With the emergence of the Oculus Go in May 2018 and the Oculus Quest in 2019, key figures in the pornography industry have suggested that the availability of cheap, user-friendly and easy-to-use VR devices is a 'game changer' for VR pornography, providing a major gateway to VR content and ostensibly placing Facebook<sup>1</sup> as an unexpected ally of the pornography industry (Roettgers, 2018). Conversely, some VR advocates have argued that VR will revolutionise the form and experience of pornography through embodying the user in a manner that will remediate the experience of pornography. Historically, pornography has been a significant driver of consumer media (Coopersmith, 1999) and so the importance of pornography to the medium of VR should come as no surprise. While there is a danger of overemphasising the importance of pornography in the development of mediums (Coopersmith, 2006), given that the pornography aggregator site Pornhub reported that VR porn videos hosted on their site received 500,000 views per day in 2017 (Pinto, 2017) the traffic generated means that pornography demands attention as a way that VR is being used by consumers. In April 2016, Pornhub decided to give away 10,000 cardboard VR headsets for use with smartphones, acknowledging a new form of interactive, immersive pornography. Just as with the emergence of the VCR in the 1980s and the Internet in the home in the 1990s, pornography is playing a critical role in providing content for VR that is appealing to consumers and driving the uptake of the medium.

While pornography clearly brings something to VR in terms of traffic, what VR brings to pornography may be more significant according to advocates of the medium. The filmmaker Chris Milk dubbed VR as "the ultimate empathy machine" in a TED talk in 2015. Milk suggested during that talk that unlike any other medium he has tried producing content with in the past, VR allows people to connect "to other humans in a profound way" which has the "potential to actually change the world" in terms of emotional connections with other people thanks to the way that VR can offer embodiment as an experieience (Milk, 2015). This idealistic vision of VR is a call-back to some of the discourses on VR in the 1980s and 1990s, a cyber-utopian discourse on the ability of VR to connect humans through immersive and networked virtual environments (Evans, 2018: 89). Empathy has become, thanks to the historic and contemporary discourses around VR, an idealistic property of the medium – if one makes a VR experience, it will engender an empathetic mood thanks to the embodying affordances of VR as a medium. This contention has become an important argument in what VR can bring to pornography. The possibilities afforded by VR have led some commentators claim that there is a potential revolutionary aspect to VR pornography compared to pornography in

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<sup>&</sup>lt;sup>1</sup> In 2014, Facebook acquired Oculus VR for \$2.3 billion in cash and stock options (Evans, 2018: 2).

other media. Rubin (2018: 211-213) argues that VR pornography may be a more humanizing and less objectifying form of pornography than conventional pornography. Rubin's argument is contingent on the idea that using VR can provide an empathetic aspect of 'being there' or being embodied (on the part of the user) in the scene that could reduce the voyeuristic aspect of pornography. For Rubin, voyeurism could be replaced with a participatory intimacy that will increase empathy and decrease desensitisation and detachment with regards to the subject position of the viewer in comparison to the performer. As Ashton, McDonald and Kirkman (2019: 160) note, citing Brophy (2010), there are a number of ways that VR could change and even improve the experience of pornography: veridically (the experience is life-like to the user), through immersion (the consumer becomes integral to the pornography and feels part of the experience), interactively (the consumer's decisions and actions determine what occurs in the scene), and through unboundedness (any pornography is available, no matter how particular, bizarre, or extreme). In a utopian manner, VR 'will provide users with limitless real-life-like possibilities, including virtual sex. Virtual sex could even surpass real sex in offering "hyperreal" pornography, which may ultimately render real sex as inferior' (Brophy 2010: 206). Both Brophy and Rubin attend to the potential for embodied presence and immersion in VR pornography as a potentially revolutionary turn in the experience of pornography for users.

Although it is not made explicit in either argument, the combination of VR immersion and teledildonic technology (technology for remote sex or remote masturbation where tactile sensations are communicated via a data link between participants) affords the possibility of a connected pornographic experience totally unavailable previously. The possibility of empathetic response is largely contingent on realising a role as an embodied active agent in a pornographic context through VR. This can be read as an 'affective turn' in the experience of pornography (Paasonen, 2014: 138) with a new set of affective dynamics arising from the material and embodied aspects of VR experience. VR pornography could therefore (if realised in the manner Brophy and Rubin anticipate) begin to address in a pragmatic manner what Paasonen (2014: 138) describes as the power or appeal of porn, its visceral grab and its power to move those experiencing pornography. If the appeal of porn is connected to its fleshy, excessive modality (Paasonen, 2011) and the carnal resonance of porn involves the viewers' ability to recognize and sense the intensities, rhythms and motions depicted in porn in their own bodies, then the embodied experience afforded by VR would, if perfected, allow for experiences of pornography that could remediate the relationship between performer and consumer. Ashton, McDonald and Kirkman (2019: 159) suggest that, while the visual representation of VR pornography experiences could reasonably be described as 'pornographic', when technology facilitates interactions between two people using virtual space, it is not pornography but is better described as a sexual encounter or, if money is exchanged, sex work (although pornography and associated forms such as camming are considered sex work too). The positive argument for VR is that the medium can remediate the experience of pornography in an affective, experiential manner which

in itself could change the perception of and experience of the relationship between performer and consumer by eradicating the mediated distance between the two parties thanks to the potential for embodiment on the part of the consumer.

This positive argument for VR pornography is heavily contingent upon the immersive experience supporting an intimacy and empathy that is considerable. The kind of intimate empathetic response that VR pornography might produce according to Rubin is contingent on further technological advances in haptic technology and teledildonics that would allow users to transcend voyeurism and the enforced (and maybe deliberate) male gaze into a co-present pornographic experience. As it is, this kind of pornographic revolution is in the future of rather than the early reality of consumer VR. This level of immersion would require a complete VR technology assemblage that would enable a fully embodied experience. This would require teledildonics that allow for a sensory immersion in the scene that really creates a feeling of 'being there' through sensory biofeedback as well and auditory and visual immersion. It is on this point that the pornography of the early consumer VR wave has issues with achieving the goal of empathy. The kind of technology required for this level of embodiment is extensive, expensive and currently largely undeveloped. The development of teledildonics also poses questions around the idealised or targeted users for the technology. Quite obviously, such wearable technology will need to be modified for different bodies; given some of the inherent discriminatory qualities of VR itself with regards to women using the technology with comfort (Evans, 2018: 75) it is questionable as to how much attention the needs of more than 50% of the population (who also use pornography) will be addressed. The current market for and marketing of teledildonics with VR prioritises aids to male masturbation such as VR-enabled fleshlights (Song, 2020). Despite the work of some companies such as CamSoda that have created WiFi-enabled vibrators for performers that connect to 'male masturbators' owned by paying viewers (viewing through VR headsets) that can be housed inside life-sized sex dolls to mimic the feel of intercourse (Vincent, 2018), the assumption is still that it will be a male watching and experiencing the show. The perpetuation of one use of pornography does not address the spectrum of embodied sexual experiences that a revolutionary technology would need to address if it is to be worthy of the name.

Without teledildonic technology that would allow for the requisite levels of immersion and presence that can foster a sense of empathy for the performer, VR pornography is little more than a 360-degree video 'through the eyes' of one performer that is watching another performer. In a way, this is a variation of the POV (point of view) genre, where the pornography is filmed from the perspective of an actor (usually male) (Tibbals, 2014). This is the kind of VR pornography being created by major pornography studios such as looking to capitalise on this new avenue for content distribution, not aiming for the use of technology like the Oculus Touch controller (even if this could provide the haptic feedback necessary for a realistic experience). The troubling aspect of this is whose eyes you

are asked to look through in this situation. Overwhelmingly, VR pornography forces the viewer into the subject position of a straight, white male (Allen, 2018, Rubin, 2018) and the experience of VR pornography is of a (often) white female submitting to the sexual desires of the male actor. A relative absence of queer bodies (DeGenevive, 2014) in VR pornography indicates an exclusionary aspect to the form of pornography currently created. While some content creators such as VR Life SR are creating VR content with transsexual performers, this content typically follows the paradigm of POV from the male actor perspective. While occasionally a male version and a female version of the same scene may be made, the predominant mode of production of VR pornography is a straight and 'fixed' format (fixed as in the male performer is stationary while the female performer is the sole moving actor in the scene), even given some of the affordances of teledildonic systems such as the CamSoda system outlined above. Chin (2018) identifies that VR pornography requires the user to adopt an uncomfortable and unnatural viewing position in order to synchronise with the viewpoint given, that the ability to look around a room is entirely superfluous to the pornography viewing experience and that being unable to skip through scenes or fast forward to the 'action' means that VR pornography is a boring variation on the genre. Breslin (2018) even argues that VR pornography might be more alienating and less alluring than conventional pornography thanks to the uncanniness of the experience and the lack of feeling that the viewpoint afforded in VR pornography provides.

VR pornography therefore might not even provide the kind of vicarious excitement that conventional computer-mediated pornography does. What can be said is that the early consumer VR systems do not appear to be capable of delivering a VR pornographic experience in line with the more optimistic predictions for the medium. Indeed, it could be that VR does not necessarily create empathy at all but is creating a sense of altered and enforced intimacy. Grant Bollmer argues that the term 'empathy machine' is a discursive formation deployed to legitimise an agenda for VR as valuable in terms of social interactions and social behaviours. Bollmer argues that "technologies intended to foster empathy merely presume to acknowledge the experience of another but fail to do so in any meaningful way" (2017: 63). The notion that a sense of greater embodiment as an affordance of VR instantly creates empathy is contentious itself. The underlying assumption that empathy corrects a fundamental defect in the experience of pornography is also highly contentious. Rubin's argument relies on a contention that empathy for performers is a necessity even if pornography is a consensual adult performance, and that voyeurism has a debased value compared to a hypothetical empathy. Futhermore, the content which has been delivered in VR is not revolutionary but has issues which make the remediation of pornography a continuation of long-standing debates about the messages and lessons delivered in pornography. This positionality of the subject in VR porn (Burke, 2014) is particularly problematic as VR pornography of the kind commonly available at the outset of consumer VR is overwhelmingly an experience geared towards male desires and male subjectivities – although, this is an argument that could be made for the vast majority of mainstream pornography. The

remediation of that aspect of the pornographic experience, the packaging of women's sexuality for men as Allen (2018) explains it, is the major issue with VR pornography as it creates a controlling male gaze that is arguably more powerful even than existing pornographic forms such as point-of-view pornography. The result of this is that VR pornography reproduces ideals around heteronormativity and hegemonic masculinity in eroticism (Wood et al., 2017), discourses that hardly utilise the potential of VR to alter the nature of pornography towards intimacy and empathy.

The current state of the consumer VR market poses other issues for the use of VR pornography. The emergence of Facebook's Oculus systems and Facebook's role in the delivery of pornographic experiences should instantly pose serious questions. As Keilty (2018: 338) argues, companies such as Facebook (and by extension HTC with the Vive system, or Sony with the PlayStation 4 VR system) are sophisticated technology companies that employ hundreds of technical staff to design and develop interfaces, algorithms, data mining software, data analytics software, video streaming software, and database management systems. Facebook are responsible for making strategic choices about information management and the graphical organization of content that translates into large profits, but more importantly if one is using Facebook hardware to access pornographic content then Facebook itself becomes an actor in the curating, distributing, and regulating of our experience of sexual desire. Tziallas (2018: 333) uses the term 'Pornopticon' to describe the apparatus wherein the symbiosis of biopower (Foucault, 1976), sexual hierarchies, and the discourse of normality is increasingly fortified by a system of algorithms and expansive data storage. Tziallas' pornopticon is a multi-faceted, informatic system that encompasses all those things we call 'porn'. The danger of the pornopticon emerges from the exercise of control over us as consumers, which could potentially affect the development of human desire, sexuality, and power: it is a system in which porn, is coded into surveillance and vice versa (Tziallas, 2018: 338). The stark warning of the role of a major surveillance capitalist organisation continually surveilling users (with the potential for the measuring of attention through physical sensors and eye-tracking, for example) and transforming the physiological, psychological and affective dimensions of pornography consumption into data to be used, sold and ultimately to exert control over users.

Alilunas (2019: 139-40) argued that "the VCR was, by its very nature, loaded with progressive potential given that it offered ideological and literal safety and security to marginalized peoples in terms of sexuality. The possibilities for spectatorship, especially for women, changed permanently with this machine, ... and [the VCR] allowed for wide ranges of content not necessarily fixated on conventional notions of quality and respectability." In many ways, the promise of VR pornography is similar in terms of the ideological benefits identified with what the technology could become. The very notion of spectatorship in the context of pornography could be transformed by VR, which could provoke a re-thinking of how pornography itself is experienced and no longer consumed. However,

current VR hardware is simply not equipped to deliver on this promise in anything but a highly compromised manner. Future generations of VR technology may do this, but their development will be conditioned by the financial, technological and operational demands for data collection. While we wait for the next decade of VR development to assess whether the revolution will be virtual, VR pornography at the early stages of consumer VR replicates many existing issues with pornography, without yet altering the dynamics of pornography through technological innovation.

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