking sites, chat rooms and bulletin board systems can be considered symmetrical, with a similar communication network as a ham radio network - i.e. Case 3 in (Bernard et al. 1979).
- An early (currently defunct) network, Friendster by Jonathan Abrams originally employed a social network where both members are part of a symmetrical relationship (Gannes 2010).
- Facebook's connections between Friends (not to be confused with the relatively new 'Follow' feature) is predicated upon the same as Friendster's (Facebook Inc. n.d.).

As documented in Gannes (2010), Figure 1 illustrates the visualisation of an early patent by Friendster on its social networking product. The symmetry between actors is present, as per Definition 1.
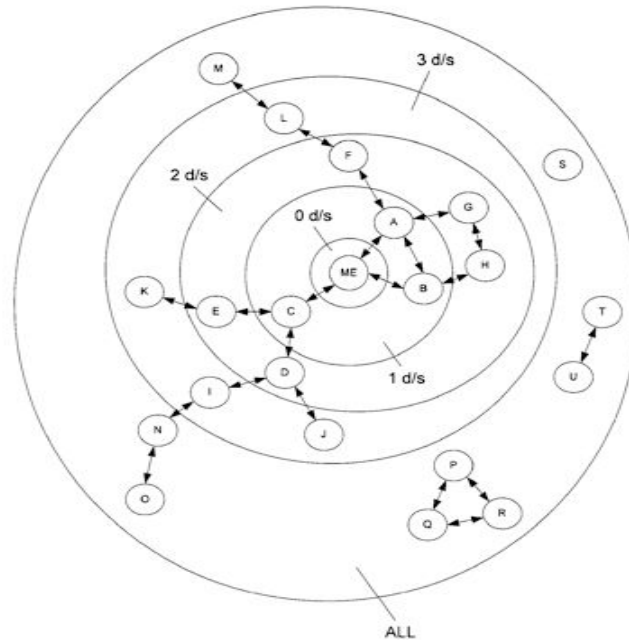
Figure 1. An early patent of Abrams' Friendster social network, reproduced in (Gannes, 2010).

3.2. Asymmetry and Contemporary OSNs

However, as other social networks such as Twitter and Instagram (Hu, Manikonda, and Kambhampati 2014) came into popularity, they introduced a new, *asymmetric[10]*, mode of connection (Krishnamurthy 2009; Cheong 2013). This concept was later introduced to Facebook (with it's Fan Pages feature), the (now-defunct) Google+, etc.

What this means is that a user A can unilaterally engage user P, *but user P need not necessarily reciprocate.* In Twitter and Instagram, for instance, a person A can 'follow' - in a sense, subscribe to social updates from - a popular celebrity or personality P whom person A is interested in, but has no real-world connection to. The asymmetry is defined, in graph notation, as **Definition 2**:

$$A \rightarrow P$$

This is not only limited to 'following' -- an asymmetrical relationship can also take the form of unidirectional messaging or rebroadcasting[11] of another's post. For the rest of this paper, for simplicity, we shall term any of the above as "A engages P". This relationship is in contrast with a real-world social network, recalling the discussion in Chapter 1.0: in real life, the social

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[10] Some authors claim that digital communication is inherently asymmetrical (Salis 2019), while others distinguish between different features in OSNs (Lopato 2016).
[11] Known as @user messaging, and RT for Retweeting, respectively. See (Cheong, 2013).

connection between a person A and a personality P *itself* is likely to *not* exist in the first place (and the engagement rarely bidirectional) as they are not in the same social network!

Another side effect is, due to the open, public nature of asymmetric communications, other parties could jump in and continue engaging with any number of the original participants, such as in a comment thread on Twitter (Salis 2019). This could continue *ad nauseam*, as future commenters could comment with any of the original participants and new commenters.

From the perspective of network/graph theory, by changing the basic building blocks of the network -- from non-directed to directed -- this has many implications. For example: "in a connected graph, there is a path between any pair of nodes (people); and no node is isolated. In directed graphs, this is not so: there may be many leaf nodes. So messages from most members cannot spread far" (D Green 2019, pers. comm., 5 July).

Having acquainted ourselves with the concept of asymmetry in OSNs, I will argue in the next section that basic asymmetric connections lead to *emergent asymmetrical behaviour* in the OSN's overall influence and connectivity, and its (often) negative implications.

4.0. EMERGENT ASYMMETRY: THE RICH GET RICHER?

If we establish the premise that the basic building block in a social network -- the "A engages P" connection between two actors -- can be one-sided (in terms of interest, reach, engagement, etc), what would it imply when we scale this up to the entire network?

Observe the summary statistics of two notable[12] personalities on social media, the soccer player Cristiano Ronaldo on Instagram (Figure 2), and former US president Barack Obama on Twitter (Figure 3).
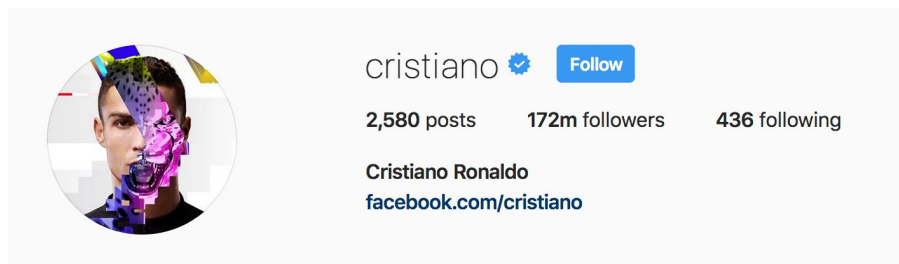

Figure 2: Summary statistics for Cristiano Ronaldo on Instagram
<https://www.instagram.com/cristiano/?hl=en>.

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[12] Based on a naive Google Search on "most Instagram followers" <https://www.google.com/search?q=most+instagram+followers> and "most Twitter followers" <https://www.google.com/search?q=most+twitter+followers> respectively. Search conducted 28 June 2019.

Figure 3: Summary statistics for Barack Obama on Twitter <https://twitter.com/BarackObama>.

The ratio between the number of people 'following' such personalities range from about 150:1 (Obama on Twitter) to about 400,000:1 (for Cristiano Ronaldo on Instagram)[13], in contrast with a symmetrical social network with a fixed ratio of 1:1.

Observe both Figures 2 and 3, with the number of followers in the range of thousands or millions, a genuine interpersonal connection or social exchange (Homans 1958) is not possible. Such a disproportionate social network, several times greater in order of magnitude than Dunbar's group size (Dunbar 1992), hints at only a 'surface' level of bidirectional influence or exchange (Homans 1958).

One can argue that, on the surface, a *symmetric* relationship can equally reach the same degree (quantity) of 'surface' level connections, as it is a feature of the network size (and not the asymmetry). Here, I argue that a large symmetrical social network structure is actively discouraged, both from a technological standpoint[14], as well as from a group standpoint (Dunbar 1992). Dunbar himself, in a recent study, acknowledges that "professional users such as Justin Bieber ...use Facebook as a kind of free fan club" (Agence France-Presse 2016; Dunbar 2016). Such large social networks "fail... to differentiate [between] relationships of different quality..." (Dunbar 2016) -- the bulk of the "outermost layers" of large networks are more "loosely defined". In fact, having a symmetric connection will imply a reciprocity between, say, a personality and his/her fans, and an *equal* exchange between the two, which isn't the case. Furthermore, such symmetrical networks won't sustain a rapid growth, as the symmetrical nature implies that a personality or professional user needs to *reciprocate* to the "A engages P" relationship -- P has to, for instance, actively approve friend requests from P, acknowledge messages from P, etc.

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[13] These are subject to fluctuations, as users can 'follow' and 'unfollow' others on a daily basis.

[14] It is difficult to find an authoritative answer from a Facebook official, but from online media, the limit can be due to "[technological] scaling problems …" <https://techcrunch.com/2008/05/09/facebook-to-lift-5000-friends-limit/>, or simply for encouraging use of the "Pages" feature due to interactional differences between friends and followers.

Such inherent asymmetry in the network structure, evident in an asymmetric social network[15], gives rise to *emergent behaviour ('emergences')* in terms of the network as-a-whole. In this paper, I argue for two such *emergences*, by providing anecdotes from existing network research. In explaining the two *emergences*, I turn to anecdotal evidence in the Australian social network discourse on regional energy issues -- specifically renewable energy and decommissioning of coal power in country Victoria (Morgan, Cheong, and Bedingfield 2018). On the surface, the study found that "cohorts of the general public that we could identify as being the 'common[er]', have very limited presence in the wider discourse" (Morgan, Cheong, and Bedingfield 2018).

Using empirical observations in said case study; together with observations in popular contemporary OSNs; and borrowing from shared properties in network epistemology studies, I introduce the two concepts of 'asymmetry of influence' and 'asymmetry of attachment'.

4.1. Asymmetry of Attachment

Firstly, I will introduce the concept of **Asymmetry of Attachment**. In the theory of networks, the property of *preferential attachment* -- per the model proposed by Barabasi and Albert (Albert and Barabási 2002) -- simply means that nodes (actors) in a network which contain many links to others will tend to gain more connections than those without[16].

This property is exhibited in many real-life networks: academic citation networks (de Solla Price 1965) (one of the earliest found); the network of links on the World Wide Web; protein networks; and more pertinently, (both offline and online) social networks (Barabási 2009). Such networks have a distribution of connections between actors which follow a *power-law* distribution (Morgan, Cheong, and Bedingfield 2018; Green 2014).

In the examples above, all (except for the protein network) of them exhibit properties of asymmetric connections. Author X citing Author Y does not necessarily imply the inverse; similarly, consider Webpage P linking to Webpage Q.

Asymmetric OSNs are shown to exhibit this power-law distribution (Morgan, Cheong, and Bedingfield 2018; Aparicio, Villazón-Terrazas, and Álvarez 2015). So, what are its implications? Formation of "scale-free networks [result in a]... power law in the degree distribution, and the reach (number of actors a message can reach) is even more extreme". (D Green 2019, pers. comm., 5 July). From our definition, this is not only limited to reach, but also any form of engagement -- following, retweeting, etc.

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[15] As argued before, even if it could be represented (structurally) as a symmetric structure, inherent asymmetries in social exchange and limits to group size will defeat the purpose.
[16] Simply put, 'the rich get richer'.

For starters, it is demonstrated from other networks that 'richer' actors 'get richer', so to speak: popular websites tend to gain more incoming links from others[17]. Personalities with lots of 'followers' in an OSN, by the same property, will tend to attract more followers.

From a practical standpoint, examples of how this can manifest, in terms of the user experience a typical actor has on the OSNs themselves:

- An Instagram user P has many millions of followers (one of whom A).
  By recommendation algorithms (e.g. finding the more popular users, numerically, amongst A's 'following' network), A's peer (say B) is recommended to follow P.
- A Twitter user conducts a search for a given hashtag. The list of results show several users who have tweeted about it before (most with, say, followers in the hundreds). In that list, a Twitter user P stands out as they have 100,000 @user messages addressed to them. As such, the user is inclined to follow P.

As discussed prior on the "A engages P" relationship, the asymmetry of attachment does not only apply to the number of potential 'followers' one has, but also to other asymmetrical connections enabled by OSNs -- e.g. retweets on Twitter, shares on Facebook / Twitter / Instagram, as well as replies on Twitter, and responses to comment threads for many OSNs (Salis 2019).

From (Morgan, Cheong, and Bedingfield 2018), "cohorts of the general public"-- in the context of their study, a regular, non-influential Twitter user -- are found to "have very limited presence in the wider discourse". Empirically, based on the network of @user messages, communication patterns found within illustrate a power-law distribution with the few 'richest' users dominating the discourse, with a magnitude of hundreds to thousands of messages (Morgan, Cheong, and Bedingfield 2018).

4.2. Asymmetry of Influence

If Asymmetry of Attachment can describe a network's growth patterns and topology, what are its practical implications? In other words: how and why are particular actors more influential than others in terms of attracting attention: eliciting responses[18]; eliciting likes (to encourage awareness, or simply as part of Internet memes[19]); eliciting more followers[20] (self-perpetuating,

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[17] Google's PageRank algorithm exploits this property - an excellent non-technical overview can be found in (Sullivan et al. 2018)

[18] See e.g. Donald Trump's 'cofveve' Tweet <https://www.nytimes.com/2017/05/31/us/politics/covfefe-trump-twitter.html>

[19] See e.g. the campaign to get many 'likes' for a picture of a meme <https://www.cnbc.com/2019/01/14/an-egg-has-overtaken-kylie-jenner-as-most-liked-instagram-post-ever.html>

[20] An early example of this, almost a decade before this paper, is CNN's race against Ashton Kutcher to get 1 million Twitter followers <https://www.cnet.com/news/following-the-great-twitter-race-to-1-million/>

cf. Section 4.1's growth)? This can be due to a number of factors, which, collectively, I define as the **Asymmetry of Influence**[21].

Revisiting the definition in Section 3.2, it is implied that the number of actors A in the "A engages P" relationship is independent from the number of actors in the inverse "P engages A" relationships. If we turn to, say, (Homans 1958), the exchange between A and P cannot be characterised as, say, a real-world friendship.

However, on an OSN, certainly P has something to offer to A for the unilateral engagement to take place. Examples include popularity/inspiration (as in the case of celebrities or those with *social identity*[22]); or high epistemic authority (as in the case of opinion leaders); or even potential business leads (in the case of using OSNs for marketing). However, A is not expected to reciprocate as an equal -- with no empathy, nor emotional aspects, nor "faithful focus" on a genuine conversation (Salis 2019) in such communication, present in the bidirectional $(A \longleftrightarrow B)$ -- but merely offering some form of exchange (e.g. social media participation by endorsing, retweeting, liking etc).

Let's consider (Morgan, Cheong, and Bedingfield 2018) as an example: the presence of large 'hubs' resulting from "popular users with many @user [Twitter] messages received" were observed on Twitter. An influential user such as a politician or an opinion leader is more likely to elicit a response when they participate in the discourse on an OSN, rather than the 'commoner'. As a product of the Asymmetry of Attachment (per Section 4.1), more highly-connected users will be ranked more highly in, say, search results[23], propagating a further increase in followers, and in turn, influence (*ad nauseam*).

4.3. [Dangerous] Practical Effects of The Asymmetries
This section will cover two practical [and pessimistic] *emergences* resulting from the two asymmetries, drawing upon contemporary real-world OSNs.

4.3.1. Online Controversies: Polarisation and Amplification of Toxicity

To illustrate this point: in Australia, a controversy on Twitter in recent years deserve mention[24]. Activist and former ABC staff member Yassmin Abdel-Magied was criticised by some quarters (and supported by others) over a controversial Anzac Day tweet[25] in 2017.

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[21] NB: identifying which factors are more important than others in producing this asymmetry is beyond the scope of this paper (at the very least - the type of social media makes this hard to generalise!)
[22] As defined in (Sullivan et al. 2018).
[23] For example, the "Top Tweets" option on Twitter <https://help.twitter.com/en/using-twitter/top-search-results-faqs>
[24] To provide the reader with a balanced coverage of the examples, two news sources will be provided as context for the example, each from opposites of the political spectrum.
[25] See <https://www.heraldsun.com.au/business/companies/yassmin-abdelmagied-posts-a-controversial-anzac-day-callout-to-her-followers/news-story/304ca37489fa6a0a28ae1beb65894c2e> and

Asymmetry of Attachment is evident in the high number of social network engagements -- likes, "follows", or replies -- and amplify the engagement of OSN users to these controversies. Asymmetry of Influence, on the other hand, provides a more damaging outcome: apart from the public and high-profile nature of the personality (Abdel-Magied) in question, other high-profile commentators (including members of the press, politicians, and the like - from both sides of the political spectrum) do contribute to the polarising debate[26].

This Asymmetry is not necessarily positive - consider the case where one's social media post becomes 'viral' and attracts uninvited attention. Having trolls initiate unilateral communication (e.g. trolling messages) is an example of this. Recall Salis (2019), such OSNs invite participation from other users not necessarily engaged in the original conversation.

Users who 'follow' (or otherwise engage in any form) with these commentators -- in turn are likely to exhibit, and be influenced by (Zollman 2012), so-called influencers' ideological leanings, which can be severely divisive, or worse, inciting actual harm[27] -- "virulent comments" targeted towards individuals, potentially due to discrimination, caused by relative anonymity behind a keyboard (Salis 2019).

4.3.2. Exploiting the Asymmetry - Troll Farms

Recognising the asymmetry, an actor (say P*) seeking to exploit the first to gain advantage of the second will be tempted to find a way to increase incoming engagements. Recalling Sections 3.2 and 4.0, as the connection is asymmetric, we only need to increase the number of "A engages P*"s but not vice-versa.

Turning to (Pariser 2011), the effects of the Internet 'filter bubble' - caused by personalisation algorithms and the user experience, amongst others - will contribute to the effects of the two asymmetries with a strongly siloing / polarising effect, as users will gravitate towards people who share the same ideological leanings (in an 'echo chamber').

The combination of the above can be illustrated in the use of fake accounts to spread disinformation. One example oft-discussed is allegations of foreign interference in the recent 2016 U.S. presidential election using social media platforms (especially Twitter).

The exploitation of the asymmetry of attachment, and then influence, can be summarised succinctly by this report by Carnegie-Mellon University:

<https://www.smh.com.au/lifestyle/hysteria-over-yassmin-abdelmagieds-anzac-day-post-cannot-be-separated-from-racism-20170427-gvtjdj.html>

[26] Kierkegaard's work is relevant here, specifically his observations on the 'mob mentality' and 'untruth'-ness of social media. Section 5.0 will briefly highlight applications of his philosophy to OSNs.
[27] See Abdel-Magied's personal account of her experience
<https://griffithreview.com/articles/a-little-too-close-to-the-sun-advocacy-modern-age/>

> *"Bad actors who understand those mechanisms and user tendencies have used that knowledge to weaponize information in various ways, such as swaying public opinion or sowing chaos in the leadup to an election. Between fake accounts and social bots—specialized computer programs that can autonomously post messages on social platforms—false information spreads with incredible velocity… 'Bots exacerbate the problem. People spread disinformation, and then bots spread it in a million directions,' said Lightman."*
> (Barsotti 2018)

As an example, consider the dump of data released by Twitter containing ~10 million tweets in the aftermath of "potentially state-backed information operations on [their] service" (Twitter Inc. 2018). Studies reveal that the accounts behind these tweets display characteristics which I defined as asymmetry of attachment:

- "Of the total, over nine million tweets were attributable to 3,800 accounts affiliated with the Internet Research Agency" (Digital Forensic Research Lab 2018) - i.e. over 2,000 tweets per account[28].
- Facebook's analysis on Instagram posts is even more conclusive: "76 [state-sponsored] accounts on Instagram… [with] more than 48,000 accounts follow[ing]... at least one of these Instagram accounts" (Gleicher 2018).

5.0. OSNs: IN ONE'S RELATIONS WITH *THE OTHER*.

Moving from a broader picture of the two asymmetries and real-world emergences, I now turn my attention to the actors on OSNs -- the users themselves. This discussion will revolve around human actors on OSNs (and exclude, say, organisational users or the fake accounts of targeted campaigns per the previous sections). Several studies from an existentialist perspective deserve mention here, before delving further into the topic.

5.1. OSN Participation - Authenticity?

Dowden (2016) considered "a Sartrean existentialist reading" on the social media presence of Kim Kardashian-West. Kim projects both "vulnerability and willingness to be exposed", with a caveat that if it's a "calculated projection of a cultivated image of vulnerability, … Kim assumes her own objectification and conceives of herself as an object as well as the audience's bad faith and assumption of objectivity" (Dowden 2016).

On OSNs as a collective (Cheong 2017), I have argued based on Kierkegaard that crowd mentality on OSNs -- particularly online abuse (per Section 4.3.1) -- is "untruth [as it]... renders the single individual wholly unrepentant and irresponsible, or weakens his responsibility by

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[28] Though we cannot obtain the exact specifics due to the actual accounts being already shut down.

making it a fraction of his decision" (Kierkegaard 1846); or where acting as a news media source, "no one has to answer" or claim responsibility for (Kierkegaard 1846)[29].

In a followup experimental study on "800-1000" Instagram images purportedly 'authentic', "certain characteristics are emphasised in such images, accomplished by (and as a byproduct of) a mindful curation of the images" -- i.e. this "careful curation of what one would like others to see" involving "quite a few 'rehearsals' and 're-posing'" strives to "accomplish certain *ends*" (Cheong 2018). The invocation of authenticity is found to be favoured by marketers and influencers, at the time of writing (Lorenz 2019), to increase "sales, incentives, or popularity" (Cheong 2018).

5.2. OSNs and The Look

In (Cheong 2018), my analysis turned to Varga and Guignon "to reflect on the context of a **#liveauthentic** post", which I will quote verbatim below:

> "...the person who thinks [*by travelling the world, posting their experiences on SMS, and claiming that they are living authentically*] "just as a matter of fact" is excluding from view the ability to transform [*their existence*] through [*actually, say, striving to continually improve oneself through lifelong study or healthy living habits etc.*] ...a denial of transcendence or freedom."
> (Varga and Guignon 2014)

This analysis gave rise to a followup examination of an actor's *subjectivity* on an OSN, pertinent to our examination of asymmetric OSNs thus far. If, from our use of OSNs, "A engages P" (A → P per Definition 2 [30]), then P has a certain propensity to be an *object* for the *other's[31] Look* (Sartre 1969). To contextualise this in our nomenclature, we can say that "A engages P" as a result of "A casting their look on P's posts"; otherwise it will be A engaging randomly with P without any reason[32].

With this in mind, I turn to two interpretations of Sartre's *Being and Nothingness* from a contemporary sense, with one specifically referring to OSNs. Lopato's (2016) "*Social Media, Love, and Sartre's Look of the Other: Why Online Communication Is Not Fulfilling*" specifically

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[29] Furthermore, Kierkegaard observes that the press "makes its readers more ... mediocre" and "create[s] the impression that many people think the same way" (Jansen 1990). Section 4.3.2 is alluded to here.
[30] Note that for consistency, we use the A→P definition here; in this general case, 'P' need not specifically be an personality, influencer, etc.
[31] Sartre uses the word 'Other' (in translated form) various times in *Being and Nothingness* for various concepts. To distinguish between the various ways the terms Other (uppercase 'O') and other (lowercase 'o') are used, I will use the uppercase variant for "the point of view which is not my own"; per (Lopato 2016; Cox 2008). The lowercase variant is used for the concrete 'other' [person].
[32] Such 'blind' engagement can still take place by the use of automated programs, troll farms etc, and is outside the scope of our discussion.

applies the Sartrean 'Look' on online communications, drawing upon Dolezal's (2012) "accounts of the Look and reflective self-consciousness within social relations"[33].

To clarify: similar to both (Lopato 2016) and (Dolezal 2012), the use of the capitalized term Look is based on *Being and Nothingness* (Sartre 1969): the 'Look' is, simply, "how the self gains thematic awareness…[,] forming a public and self-conscious sense of how the body appears to others…[,] illustrates affective and social [a]ffects of embodied being" (Dolezal 2012). The "Other", to paraphrase Lopato (2016), is the "point of view which is not my own…" and the lowercase "other" is that "someone or something which can [see me and]... judge me" (Cox 2008; Dolezal 2012; Lopato 2016).

Two more terms worth defining here are the *in-itself* (French: *en-soi*) and *for-itself* (French: *pour-soi*) modes of being. The former is a *facticity*, "characteris[ing] the existence of worldly objects" (Dolezal 2012); the latter, a *transcendence* with "consciousness", which may require "the existence of others… to fully realise all the structures of one's being" (Dolezal 2012; Golomb 1995; Gardner 2009).

5.3. The pressure to assume the (Revised) in-itself

We shall first acknowledge that in the online space, my real-life, *human*,"very being-in-itself" does not apply to virtual communication: I am still "aware of myself on display as an object" but it is *not my holistic self* -- I can revise this online persona by e.g. "remov[ing] instances of my facticity from public display" (Lopato 2016). Reducing myself to an object "of the other's judgment" (Lopato 2016) -- i.e. the in-itself -- I feel a specific pressure to craft or curate (Cheong 2018) my online persona to attract (say) attention from the Other; "I must obtain from the [o]ther the recognition of my [online persona] *being*", to paraphrase Sartre (1969).

This Other, in the case of OSNs, is omnipresent. From our analysis on asymmetric networks, such OSNs tend to be more public in nature compared to, say, Facebook (with it's symmetric 'Friend' feature); with a default privacy setting allowing one's OSN profile/activity to '*be Looked at*' by the entire OSN user base[34]. In fact, Lopato's (2016) reading of *Being and Nothingness* (1969) indicates that even if there is just the *mere possibility* of a Look -- I am aware that "[Others can] direct [their] attention to me… and judge me … [at any] particular moment" (Lopato 2016). In an asymmetric OSN, my naive example would be a mere awareness that anyone from across the globe might have a chance to look at my witty tweet or insightful Instagram post. A part of myself is "contained in the representation which is being judged"

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[33] I concur with Dolezal (2012) that Sartre's "account of the Look" can be contradictory based on his own writing style; however Dolezal takes the approach of "the oft-cited voyeur vignette" which is, interestingly, less taboo in today's day and age (e.g. one browses other strangers' OSN profiles without any shame!) Lopato (2016) takes a more pragmatic approach, applying Sartre's account to the practicalities of current OSNs.

[34] Lopato (2016) emphasizes that this 'virtual' Look from the Other "is still, indeed, a look".

(Lopato 2016), invoking the Sartrean sense of *shame* or *pride* at being looked-at (Lopato 2016; 1969).

With the omnipresent (Dolezal 2012; Sartre 1969), often public, possibility of the judgemental Look, no wonder an OSN user places high emphasis on the virtual representation of themselves.

In *Being and Nothingness*, it can be argued that Sartre interprets the Other not as a concrete actor[35] -- in contrast to, say, Cox (2008) -- but this argument is irrelevant in our interpretation of asymmetric OSNs. The non-concrete, distanced, point of view (Dolezal 2012) from which an actor regards her OSN persona can just easily be actualised, as an *actual* OSN user who 'judges' my persona (Cox 2008); due to the twin factors of the sheer number of users on OSNs and the high degree of potential for discoverability by others (via, say, search results, or friend recommendations). In fact, even if a human user joins an asymmetric OSN purely as a *sink* for news (akin to using e.g. RSS feed readers or news feeds), anecdotal evidence by the author suggests that even for an actor A with zero 'followers', there is a high possibility that an Other (human or non-human) actor P can and will engage with A[36].

How does the pressure to assume the *in-itself* manifest in asymmetric OSNs, resulting in *bad faith*, seeing as the Other is omnipresent? I'll preface this with Lopato's claim early on that exclusively, OSN communication does not allow "me to love others… [nor] effectively learn about myself or my possibilities… [nor] intimately reveal myself to the Other", resulting in an unfulfilling *communication* (Lopato 2016).

I turn to Golomb (1995), whose analysis is paraphrased by my interpretation of modern OSNs:
> "...this exposure of the transcendent ego [i.e. my real-world transcendence which is linked, but not equivalent to, my online representation -- but constantly subject to online judgement]... to public scrutiny and the constant awareness that one is being watched by the 'other' ... impels us to escape this judgemental 'hell'... We turn to disguises and acts of bad faith." (Golomb, 1995).

Simply put, I want to avoid *shame* in my online activity, and I want to be *proud* of whom I appear as on OSNs, to friends and acquaintances and casual observers alike[37].

Going beyond any claims of effective self-reflection or intimacy (Lopato 2016), if one were to exploit asymmetric OSNs for a specific 'exchange' (per Section 4.2) - be it 'likes', popularity,

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[35] To borrow our earlier nomenclature in Footnote 31.

[36] Due to e.g. search engine recommendations (features recommending users/friends you may know), bot program activity (e.g. per Section 4.3.2), someone who seeks online acquaintances (by, say, engaging with users on Twitter discussing a particular topic), or even users engaged in marketing (legitimate or otherwise).

[37] Anecdotal evidence from the author: while writing the manuscript and publishing an early draft on social media for review and comment, I feel the need (or pressure) to refine my online portrayal - of myself and my work - to *my Other*s.

commendations, visibility, etc. - it would further drive them to look for pride and signal positive virtues.

Some examples, from the perspective of different users, include:
- Politicians tend to "externalise on social media rather than answering questions (Salis, 2019)" and is more "purportedly … [in] direct contact with 'his people'". This is evident in the degree of OSN use in real-world politics where prominent political figures would want to foster a sense of *togetherness* with their supporters..
- On Instagram and other image-based OSNs, by curating the public 'images' of their online persona for consumption of others -- say profile images (Byrne 2017; Duffy and Hund 2015) -- it increases their *relevance and relatability* with their target audience. This is especially true for high-profile influencers seeking to drive marketing campaigns (Whiting 2016).

6.0. CONCLUSION AND OPEN QUESTIONS

In this paper, I have provided a broad technical introduction to asymmetrical OSNs. First, I have discussed how the basic asymmetric properties (in Definition 2) which constitute the building blocks of such networks can lead to broader, network-wide, emergent behaviour. Following that, I have discussed how two such emergent *asymmetries* are interdependent with each other, and how they can be used to explain contemporary events whose genesis can be found within [asymmetric] OSNs.

Then, I drilled down into the specific constituents of an asymmetric OSN -- the users themselves -- and examined, from an existentialist reading, how they are tempted to portray an *inauthentic* persona: Sartre's concepts of the *Look* and the *Other* is applied to the contemporary nuances of one's participation in an asymmetric OSN.

As a result of this inquiry, a few open questions remain, that may be the foundation of further philosophical inquiry. In *epistemology,* for instance, recent studies have touched upon asymmetric networks (Sullivan et al. 2018) as opposed to prior information-sharing network models (Holman and Bruner 2015; Zollman 2007, 2012) which assume that testimonial exchanges are symmetric. The introduction of asymmetric networks may prove beneficial in the study of, say, *political philosophy*, *ethics,* as well as other studies on *phenomenology*, amongst others.

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