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Virtual and Face-To-Face Academic Conferences:
Comparison and Potentials

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Abstract

Academic conferences have always been privileged spaces and moments for the dissemination of new scientific knowledge, as well as for social interaction and for the establishment and development of social networks among scientists. However, the virtual dimension of conferences, in which individuals are not physically present in the same place, begins to emerge as an increasingly used possibility, which implies a different framing of these scientific events. This paper seeks to comparatively analyse several models of academic conferences, putting forth their advantages, limitations and potentials. Furthermore, it also seeks to reasonably envision the importance and challenges to be faced in the near future. The analysis allows concluding that virtual conferences tend to take on an increasingly central role in this type of scientific dissemination, but without totally relegating the conference mode with face-to-face interaction. Moreover, there may be conferences that emerge as a hybrid between these two types of conferences, in an attempt to provide their main benefits to the various participants. However, the insufficient literature on this topic calls for the need to develop and deepen studies in this area that allow understanding this academic and social, but also economic phenomenon, in its broader implications.

Keywords: academic conference, scientific conference, face-to-face conference, virtual conference, online conference, peer science communication, science communication

"Good conferences contain thought-provoking presentations that are leading to change. This might not always be immediate, but by challenging our perceptions of reality, we have the opportunity to grow and to transform, thanks to new thought paths that have been created in the conference environment."
(Edelheim, Thomas, Åberg, & Phi, 2018, p. 101)

1. Introduction

In the contemporary world, the great increase in the use of technology (León, Barberán, Pérez-Jorge, & Olivenza, 2018; Ferreira & Serpa, 2018a), with the resulting social and scientific implications, also has consequences for academic/scientific conferences and for the dissemination of knowledge itself. As Martin (2018) argues, our world is more and more linked in an increasingly digital future, in which "activities, information and results in data that can be compiled, analyzed and shared" (p. 7).

Scientific communication, as a process of information production and transference, has a prominent social function of canonisation and categorisation (Bourdieu, 1997, 2001), with the emergence of policies of cognition developed by the agents with higher scientific capital. These policies enable the construction of an "official" reality around classifications that produce the promotion or marginalisation of ideas that selectively define situations and shape the receivers' preferences, perceptions and cognition (Carvalho, 2000; Ramos, 1981).

Academic conferences have always been privileged spaces and moments for the dissemination of new scientific knowledge (Edelheim et al., 2018; Rowe, 2018; Sá, Dias, & Sá, 2018) and for social interaction and the establishment/development of networks among scientists (Verbeke, 2015; Richards, 2015; Fraser, Soanes, Jones, Jones, & Malishev, 2017), as well as between them and novice researchers (Sardelis, Oester, & Liboiron, 2017; Oester, Cigliano, Hind-Ozan, & Parsons, 2017; Hall, 2015). This interaction is, to some extent, vital to science (Favaro et al., 2016; Oester et al., 2017; Fraser et al., 2017; Sousa & Clark, 2017; Richards, 2015). However, academic conferences can also be an instance of surplus (profit attainment) (Richards, 2015, Rowe, 2018), and also more or less formal instruments for assessing institutions (Orouskhani & Tavabi, 2016). Academic conferences also work as spaces and moments of academic socialisation processes (McCulloch, 2018; Lindley, 2009; Nicolson, 2017). In a synthesis offered by Edelheim et al. (2018),

> *Each and every time we attend a conference, we are simultaneously constructing our own identities as academics: the things we do, the sessions we attend, the questions we ask (and refrain from asking), the connections we develop, and the ensuing research we work on are all part of making us into the selves that we experience and others see (p. 105).*

There are several proposals on how to organise a conference (such as the one presented by Sousa & Clark, 2017, among others). Yet, it is interesting to note that the literature on the actual study of academic conferences is rather scarce. According to McCulloch (2018), such a lack of studies is due to the fact that, similarly to the reluctance of academics to investigate their own practice for several decades (a reality that now begins to change, to some extent), there is, on the part of these professionals, the same resistance against the immense possibilities of creating (new and different) synergies offered by academic conferences, considered one of the more universal and ubiquitous academic activities.

This knowledge scarcity (Mair, Lockstone-Binney, & Whitelaw, 2018; Büyükyavuz, 2016) is reinforced as regards virtual conferences, for which there is not much information, research and assessment on aspects such as their number, implementation and type of market, quality and scientific success, but also on their social influence (Surendernath, Sharma, Schroeder, & Pandey, 2012; Fraser et al., 2017). The concept of "virtual" applied to technology has, itself, a socially polysemic dimension (Sköld, 2012). Still, the virtual dimension of conferences, in which individuals are not physically present simultaneously in the same place, begins to emerge as a growing possibility and practice (Oester et al., 2017; Fraser et al., 2017).

On the basis of this context, this paper seeks to carry out a comparative analysis of several models of academic conferences, putting forth their advantages, limitations and potentialities. Likewise, it seeks to reasonably envision the importance and challenges to face in the near future.

This paper is structured as follows: next section offers a literature review on this topic. Section 3 explains the methods applied in this research. Section 4, "Academic Conferences", puts forth and discusses the results and the types of Face-to-face Conferences vs Virtual Conferences, and

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presents a comparison of their advantages, limitations, potentialities and challenges. The article closes with the conclusions and implications that this study allowed attaining.

2. Literature Review

Notwithstanding the existence of several motivations for the participation in conferences (Rowe, 2018), Verbeke (2015), in an interesting synthesis, highlights the following ones: "socializing with colleagues from other universities, trip to a possibly exotic location, experience famous keynote speakers and/or researchers; attend presentations by peers; present yourself so you become visible in the field, and converse and discuss with other researchers" (p. 98).

Thus, the importance of conferences and participating in them in the visibility, consolidation and expectations is undeniable both at the professional, institutional and personal levels (Bhandari, 2018; Sousa & Clark, 2017; Finnegan, McGhee, Roxburgh, & Kent, 2019; Büyükyavuz, 2016; Borg, 2014; Hall, 2015). As a way of illustrating this importance of actively participating in conferences, the Binaya Bhandari's (2018) personal testimony is offered, which unequivocally demonstrates the personal and professional learning and development that his regular participation in conferences provided him:

> At that moment I realised that due to the confidence developed from the first conference, I was able to smartly deal with the questions, and therefore look forward to presenting in similar conferences. Since then I have been continuously participating in different conferences. Now I feel that I can present confidently and can learn so many things in conferences. The participation in different conferences has provided me with ideas and knowledge useful for my academic career. Each time I attend any conference I remember my participation in the first conference back in Nepal (p. 69).

Furthermore, conferences can also be forms of "reinforce an academic hierarchy" (Hall, 2015, p. 837), as well as the socially established order (Walters, 2018; Biggs, Hawley, & Biernat, 2017). There is another aspect of traditional academic conferences, perhaps less explored, acknowledged and even accepted by the academic community, which Favaro et al. (2016) address. The authors state that

> The accessibility of any event is determined in part by how safe it is to attend, and safety is tied closely to one's gender, gender identity, sexual orientation, race, religion, and other factors. While this is uncomfortable to acknowledge, science continues to experience cases of harassment, intimidation, bullying, and discrimination (p. 1).

Thus, some examples of inequalities in academic conferences are gender, race and social condition (Hanson, Sykes, & Pena, 2017, Biggs et al., 2017, Sardelis et al., 2017). Walters (2018), focusing on academic conferences, emphasises women under-representation, for example in the selection of Keynote Speakers and members of the most prestigious Committees, such as the Honorary Committees, which

> […] is problematic for three reasons. First, the lack of a gendered approach to selecting Keynote Speakers or Expert Panellists results in a less balanced perspective on the issues discussed, and limits the type of innovative solutions that may be proposed. Second, women's promotion and career progression to senior roles in the academy may be hindered by limited opportunities to perform Keynote Speaker roles and thereby demonstrate academic excellence and international repute. Finally, it is argued that the invisibility of women in these positions (through under-representation) is detrimental to women graduate students and emerging scholars; there is little role-modelling of women academics as successful experts which is necessary for those aspiring women academics (p. 30).

Therefore, "Science is inherently a hierarchical community (professors, post-doctoral researchers, graduate students, etc.) but it doesn't follow that access to science and professional conferences should be hierarchical" (Favaro et al., 2016, p. 3). So as to control these situations of coercive psychological and/or physical pressure – and, in the worst case scenario, there may be harassment, intimidation and discrimination (Favaro et al., 2016), as well as inappropriate behaviours (Richards, 2015) endured by participants, organisers and/or volunteers (Favaro et al.,

2016; Sardelis et al., 2017) – Sardelis et al. (2017) advocate the existence of "codes of conduct", with effective consequences in the search for a) fostering constructive stances, such as a free, critical and respectful exchange of ideas; b) controlling and, if possible, preventing situations such as harassment (verbal and/or even physical); (c) combating discrimination based on gender, sexual identity, race, age, religion, nationality, disability and physical appearance, among other types of discrimination; and (d) fighting discrimination, which is often based on differences in the academic status. It is undoubtedly a sensitive issue, but which must be addressed.

Considering this discriminatory reality, it is therefore important to broaden the definition of "quality of the scientific conference" (Sardelis et al., 2017, p. 5) to include participants from a wide range of backgrounds, nationalities and career levels, among other differences. Conferences will certainly gain from this diversity, which will undoubtedly bring different, but also valid perspectives on the various topics of this type of conferences. However, in order for everyone to gain from these multiplicity experiences, it is important to foster equality and diversity of participants in academic conferences. Otherwise, these scientific events will stagnate, lose quality and, eventually, interest, and will be confined to the participation of small groups composed of closed-mind scholars who do not welcome change and the inclusion of stances that differ from theirs (Sardelis et al., 2017).

The scientific community lives, currently, in a context of reduced funding for participation in conferences (Oester et al., 2017), with a large number of conferences taking place annually in the most varied scientific areas and throughout the world (Eckhaus & Davidovitch, 2018). According to Lakhotia (2017), there is a growing propagation of "bogus conferences" or "predatory conferences", which are not concerned with the scientific quality of the conference, but only as a business:

> […] both the predator and the prey turn out to be 'beneficiaries'. The 'prey' (author), who needs some evidence of 'academic' activity to prove his/her eligibility for moving ahead in the professional ladder, secures the required 'credit' in exchange for the money that the predatory journal manager or conference organizer earns in the deal. Such mutually beneficial arrangement has led to such journals and conferences becoming a rapidly expanding 'business' (p. 513).

As stressed by Verbeke (2015), conferences can and should be sites and moments that foster the active building of knowledge among participants. Then, and to some extent, academic conferences may also be seen as spaces and moments of collective learning (Sousa & Clark, 2017). While acknowledging the need for further study, Sköld (2012) offers a summary of the literature that addresses the effects of virtual space on learning, and which, given its relevance, are depicted in Table 1, which is offered by Sköld (2012, online at https://firstmonday.org/ojs/index.php/fm/article/view/3496/3133).

Table 1. Summary of the literature on the effects of virtual space on learning

Key theme	Findings
Physical space and learning	• The various properties of physical learning space, like lighting, acoustics, noise, colour, seating arrangements, etc., have an effect on learning. • Research on how physical space affects learning can inform the study of virtual learning space. It should, however, be noted that some of the findings have been disputed, and that physical and virtual space are two distinct phenomena in many ways.
A socio–cultural constructivist view of virtual space	• Virtual space is culturally, politically, and socially biased. • Virtual space affects our perception and understanding of physical phenomena and the other way around. Thus the immanent biases of virtual learning spaces may have sizable implications for the inclusiveness and exclusiveness of the space itself.
Virtual space, pedagogy, and learning task design	• The increased use of virtual space necessitates the development of a theoretical and practical online pedagogy. • The design of learning tasks must be attuned to the benefits and drawbacks of the virtual space where it will be carried out. • Learning tasks must be designed to make sure that students attain the skills required to fully utilize the modes of multimodal communication available in virtual space. • The ambiguity and uncertainty of virtual spaces presents a major pedagogic challenge, but can nevertheless be used to support innovative approaches to learning. • Social constructivist, Vygotskian views of learning have a strong influence on the academic discourse on virtual space, pedagogy, and learning task design.

Architecture and virtual space	• The architecture of virtual space is a social object and as such affects learning. • Virtual space designed for a specific activity may have positive effects on learning if it is compatible with the educational activity that takes place in that space. • Virtual space architecture plays an important role in supporting the emergence of a "sense of place" among students, which is beneficial for learning. • The experience of virtual space — in terms of beauty, satisfaction and interestingness — is connected to the spatial properties and architectural elements of the space.
Aesthetics, learning, and virtual space	• The concept of aesthetics is applicable to educational research and many other disciplines and can be used to further the development of pedagogy and learning task design. • The aesthetics of virtual space may be utilized efficiently to convey information about the physical work in an educational context. However, this view has been contested.

Source: Sköld (2012, online at https://firstmonday.org/ojs/index.php/fm/article/view/3496/3133).

Summing up, conferences are information-sharing situations, but also, and preferably, essentially learning sites (Hall, 2015; Oester et al., 2018).

The promotion of conditions for free participation is not only morally correct but also the best means for conferences to fulfil their goal of fostering communication and a moment of scientific learning (Richards, 2015), in the sense of stimulating learning for all in diversity (Hansan et al., 2017).

3. Methods

This paper seeks to answer the following research questions:
1. What are the main differences between the two models of academic conferences: face-to-face and virtual?
2. What are their main advantages, potentials and limitations?
3. How can the importance and the challenges to be faced in the near future in relation to academic conferences be, within reason, envisioned?

In order to answer the research questions that drive us in this study, the technique chosen for collecting information on this topic consisted of document search and analysis of articles that could provide a significant contribution to answering the research questions formulated.

The collection was based on the consultation of the b-on database of the Foundation for Science and Technology (FCT) in Portugal, an electronic library that includes databases such as the Web of Knowledge, DOAJ and SCIELO, among others, as well as institutional repositories (Biblioteca do Conhecimento Online, n.d.)[1]. A survey was conducted between January 11 and 25, 2019, by searching for the following expressions/keywords, either in the Abstract or in the Title: "face-to-face conference", "on-site conference; "online conference", "virtual conference", "online event" and "virtual event"; and by title, abstract e terms of the topic: "academic conference", scientific conference", "science conference" "online conference" complemented or not by the word "virtual". This online bibliographic research was expanded with the collection of complementary bibliographical material directly related to virtual and face-to-face conferences.

4. Academic Conferences

4.1 Types of academic conferences

Academic conferences can take place in a context that may locate in a continuum from the more traditional (in-person) to the pure virtual conference, each with specific definitions, goals, advantages, limitations and specific underlying logistics. Using Fraser et al. (2017), we have a

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[1] *Biblioteca do Conhecimento Online – b-on (Online Knowledge Library) makes unlimited and permanent access available, within the research and higher education institutions, to full texts from over 16,750 scientific international publications from 16 publishers, through subscriptions negotiated on a national basis with these publishers.*

continuum with two extreme models of academic conferences: from the in-person conference (face-to-face conference) to the virtual conference (synchronous or asynchronous) that entails an elaborate and very specific technological logistics (Stephens, Dewing, Brown, Middleton, & Neville, 2016; Carr, 2016; Richardson, Petscavage, Hunter, Roberts, & Martin, 2012; Hancock & Rowland, 2017).

Face-to-face academic conferences, which are more traditional, are defined by McCarthy, McDonald, Soroczak, Nguyen, and Rashid (2004) as follows: "[Face-to-face] Academic conferences provide a social space for people to present their work, learn about others' work, and interact informally with one another" (p. 39). In turn, Anderson and Anderson (2010, p. 15) define an online/virtual conference as "a structured, time delineated, professional education event that is organised and attended on the Internet by a distributed population of presenters and participants who interact synchronously and/or asynchronously by using online communication and collaboration tools" (Cit in Carr, & Ludvigsen, 2017, p. 121).

Given its heuristic capacity and visibility, we will present, in a more detailed analysis, the Fraser et al.'s (2017) typology on the sorts of academic conferences.

Fraser et al. (2017), while advocating that virtual conferences will not completely replace, at least in the short term, face-to-face conferences, analysed four virtual-format conference models, which they call "hybrid conference supplement of in-person conferences", and which consist of the following four formats:

- *pure-virtual*: includes a set of external locations linked by a virtual network of the central conference. Participants can remotely join the event from any part of the world. Moreover, it has the advantage of reducing the costs of organising the conference and also the participants' travelling and accommodation costs;
- *one hub and node*: has a central hub that, for example, sends the conference proceedings to nodes, where local participants can meet, discuss and participate in the conference, which allows, to a certain extent, to replicate the traditional conferences;
- *multi-hub and node*: This configuration is similar to the previous one but integrates several hubs, which allows a higher number of participants to get together in nodes, which, in a way, allows them to experience attending a traditional conference. The great advantage of this format is that it has the potential to be transnational;
- *multilateral hub and node*: this format replicates the configuration of the previous one, with the difference of entailing multiple time zones. Its advantage, compared to the previous model, is that it improves accessibility at a global scale, as it offers the possibility of dissemination of research in different countries. However, it has the drawback of reducing the participants' possibility of interacting in real time with other hubs and nodes.

Fraser et al. (2017) advocate the use of the first two formats of virtual academic conferences (*one hub and node* and *multi-hub and node*) as they believe that these are

[…] the most suitable for ecology and conservation conferences because they incorporate virtual conferencing with the benefit of a central location to serve as a nerve center. Compared with the multilateral hub and node model (with potentially many hubs spread over a number of time zones), these 2 models are the most viable due to lower time and resource costs for organization and coordination between hubs (p. 545).

4.2 Face-to-face conferences vs virtual conferences

One of the main advantages of face-to-face conferences identified by Maire et al. (2018) is that higher education institutions and funders of scientific activities increasingly value academics who show interest in cooperating with national and international partners in applying to fellowships and submitting projects and co-authored publications. This interaction is strongly encouraged in an environment of face-to-face conferences, which are seen as privileged opportunities for creating and expanding networks.

In turn, Hixson (2012) cited in Mair et al. (2018) points out, as positive aspects for face-to-face conference participants, three fundamental factors: (i) participation in scientific events produces in the participants the feeling of belonging to a community with common interests; (ii) the joint

discussion of a research topic is a possibility to lead to new ways of looking at a given topic and to new insights on how to solve existing problems, in a logic of creating synergies; and (iii) meetings with peers at conferences can even increase job satisfaction and, consequently, increase the academics' performance.

In line with Hixson (2012, cit. in Mair et al., 2018), Oester et al. (2017) advocate that scientific conferences are excellent opportunities, not only for academics to present the results of their research, but also for the joint discussion on a given topic and for the establishment of networks and links that may result in "new initiatives, papers and funding, in a way that virtual, online meetings cannot" (p. 7). The authors point out, with some humour, that many of the interactions between lecturers occur in the corridors, in coffee breaks or in the social side of events, which cannot happen in virtual conferences, which do not allow this type of communication, inasmuch as, in virtual conferences, "You cannot enjoy a virtual drink!" (Oester et al., 2017, p. 7).

However, this type of conferences has been criticised, for example, in terms of the environmental footprint it leaves, the costs it has for participants, time spent on travel, accessibility and safety in a context of reduced funding (Oester et al., 2017; Mair et al., 2018; Fraser et al., 2017; Carr, 2016; Mair et al., 2018). Furthermore, the participants' personality traits are added to these factors. For example, more introverted people who do not fully master the language (generally English as the lingua franca of science today, because of their culture, gender or race, as we have seen previously) have specific difficulties in taking the most of the potential of face-to-face conferences (Sousa & Clark, 2017).

With technological development, there has been an increase in online conferences (Carr, 2016), and if they initially mimicked face-to-face synchronous conferences, there is technological, scientific and social potential for online conferences to offer they own perspective. The author argues that "Online conferences are designed to take advantage of multiple affordances of digital communication technologies including communication across time and space, [the] scope for reflective engagement and access to a widely dispersed network with international and regional peers and experts" (Carr, 2016, p. 96).

Notwithstanding the fact that, very frequently, synchronous communication between the participants does not occur (Cavadas, Villanueva, & Gérvas, 2010), and the fact that virtual conferences encourage much more unidirectional (spoken or written) information than bidirectional communication between the speaker(s) and the audience, the increase of technology may foster easiness and interaction among participants (Carr & Ludvigsen, 2017). For example, Gichora et al. (2010, online at https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1000650) offer the following guidelines for the organisation of virtual conferences (Table 2).

Table 2. Guidelines for the organisation of virtual conferences

Address time zone differences: timing is everything.
Test the available resources: to ensure that you are able to host the conference.
Manage bandwidth usage: to safeguard against conference interruptions.
The concept of virtual hubs: makes registration and participation simpler.
Prerecord presentations: to gear-up if streaming video fails for any reason.
Allocate time for presenter orientation: to ensure glitch-free schedule compliance.
Establish dedicated virtual interaction rooms (e-lobbies): to ensure a practical platform for participant Q&A and networking.
Troubleshoot technical glitches: to equip yourself for any foreseeable challenges.
Get motivated… It's the key to your success.
Participant feedback: useful for future reference

Source: Gichora et al. (2010, online at https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1000650).

Gichora et al. (2010) argue that virtual conferences, unlike face-to-face conferences, allow that a large number of participants benefit from being able to follow the main important aspects of these

events. Many of these participating delegates would be prevented from attending in the case of face-to-face conferences, mainly due to a lack of funding to cover the conference costs (travel and accommodation) and to the lack of time for travelling to distant countries.

According to Tony Carr (2016), a virtual conference may be an opportunity for social learning. For the author, the main principles that virtual conferences develop are the following:

> *1) the importance of social design and facilitation in promoting the development of a vibrant conference community; 2) the benefits of providing spaces and time for reflective conversation; 3) the need for multiple modes of engagement for a very diverse group of participants; and 4) the customisation of a stable yet versatile technological platform supported by a highly experienced team (p. 88).*

Carr (2016), as well as other authors (Koch, Möslein, & Wagner, 2000; Neustaedter et al., 2018; Surendernath et al., 2012) concludes that virtual conferences allow benefitting from the different technologies of digital communication available to academics and highlights, among these advantages, "[…] communication across time and space, scope for reflective engagement and access to a widely dispersed network with international and regional peers and experts" (Carr, 2016, p. 96). Thus, virtual conferences are excellent opportunities for the professional development of actors located all over the globe.

According to Handke, Schulte, Schneider and Kauffeld (2018), virtual communication, specifically in the context of virtual academic conferences herewith discussed, is a dynamic construct that is dependent on a variety of factors, such as "time and experience, social influence, and appropriation" (p. 6). The authors characterise individuals who use virtual communication as active users who use the new media in their favour, advocating that the academic community (or others) no longer need to be physically in the same place at the same time (Handke et al., 2018). The authors conclude that individuals

> *[…] dynamically adapt their communication behavior. Moreover, we presumed that adaptive virtual communication relies on compensatory processes between physical media properties and communication intensity. Our descriptive results show that adaptive behaviors, as per our definition of high levels of communication intensity at low levels of physical media richness (and vice versa), are consistently displayed, at times by more than half of our sample. Moreover, the descriptive statistics also show that adaptive behavior can largely be seen as high communication intensity at low physical media richness levels (p. 31).*

4.3 Potentials and challenges

In addition to the many potential advantages that virtual conferences have, as demonstrated above, they also pose some challenges that must be carefully considered when choosing the format of a conference or scientific meeting.

According to Carr and Ludvigsen (2017), online conferences can be considered as necessarily complex socio-technical systems, which raises deep and specific implications. According to the authors,

> *Online conference designers can face some challenges in supporting informal and social interaction among participants, however these forms of interaction may be essential to develop the safety and trust required for effective engagement in formal conference activities, as well as the formation of professional relationships that last longer than the conference. The social design parameters available to conference organisers include boundaries, facilitation, modes of interaction, the balance between synchronous and asynchronous events, relevant modes of knowledge, the duration of the conference, and the conference outputs (p. 122).*

The use of technology, also by the participants, such as computer applications (apps) and online social networks, entails that their digital literacy is enough, so that this digital literacy interaction is fruitful (Carr, 2016; Carr & Ludvigsen, 2017; Santos & Serpa, 2017; Gavilanes et al., 2015; Sousa & Clark, 2017). However, it can raise ethical questions and issues related to intellectual property rights, as reported by Ghose, Warren, Raison and Dasgupta (2018) on the

online dissemination of new data, such as, for instance, slide shows by non-presenting participants that were being presented for the first time at the conference.

Stephens et al. (2016) argue that, if carefully and correctly planned, conferences and other virtual scientific events can be highly interactive. It is possible to emulate, in a significant way, face-to-face conferences, and the principles of inclusion, participation and collaboration are respected and developed. In the conclusions of their study, Stephens et al. (2016) state that

> *[…] our learning from our evaluation has three core aspects; first, a need for practice developers to grasp skills in technology associated with virtual space; secondly, the need to embrace virtual space itself as another means by which creative and communicative spaces can be established for active learning and practice development activities and finally, further exploration of the potential that international virtual engagement has over face to face national or international engagement (p. 12).*

Using Bell's (2011, p. 30) and the European Medicines Agency's (2011, pp. 3-4) work, Table 3 offers the result of the comparative advantages and disadvantages of the different types of conferences.

Table 3. Comparison between virtual and face-to-face conferences

	Virtual Conferencing	Face-to-Face Conferencing
Convenience	Advantage virtual Can't beat conferencing from your desktop.	See you at the airport for another delightful travel experience. What? You say your university just enforced a travel freeze. Good luck getting there.
Boost	Advantage virtual Cheaper registration and no travel or lodging costs; the bean counters love it.	Great, there is no travel freeze. Sorry, there is no funding for registration, lodging, or meals.
Network Collaboration	Still waiting for the "virtual hallway": chat, discussion boards, Twiter, and VoIP offer "close but no cigar" experience.	Advantage F2F. The schmooze factor is hard to beat; half the fun is seeing old friends and making new ones.
Learning	Toss up Works well for targeted, shorter presentations.	Toss up. Preferred by many learners who need face-to-face contact.
Technology	Advantage virtual Logging in and participating in a virtual conference is getting easier all the time. Better have a good connection though.	None really needed but good luck trying to get that Wi-Fi signal in the mega-convention centre.
Presenter Quality	Toss up Conference organizers pay more attention to advance training; engaging attendees staring at their PC is critical for success; many sessions still fall flat owing to presenter inexperience.	Toss up It's a mixed bag of presenters, from great to awful; not much focus on speaker training and preparation; easy to go to another session.
Post-Conference Experience	Advantage virtual Tough to beat fully achieved conferences. Missed a session? Just dial it up and watch.	Well, you can always look forward to getting that ALA conference newspaper thing in the mail a few weeks later.
Distraction Factor	Too easy to be distracted by work, home, and all the other daily routines – unless you lock yourself in a closet.	Advantage F2F. It is a full immersion experience; there are distractions but far more limited and much easier to avoid.
Time Zone Conundrum	Efforts must be made to coordinate attendees from multiple time zones.	Advantage F2F. Time zones not an issue.
Global Participation	Advantage virtual Despite the time zone conundrum, it is far easier for attendees around the globe to participate.	International attendees must travel great distances at great expense.
Type of communication	Non-verbal, non-written communication is either impossible or of limited effectiveness.	Non-verbal, non-written communication is possible.
Reactions of the audience	Reactions from those other than the currently speaking individual are not observable.	Reactions from those other than the currently speaking individual are observable.

Interactions	Interactions in the margins of conferences are not possible.	Interactions in the margins of conferences are possible.
Conferring	Conferring with fellow participants during a conference to confirm facts or a position is either difficult or impossible.	Conferring with fellow participants during a conference to confirm facts or a position is possible.
Discussion	Detailed discussion of issues can be difficult to achieve	Detailed discussion of issues is appropriate.
Participants' time	Travel time is minimal, if none.	Participants will need to spend time travelling to and from the conference.
Technical difficulties	Technical difficulties can occur, and may significantly impair the usefulness of conferences.	Technical difficulties are a minimal hindrance.
Attendance	Attendance at meetings is easier to assure, and participation from those located physically away from a host's premises is easier to assure.	Constraints on travel can affect attendance at meetings.
Logistical	Logistical impacts on participation are minimal.	Travel arrangements can impact on the length of time participants can attend.
Number of participants	The number of participants can be limited for technical reasons.	The number of participants is limited by the size of the physical location

Source: Bell (2011, p. 30); European Medicines Agency (2011, pp. 3-4).

Table 3 depicts an exhaustive review and analysis of the literature on the topic under analysis and, in addition to the sources it is based on, it compiles, from the authors' stance, the different approaches and studies carried out so far, allowing a holistic perspective of all the advantages and disadvantages identified for each academic conference format.

Fraser et al. (2017) contend that virtual conferences enable participants to obtain much of the benefits of in-person (face-to-face) conferences, with the advantages of reducing the financial and environmental costs involved in travelling to other countries. The authors, who are visibly favourable to this conference format, maintain that "Virtual conferencing opens the door for researchers from poorly funded countries or institutions to more easily participate in the international research discussion. It also provides a genuine alternative to those who choose to limit their carbon footprint by not traveling" (Fraser et al., 2017, p. 545).

As maintained by Fraser et al. (2017), although virtual conferences are not expected to completely replace face-to-face conferences in the near future, one of their major advantages is that the use of virtual tools enables researchers and even students, especially those with financial difficulties, to participate in a higher number of scientific events.

On the other hand, any of the conference formats may be associated with predatory journals, in an academic world where the pressure to publish is enormous (Ebadi & Zamani, 2018). However, the fact that virtual conferences are certified helps to promote their quality, while respecting the ethical code of conduct appropriate to each specific conference (Favaro et al., 2016). This entails, of course, the respect for gender and/or cultural-socio-economic implications found in the scientific arena (Hanson et al., 2017) also in the access to and the participation in various types of conferences (Cavadas et al., 2010).

5. Conclusion

This paper sought, through a comparative analysis of several formats of academic conferences, putting forth their advantages, limitations, potentials and challenges ahead, according to the most recent literature on this topic. Following this analysis, it may be ascertained that virtual conferences play an increasingly central role in this type of scientific dissemination, but without totally relegating the conference mode with face-to-face interaction. Furthermore, a hybrid between that uses the best features of the two types of conferences starts to emerge and gain increasing relevance and supporters from the academic community.

Three research questions were defined and the search for answers to them has geared this study. Regarding the first research question – *What are the main differences between the two models of academic conferences: face-to-face and virtual?* – this study offers a comparison between face-to-face and virtual conferences, concluding that there is a gap between these two conference formats, where hybrids are possible. However, there is the need to deepen the studies in this field that allow, with growing scientific intentionality, the understanding of this academic and social phenomenon in its most complete implications. On the other hand, the conferences' online dimension tends to take on an increasingly central role, but without totally relegating the physically present dimension.

As to the second research question – *What are their main advantages, potentials and limitations?* – the virtual conference dimension may facilitate the academics' participation, reducing the inequalities that take place in the global scientific world resulting from factors such as gender, race/ethnicity or social class (Hanson et al., 2017).

Finally, concerning the third research question – *How can the importance and the challenges to be faced in the near future in relation to academic conferences be, within reason, envisioned?* –, there are no ideal models or types of conferences. As Sempere (2011) points out, "It is important always to allow the user control and feedback over who is being addressed and how. Not all systems need to provide all possible scopes, but the ones that they do support should be immediately and clearly visible" (p. 183). The application of certain principles and the flexibility in their implementation throughout the course of the conference are critical elements (Richards, 2015; Verbeke, 2015; Büyükyavuz, 2016). In short, *no one size fits all*.

As a final remark, this study also found that the literature on this topic is still scarce, which call for the need to develop and deepen studies in this area that may help to understand this academic, social and economic phenomenon, in its broader implications and repercussions.

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