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RENDERING VOLUMETRICALLY, RENDERING QUEERLY

Abstract

The main aim of this article is to describe the conceptual basis and challenges of the project V*olumetric Frictions. Volumetric Frictions* is a queer virtual reality resulting from my will to render my ongoing PhD research ("Digital Speculation, Volumetric Fictions. Volumetric/3D CGI within the queer contemporary debate") differently. To contextualize the project, I start by addressing contemporary debates about the role of queer, and the practice of queering, in academic institutions. Then, I move forward to describe my PhD research and its provisional results. I name these results "volumetric frictions", as they define crossing paths between queer theories and 3D/volumetric aesthetics. Finally, I summarize some of the challenges currently being faced in the design of the project. Throughout the article, I make use of contemporary 3D/volumetric art to illustrate ideas, concepts, and possible solutions.

Introduction

During the last two years, I have been thinking and prototyping ideas to render my PhD research differently. The PhD revolves around the relationship between contemporary 3D aesthetics and feminist and queer epistemologies. "Volumetric Frictions" is the name of this new rendering process, and it will be shaped as a queer virtual reality where the questions, ideas, and lines of thought of the thesis will be condensed in a stimulating scenario.

I use the term "volumetric frictions" to define something quite undefinable: the idea that there are corners in contemporary 3D practices which are highly complex and creative spaces where multiple, parallel, and even contradictory ideas, collide, building stimulating viewpoints from which to look –and think about– around. The term "volumetric" comes from its rendered three-dimensional form, whereas I pick the term "frictions" from Sara Ahmed's queer phenomenology, which defines the uncomfortable contact of irregular (queer) contours that helps us build new forms. Consequently, "volumetric frictions" are the collision points in 3D practices, between forms, ideas, concepts, artists, and infrastructures, among others, where new ways of thinking about our current epistemological, aesthetical, and phenomenological scenarios, emerge.

In the pages that follow, I aim to describe the development of the "Volumetric Frictions" project, as well as its main challenges. However, a new form also requires a new frame. Rendering queer PhD research differently also implies addressing the university critically. Therefore, this paper starts with a revision of academia, motivated by my desire for queer knowledge and queer renderings of research. Then I move forward to describe the theoretical content of the project,

including specific volumetric frictions ((hyper)realism, world-building, embodiments, and disorientation). The paper concludes with a reflection on the main conceptual and technical challenges of the project, leaving its doors open for a continuous rendering.

Queering academia

Thinking about how to render research differently immediately pushes me toward thinking about how to render it queerly. Queer (or queering) loudly resonates in the word difference. Here, I use the term queer, following Butler's approach, as a "site of collective contestation, the point of departure of historical reflections and future imaginings" ("Critically Queer", 19), motivated by a critical approach to gender norms that broaden into an active questioning of everything that is rendered "normal". Paradoxically, queer is well connected to academia, in a twisted, fruitful, but also problematic symbiosis (Córdoba, Sáez y Vidarte; Love; Sedgwick; Trujillo). The challenge is simple but puzzling: how can Western academia host an approach to knowledge which praises un-conclusion, diversity, situation, fluidity, and radical anti-institutional politics?

Even though the question of queer academia is still unresolved, the process of queering it becomes a useful resource for actively thinking about new ways of rendering research. Of course, queering academia implies many different things. Queer researchers' experience in the institution is the most obvious. Homonationalism (Puar) and homonormativity (Duggan) have allowed, in some specific contexts — including the Spanish one — the inclusion of some queer bodies, while still segregating and excluding others through admission and funding processes. We, the bodies that are allowed

to cross academia's doors, paradigmatically embody Ahmed's theory of un-comfortability: being constantly aware of our difference and how we do not fit the institutionalized frames (Ahmed, *The Promise of Happiness*). Consequently, besides a neoliberal model of knowledge production, which provokes exhaustion, stress, or anxiety, queer colleagues also suffer explicit and implicit queer antagonism daily. The situation is worse when we acknowledge the inherent colonialism in the university project (paperson), its institutional racism (Bhopal), and ableism (Brown and Leigh), among other intersectional approaches.

Queering research, then, must start by solving these severe discriminations. Only then we will be able to start building something new. In the meantime, we will have to struggle with the "university". University is Henderson and Buford's proposal of an academia "under erasure", meaning that it is being explicitly problematized, but "since there is no other term to replace it, it must stand in its deleted-but-legible form" (6). Aside from respect and diversity, during the university, we must question the objectivity and universal claims (Ghaziani and Brim), be radically aware of the place from where we render research (Haraway), stay constantly self-critical with our own established ideas (Butler), and destabilize traditional research methods (Browne and Nash), especially quantitative analysis in social sciences (Love).

In the context of academia, without erasure, proposing queer renderings is considered unprofessional, non-scientific, or even anti-scientific. "Volumetric Frictions" is my attempt to refuse normative academia while still being inside (uncomfortably). In this project, I aim to experiment with different ways of stimulating research while questioning the institutionalized production and distribution of knowledge. I do not claim that this project will build a new way of understanding research, or a radical reformulation of knowledge. I do think, however, that it opens a fissure, and that we should inhabit these fissures (Martínez and Ortega) queerly.

Volumetric frictions

My on-the-making PhD dissertation is entitled *Digital Speculation, Volumetric Fictions. Volumetric/3D CGI within the queer contemporary debate*. The idea emerged in 2019 when noticing an important trend of contemporary queer and feminist artists turning into 3D, video game engines, and virtual environments as their aesthetical tools. I now imagine that initial moment as the default interface of a new project in any 3D modelling program (such as Cinema4D, Blender, or Maya): the screen filled up with a simulated empty and infinite space. This screen is the background on which we start to model (or we start to research). Although apparently desert, it hides a complex and stimulating entanglement of social, political, and aesthetic issues.

That feminist and queer creators and theorists are gaining relevance in 3D aesthetics appears somehow contradictory. 3D modelling is commonly related to the video game and CGI industries, traditionally associated with male working environments, misogynist representations of female bodies, and a fanbase of incel consumers. However, every media has its inside counter-discourse. The same that happened to science fiction during the seventies — when a group of feminist writers took the genre and built up an alternative literary canon (including Ursula K. Le Guin, Octavia Butler, and Joanna Russ, amongst others) — the same seems to be happening to 3D and its increasing trend of queer creators pushing the aesthetics, and the ethics, further.

There, at the crossroads between queer contemporary artists and 3D/volumetric aesthetics, lies my PhD project. Its expected outcome is the canonical dissertation text. However, this format does not fit my project, either aesthetically, or politically. Following a rich tradition of queering academia in critical studies, as well as the impulses of rendering research differently which inspire this *APRJA* issue, I am currently conceptualizing and prototyping an alternative: a queer immersive virtual space. A queer interactive virtual experience where the theoretical and artistic ideas that form my research can meet up at all levels — from design to aesthetics, to content, to interactivity.

There is a reason why. During the first steps of research, I have noticed a subtle connection between virtual realities — and our experiences with them — and queer epistemologies and phenomenologies. Rocha and Snelting's question "what is going on with 3D!?" (*Volumetric Regimes*) suggests this connection. The difficulty to answer it, and the possibility of the question's existence in the first place, announces that something queer — strange, twisted, fluid, undefinable — lies in 3D's heart.

During my first two years of PhD research, I have found some of these bridges between "volumetric regimes" (Rocha and Snelting) and queer epistemologies. These points of contact, these highly stimulating places of cross-thinking, are what I have called "volumetric frictions". As stated above, "volumetric frictions" put together 3D forms with queer epistemologies under the umbrella of Ahmed's friction/disorientation theories (Ahmed, *Queer Phenomenologies*), a connection already introduced by Rocha and Snelting in their article "The Possible Bodies Inventory: dis-orientation and its aftermath" and deepened by Helen Pritchard through the concept of "Clumsy Volumetrics". Here, however, the term "volumetric frictions"

refers to those highly complex and creative spaces where multiple, parallel, and even contradictory ideas, collide, building stimulating viewpoints from which to look — and think about — around. Rather than an ontological theory about 3D, or queerness, the "volumetric frictions" are places from where feminist and queer epistemologies allow us to ask infinite questions addressed to contemporary volumes. To this day, the volumetric frictions I have explored are (hyper)realism, world-making, embodiments, and disorientation. Following, I will deepen them four, together with some examples from contemporary artists that already explored them through their creative practices.

The first volumetric friction I want to address is realism, understood as the modelling of figures, spaces, and movements, as like reality as possible, and rebranded "hyper-realism" in 3D practice. Hyper-realism is the Holy Grail of the 3D industry (Taffel), especially in video games or FX effects. Of course, there are alternative aesthetics in the mainstream too, such as animation films, indie, or mobile phone games. But professionalism is still defined as the perfect modelling of volumes, textures, illumination, movement, and interactivity between objects.

However, the relationship between reality and queer epistemologies has never been an easy one. Of course, Queer Media Studies (Ventura) have praised doc-reality aesthetics because of its capacity to portray injustices and violence toward LGBTIQA+ people. But, in parallel, queer formalism (Simmons) consciously avoids realistic representations because the queer experience of reality is not an easy, comfortable tale (Ahmed, *The Cultural Politics of Emotion*). Queer reality is, rather, a kaleidoscope of micro and macro aggressions. And queer formalism asks why we should mirror them in our cultural productions. From this point of view, the 3D industry's obsession with mirroring reality

becomes an obsession with re-performing every day's violence, instead of rethinking how reality could be.

There are several pieces of 3D contemporary artists reflecting on reality and how we construct it. Paradoxically, the achievement of hyper-realism is pushing artists to reflect on how reality is constructed in the first place. And, jointly, what relevance should realism take in alternative, transformative aesthetics. This is the case of Hunter Janos' Anti-Singular (2016), where multiverse theory and multiple realities mix with queer anti-essentialist notions of identity. Or Sahej Rahal's *finalforest. exe* (2021), in which quantum theory serves as an opportunity to question our knowledge of reality and to explore formalist possibilities that this new scientific field opens to alternative, critical, and spiritual thinking.

Of course, the debate between realism vs. formalism is over-simplistic and does not represent the complexity of either science or aesthetics. But there has been a rich tradition of imaginative formalist creation against realistic aesthetics that we should acknowledge. That is José Esteban Muñoz's position. He defines "the here and now" as "a prison house", built upon a "totalizing rendering of reality" (Muñoz, 1). Contrarily, he encourages a creative alternative, one that has been named "queer world-making" (Berlant and Warner). Informed in feminist science-fiction and afro-futurism, queer world-making defines LGBTIQA+ attempts to narrate and inhabit alternatives to the violent present, building up worlds of communion, respect, and justice. This is what Muñoz calls "the then and there", that we can glimpse in "representational practices helping us to see the not-yet-conscious" (Muñoz, 3).

Queer world-making is the second volumetric friction addressed in my research, and it has been widely explored by 3D artists. Danielle Brathwaite-Shirley's video games, such as *Pirating Blackness* (2021) or *I Can't*

Remember the Time I Didn't Need You (2020) are paradigmatic. Their creations are worlds where social roles are inverted. Cities, or sanctuaries, in which trans Black people are welcomed and taken care of, while cis and white people experience diverse obstacles, sometimes even being denied entry. These alternative spaces, then, reverse reality, twisting exclusion and marginalization in 360 degrees. They work as a digital *Temporal Autonomous Zone* (Bey) for those who suffer trans antagonism and racist violence daily. Another example is Jacolby Satterwhite's work. His worlds mix video game environments, modelled messages, and captured dance videos and objects, all together in chaotic, queer compositions, such as *Blessed Avenue* (2018), or *Reifying Desire* (2014-2021). *We Are in Hell When We Hurt Each Other* (2020) is one of his most explicit exercises of queer world-making: a Black women's sanctuary, devoted to Breonna Taylor (who was murdered by the US police). There, Black female avatars dance freely in a natural environment, protected by giant humanoid trees, around an altar to Breonna, and under a stage that is constantly screening videos of the Brooklyn demonstrations during the Black Lives Matter protests.

Pete Jiadong Qiang's work is also well related to formalist queer world-making, in maximalist virtual spaces where multiple references mix chaotically together. The best example is *Queer Maximalism HyperBody* (2020), which serves as the visual representation of Qiang's "The Queer Maximalism Manifesto for the Hypertired images": a virtual architectural provocation that hosts the HyperBody, a shared and fluid identity based on gaming, fandom, and other traits or contemporary digital and popular culture. Qiang's HyperBody brings us to the third volumetric friction: avatar-identity and queer embodiments. Avatar creation and personification in an immersive virtual space is an

Figure 1: Danielle Brathwaite-Shirley, *I Can't Remember the Time I Didn't Need You* **(2020). Courtesy of the artist.**

experience particularly inclined towards queering identity and the body. Of course, this has already been a major research line in Game Studies, especially in the field of Queer Game Studies (Anthropy, Shaw). But it has also been extensively explored in contemporary queer art.

Take, for example, Lu Yang's work. In several of his pieces, he uses his trans-masculine alter-ego, DOKU. DOKU, as stated by Lu Yang, is not only his avatar but also his persona. An artistic performance through which he encourages his trans-masculinity. Theo Triantafyllidis, on his hand, plays with users' expectations regarding gender rules and video game conventionalisms. In *Pastoral* (2019), an ogre — a paradigmatic masculine 'other' in video game narratives — becomes a trans female. As players, we must embody her, and rather than killing the enemies, or conquering territories, we peacefully roam around a garden, silently enjoying

a charming sunset. We do not only embody a trans character, but we also inhabit a canonical 'other' in game narrative — the ogre that use to be the non-human, the violent, heartless enemy — while enjoying an apparently 'non-playable' activity.

Triantafyllidis' ogre is, therefore, an exercise of queering body politics. And body politics in digital aesthetics are particularly interesting to analyze through the lenses of Legacy Russel's "glitch politics". Russel compares cis-straight-patriarchy with a computer system, well-arranged and pre-codified to work in a specific, unique way. In any system, however, there is the possibility of unplanned errors that make the program crash. This possibility of "glitching" the cis-straight-patriarchy system lies at the heart of Russel's feminist politics. And bodies are the main tool to glitch it. Consequently, glitch bodies are Russel's transformative tools against violent regimes, spaces of online and offline creativity that

can encourage gender and racial justice. Glitch bodies stay un-programmable and unreadable, they confront everything the program has been built on. That is the case of Triantafyllidis' trans-female ogre and the way she queers gamers' gender expectations and conventionalisms.

An interesting way of approaching Russel's glitch bodies is through the "uncanny valley", as rethought by Feona Atwood. The uncanny valley was first described by robotics expert Mashiro Mori as the moment a robot is so close to representing a human, but slightly badly modelled or strangely performing, that it provokes a profound sense of discomfort, of uncanniness. What is uncanny, then, is defined in comparison with a specific idea of what is human, what is almost human, and what is not human at all. Antiracist, feminist, queer, functional diversity or animal-rights struggles have been historically dealing with (not) belonging to humanity. Consequently, they might develop an ethical empathy towards what stays uncanny. For Feona Atwood, this uncanniness is especially evident in femininity. While patriarchy imposes on female bodies the obligation of performing a narrow definition of femininity, it also encourages several punishments towards those femme bodies that stay uncanny: almost female, or far too way female. It is the case of hyper-femininity, trans-femininity, masculine-femininity, and queer-femininity, commonly linked to marginalized women: poor women, racialized women, trans women, and others.

Fortunately, 3D feminist creators are encouraging uncanny bodies. This goes from general odd modellings, such as Ed Atkins' pieces — *Us Dead Talk Love* (2012) or *Safe Conduct* (2016) — to gendered uncanny bodies, like Claudia Maté's. Maté's *Inside Out* (2015) presents a femme bodybuilder with massive muscles, while *New Faces or 3D Dreamgirl* (2015) capture real women to later modify their physical traits and make

them radically uncanny. Neocristo's avatars are also paradigmatic examples: they are trans or drag characters, and they mix hyper-masculinity and hyper-femininity. Neocristo's trans-femme, hairy, Japan-inspired characters, big-breast cyborgs with angel wings, or hyper-masculine femme manga avatars, explicitly play with the limits of what is acknowledgeable, challenging gendered stereotypes, body standards, and trans-normativity.

The last volumetric friction I want to address revolves around disorientation. As Sara Ahmed described in *Queer Phenomenologies*, queers have always been connected to a lack of orientation. 'Sexual orientation', as the words selected to define a 'normal' or 'queer' sexuality, is the paradigmatic example of how space and guidance have been fundamental in contemporary discourses about gender identities and sexualities. Ahmed has deeply reflected on the idea of (dis)orientation. If queers are considered 'disoriented' people, is because they do not follow the 'normal' life paths, and their life goals are not oriented towards the same places 'oriented' people are focused on (marriage, children, owning a house, etc.). Instead of reclaiming orientation for queer people, Ahmed proposes inhabiting disorientation as a queer practice.

At the same time, 3D virtual realities are spaces of radical disorientation (Rocha and Snelting, "The Possible Bodies Inventory"), and we commonly feel lost when experiencing them. Video game industries have developed several space tactics to try to avoid disorientation and encourage a clear location inside the game map (Calleja). On the contrary, some contemporary artists are consciously pushing forward virtual reality's sense of being lost. This is the case of queer artist Hunter Janos, who reverses gravity in her film *Upside Downtown* (2018). Also, feminist artist Cassie McQuater, who, in *End of Light* (2014) and *NO FUN HOUSE* (2014),

appropriates of video game aesthetic to make it completely incoherent and confusing, leaving the player with no idea of how to navigate the space.

To sum up, in my ongoing PhD research I have defined some crossroads between trends in contemporary 3D art and queer epistemologies and politics. These prolific spaces for thinking and creation are what I have named "volumetric frictions". My main objective when thinking about how to render them differently implies translating these volumetric frictions into a queer volumetric virtual space. This, of course, implies several multidisciplinary challenges.

Challenges

While "queer-prototyping" (cardenas) this 3D space, I have identified three big categories of challenges: aesthetics, interaction, and technologies. Of course, all these macro-groups point toward ethical and political issues, brought to the table by a queer rethinking of both 3D virtual reality and contemporary art. Consequently, they all share the same concerns, but they translate them differently depending on their area.

On the first level, I face aesthetical challenges. Trying to model queerness is, here, the main unresolved issue. Queer is essentially undefined. It encourages breaking all definitions, fluidity, and the abandonment of any essentialism. It also stays open to its self-critique, constantly questioning taken-for-granted truths (Butler). The question here is how to model that, and how we render a 3D figure that is not fixed. Zach Blas' *Fag Face Mask* (2012) is a paradigmatic example. The Fag Face Mask was rendered by mixing several 3D captions of queers' faces. Its objective was to build an unrecognizable queer mask that avoids surveillance.

And it demonstrates how queerness can be translated into volumetric language while still maintaining its political potential. Juan Covelli's */ʌndɪˈfʌɪnd/ 2.0* (2015) is another good example. In this piece, Covelli brings together several non-binary avatars from video game engines, which are constantly created, modified, and changed, never arriving at a stable identity.

The aesthetical challenge also includes how to perform queer formalism and world-making. Creating a queer world is quite difficult. Danielle Brathwaite-Shirley's games serve as good examples of how to create and make alive queer spaces. However, they lack fluidity and change. The same occurs with Eva Papamargariti's videos, such as *Faces of Janus* (2018), and Lauren Moffatt's dreaming compositions, like *Of Hybrids and Strings* (2020) and *HanaHana* (2016). They include movement but are still quite static. Another piece by Moffatt, *Love Birds, Night Birds, Devil-Birds* (2019), can bring a solution: its multi-screen installation shows an abstract landscape full of plants, insects, and other figures, constantly and smoothly changing, moving, and flowing.

The last aesthetical challenge implies how to model the PhD content. Rather than pasting my thoughts and conclusions into a 3D environment using text tools or links, I should find an aesthetic solution to translate highly theoretical concepts into audio-visual formats. Moreover, following queer pedagogies, I want to avoid 'teaching' lessons and encourage another way of self-discovering and learning. The content, consequently, should be suggested, roamed, and felt, not read or listened to.

There are a couple of examples that might help to figure out this task. The first one is Ontologias Feministas' *Santuario Nocturno* (2020). Here, this feminist collective from Madrid recreates their perfect nightclub in virtual reality. In *Santuario Nocturno*,

you can travel around different rooms, each dedicated to one topic (from security to the dress-room, or dance floor). Inside these spaces, the creators include different files and information you can check, read, and download, regarding that specific issue. While this can serve as an example of how to order information, it certainly lacks openness and is hermetically directed, with little space for self-discovery. The second example are Jacolby Satterwhite's chaotic compositions. Although they are not interactive, their aesthetic solution can serve as a guide: they mix images, texts, drawings, and videos to reflect on deep concepts, such as sexuality, community, or family. They are maximalist and unconstrained, without any specific way of moving around them, letting learning and enjoying open to users' desires.

This connects directly to the second major challenge: interaction. Queering interaction means destabilizing it. This implies avoiding strict paths, borders, closed doors, or any other limits that impose our own strict design decisions on the users who enter the space. Of course, there will always be decisions made on the design level that will determine users' experience. But we can consciously open them more. On the one hand, we have *Santuario Nocturno* design, a predefined path through the different topics of their research, determining users' experience and their mobility through the virtual space. On the other, Satterwhite's compositions encourage disorientation, looseness, and the possibility to roam through the space freely, without any specific direction.

Queer interaction, then, should be open to the user's self-determination and decisions and be transgressive and radically free. Additionally, and coming again to Sara Ahmed, queer interaction should also be based on the queer phenomenology of disorientation and open embodiments. This implies, of course, an avatar creation tool

as open to editability as possible, without establishing a connection between gender identity and gender expression, and allowing as many creative options as possible, while also away from checkboxes as markers of fixed identities (Galloway). But also further: a design that avoids any limitation of personal freedom to roam through the space, or that impedes users from taking their own decisions. And even more: a design that consciously encourages disorientation and an explicit sense of being able to drift through an unknown landscape full of questions, proposals, and ideas. Qiang's queer virtual spaces, such as *Vampire Squid* (2020), are perfect examples of this sense of chaotic disorientation that encourages queer encounters.

The last major category of challenges is technical. I should not only think about this space but also make it work. This implies searching for the software, learning how to use it, and, most importantly, doing it through communities of queer creators, theorists, and tech experts.

During the quarantine, public and private institutions made several online exhibitions in virtual spaces. These virtual exhibitions do not only serve as examples to follow, but also as practical knowledge: mistakes to learn from, pieces of advice, and multiple tips to take into account. *Santuario Nocturno* is a clear example, but there have been many more, such as "H.O.R.I.Z.O.N. (Habitat One: Regenerative Interactive Zone of Nurture)" by the Institute of Queer Ecology, or "Cyberia" by the CTM festival in Berlin.

Last but not least, and as much as possible, this virtual space should be designed and performed in green, open, free, and feminist software. Of course, several of its dimensions, especially in the design phase (modelling), and in the using-it phase (by a head-mounted display), will possibly require using privatized commercial licenses and products. Nonetheless, other problems, such

as hosting it, can be solved by contacting feminist servers — Constant, in Brussels, is a paradigmatic example. In any case, all the use of privatized extractive software and hardware must be repaired. The strategies for reparation are not defined yet and require contacting experts to make them effective. However, as much as possible, we should encourage the creation and dissemination of these alternative renderings through green and feminist servers, as well as communitarian and collective processes of creation and consumption/enjoyment.

Conclusions

How to render volumetric frictions queerly? That is the main, and unresolved, question of this paper. Rather than solutions, in the previous pages, I have tried to prototype some partial answers, proposals, and challenges regarding this task. I understand the volumetric frictions as incredible fruitful spaces of strange encounters between contemporary 3D aesthetics and queer theories and epistemologies. During this paper, I defined and exemplified four of them: (hyper) realism, world-making, embodiments, and disorientation. Considering the rich tradition of queering academia, I am currently involved in rendering this research differently. The rendering proposal I am working on is a queer virtual reality, that simultaneously occupies and reflects on the volumetric frictions I am researching. In contemporary art, I found the main inspirations, that I have tried to cluster here. However, there are several challenges (on aesthetical, interactive, and technical levels) that require prototyping new solutions to make this queer virtual environment work. These challenges show one of the main learnings from queer renderings: that queering research can only be made collectively.

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