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System Maker Files

Practice-led investigation into online system making within Artist-led Initiatives

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System Maker Files: Practice-led investigation into online system making within Artist-led Initiatives.

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DECLARATION

This thesis is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions.

The work was done under the guidance of Dr. Anna Notaro and Dr. Sarah Cook, at the Duncan of Jordanstone College of Art and Design, University of Dundee.

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21, February 2021

Abstract

The following PhD. thesis focuses on Internet art-based artist-led curatorial initiatives and the exhibition or artwork development process that takes place within this type of art organisation. The main concern of this investigation is the understanding of creative effect on contemporary Internet practice by an artist-led initiative through the development of an online multi-platform artwork, and or, exhibition. The research builds on an inter-disciplinary body of discourse, which encompasses the field of curating, critical coding studies and artistic practice. The topics discussed in connection to these fields are the distributive exhibition model, and curatorial modes of practice; research on system theory and aesthetics within artistic and curatorial practice; discourse around the expansion of space, the online art platform, and the site of art (and by extension the site of the exhibition) In combination with the rise of mobile technology; finally, coding studies and design philosophy platform building such as Internet protocol are covered. The research carried out for this PhD. thesis consists of a practice-led methodology that utilised researcher Alejandro Daniel Ball's own practice as a system maker within two artist-led initiatives: PILproject, and Agorama, where a chronology of artist-led artistic and curator projects was developed and realised by the researcher and his collaborators during the period between 2015 to 2018. Each project during this period are analysed through three system-based parameters: The project's multiple interfaces, using the critical perspective of the interface being an effect between the frontend and backend, i.e., the implementation of the platforms HTML, CSS and JavaScript architecture; The project's distributive network, i.e., the tangible hyperlinks and social media links each platform uses to interconnect with the wider exhibition system and external social media platforms; the final aspect centres on the protocological effect and system evaluation of each exhibition and, or, artworks presented. The essential findings and outcome of this research reveal the possible technological effects artist-led curatorial initiatives can enact with an embedded system maker practice, such as propagating open-source protocols and protocological objects. Additionally, a further outcome of this research is the development of workable web architecture frameworks, which can be used to create distributive sites for art and the exhibition.

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Chapter 1 - Introduction

1 Introduction

During the final year of my MA in curatorial studies, I obtained a work placement with the exhibitions department at Whitechapel Gallery (London) and assisted with several projects. One significant project was the exhibition *Electronic Superhighway: From Experiments in Art and Technology to Art After the Internet* (2016). At the time, this experience shed light on the institution's curatorial process of dealing with new media art in contrast to my independent experience as an artist and curator. Having initiated my own projects in new media art and, more specifically, Internet art, the main critique that struck me about *Electronic Superhighway*'s curatorial process and the realised exhibition was the lack of *movement* within the displayed artworks. *Movement,* characterised by media pioneer Roy Ascott (Ascott 2003: p.21), symbolises "wrinkles in time and space" and when input into an artwork activates it. In other words, it is one element (or behaviour) of an artwork that is contingent on an operation functioning within our modern telecommunications system.

Referring back to my own practice, this *movement* is a key element of the product in the final exhibition, helping to contextualise the artwork's concepts and allowing for the use of the site and the space of an exhibition to be a medium. For example, one project I took part in, *6 pm Your Local Time Europe* (2015) (6PMYLT) was organised by the Link Art Centre (Italy) and was conceived as a centralised service to capture non-localised and creative Internet activities. As part of the project, participants were instructed to curate or artistically activate the online space through performances or events that could take place online or offline. The central element of *6PMYLT* took the form of an online platform that was a purposefully developed website to capture all of the online activities taking place in the Link Art Centre's curated network. Uploading to the platform was operated through Twitter and Instagram by using the hashtag #6PMEU. This prompted any content published on these two platforms to also be published on the *6 pm Your Local Time Europe* website[1] (6pmyourlocaltime.com). Furthermore, the organisers encouraged participants not only to think about creating events solely for Internet display but also live physical events, thereby creating an infrastructure that encouraged thinking in multiple dimensions.

Returning to *Electronic Superhighway*, my recurring thought was the division in curatorial thinking over the use of the site. In one case, *Electronic Superhighway* (besides the commissioned artworks) used space as a void and in doing so rendered many artworks as mere display objects. The curators of *6 pm Your Local Time Europe* had used their site as a dynamic space that allowed for a platform to act as a creative tool focused on capturing a glimpse of the chaotic network, which I used to organise the project. As a starting point for my research, I view this comparative observation as the tension inherent in spatial positioning - in other words, the dynamic qualities of the exhibition site or platform.

1.1 Research Scope

My research investigates the activities of independent or grass-root groups working with and on the Internet, which I term artist-led curatorial initiatives (1.4), and the exhibitions and artistic projects realised by these types of organisations. A significant focus of this study is the notion of fluctuating roles between artist and curator projects within new media-based, artist-led curatorial initiatives. Additionally, during the course of this research, I employ a curatorial methodology in the spirit of Steve Dietz, who has stated that he was a "serial platform builder" (Cook et al. 2010:

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[1] 6PM Your Local Time website: http://www.6pmyourlocaltime.com/ [Last accessed: 20/12/19].

p.181). This notion is shared by Marc Garrett, co-founder of Furtherfield (London) (Appx.2.1). My research builds its context upon the interdisciplinary body of discourse of the distributive exhibition model (Dietz 1998; Berry 2001; Cook 2004; 2008; Cook & Graham 2010; Ghidini 2015), curatorial modes of practice (CRUMB.org 2003; Krysa 2008(a); Cook & Graham 2010), research into artists' practices and habits in Web 2.0 (Miranda 2013; Jones 2014), and the online art platform within systems theory and aesthetics (Burnham, 1968; Burnham, 1969; Ascott, 2003; Galloway 2004; Galloway & Thacker 2007; Goriunova 2012). With this focus, I use a chronology of projects (both artistic and curatorial) from my own practice as part of two artist-led initiatives: PILproject (3.2; Appx.3.1) and Agorama (3.3; Appx.3.2). My main thought process is to frame my practice as a system maker, which is a term I defined to describe my practice within the case-studies presented. The system maker paradigm derives from academic coverage stemming from cybernetic theory (Ascott 2013; Burnham 1968, 1969), organisational theory (Goriunova 2012), network theory (Galloway 2004; Galloway and Thacker 2007), and critical coding studies (Bratton 2015). It also relies heavily on curatorial discourse around the topics of the *distributed mode of curating* (Sarah 2004; 2008; [Cook and Graham] 2010); and Krysa 2006; 2008a; 2008b) and *the distributive exhibition model* (Cook 2008; Cook and Graham 2010; Ghidini 2015). Final there is a heavy influence of artistic practice that work in *mediated space* (Miranda 2013) as dictated by a *distributed mode of curating* that follows in the footsteps of artistic practice (2.1.1). The idea is to establish my practice, which sits in the middle of a paradigm that oscillates between an artist and a curator, into the context of system maker and establishes links to previous discussed discourses.

Furthermore, my research into the field of artist-led curatorial initiatives has also found gaps in knowledge in regard to the ontological reading of space and its concept evolution through a combination of artist-led curatorial activities and advancements in telecommunications. The primary consideration for this body of research is an exploration of the changing nature of the exhibition under technical ideas such as the API economy, and the Semantic web (Berners-Lee, Hendler & Lassila 2001; Berners-Lee 2009), which I discuss further in chapter 4.

1.2 Research Questions

My research focuses on a practice-led and practice-based methodology. My main concern in developing the guiding questions was to find a discursive situation where I could place and contextualise my practice from a technical, systematic perspective that would allow me to express my particular technical abilities. My research follows on from Marialaura Ghidini's (2015) research insights, her observations, and the statement that curators' accessibility to the online space was enhanced by their digital and technical knowledge and know-how.

One concern is to avoid the pitfall of adding additional knowledge to the already dense amount of new media discourse. Therefore, it is important to ground this study within the technical realm and simultaneously acknowledge critical frameworks produced by other academics. Further detail on my methodology and the synthesis of a technical critical practice will be discussed below (1.3).

Regarding my research questions, the book *The Language of New Media* by Lev Manovich (2002) has articulated a lexicon for understanding the field of new media art and relates new media's computational elements to that of 'known' media, such as cinema. However, while I view Manovich's work as positive, it has created certain unhelpful links to older media. At the same time, Manovich's work has perpetuated friction, particularly when people without the necessary technical literacy approach these types of works in an exhibition. An earlier piece of research is

by Charlotte Frost (2009). She has emphasised a similar point to my reflection, but she has identified points of tension through a historical art lens. She asks if it is even possible to approach an Internet artwork that incorporates several art historical tools, e.g. the archive that is key to the art historical paradigm.

I intend to investigate one of the recurring factors within new media discourse: that of the artist-led initiative and the impact on fields such as curatorial discourse (2.1). With this thought in mind, and the observation that my practice and the collectives to which I belong share several key characteristics, here is the first of my research questions:

How have artist-led curatorial initiatives affected contemporary Internet practice?

The decision to use artist-led initiative groups as a focus for the research pertains to my own activities in collectives, and my experience working with these groups through the presented case studies (3.2; 3.3). As emphasised before, my highly technical practice provides the context for the analysis of each presented project and takes into account several threads of thought from new media discourse. However, in this case, due to my technical methodology, my approach to art and exhibition-making involves a systematic deconstruction of the case studies to better understand the actual practice behind the Internet and programming media. In many respects, my approach to this first question is based on the current conceptual and post-medium condition notions within contemporary art as a whole and could be said to situate itself closely to the ideas of craft, i.e. craft or artisan notions of creation.

An interesting aspect within the discourse of Internet art, specifically in curatorial studies, is that of the distributive exhibition model, which has come a long way since Cook's (2004; 2008) initial writings on the subject. In many respects, regardless of which side a practitioner is on, i.e. artist or curator, the *site* of art online is a paramount topic. Due to its distributed nature (as outlined by Berners-Lee and other Internet pioneers), the notions of Internet space, *site*, and spatial perception become interesting areas of debate within academic circles. Therefore, my research into the actual building of online distributed projects also seeks to investigate notions of the distributive exhibition model:

How do artist-led curatorial initiatives and perceived advancements in space affect the distributive exhibition model?

I see this question as an inherent factor when attempting to build projects that are online only or both online and offline. Through my practice, there is a rare opportunity to peer through the technical literacy barrier and understand the properties of distribution and how it all technically works and, more importantly, how this factor is being pushed and challenged by artist-led initiatives.

The final question arises from analysing my own practice, in addition to its being a topic of central importance within new media discourse, particularly in the field of curatorial studies (Cook and Graham 2010; Curatorial Resource for Upstart Media Bliss (CRUMB) Mailing List 2003). In new media curatorial discourse, the role of the curator has evolved from purely a facilitation role to that of a practice that shifts from position to position depending on the project (Krysa 2008(a); Cook & Graham 2010; Ghidini 2015). This is a cause of debate around the topic (2.n) and, more importantly, casts the role of the curator who works with online art and modes of its display into an ambiguous light. Similarly, though with less controversy, the role of the artist as a simple lonely creator is not included in the new media discourse, which reveals (since as far back as the

post-war period) that artists working within a technical paradigm are observably very collaborative (Paul 2006), in addition to taking on a curator position, though potentially a creative version of the role. Within my own practice, my role frequently alternates between that of an artist and that of a curator, with instances where I take both positions in the same project. In this research I see the opportunity to further investigate this notion through a technical paradigm to understand:

How embedded is artist-led curatorial practice in contemporary Internet art practice?

I view this last question of my research project as a personal investigation into the crux of my own practice to understand how working under a system maker paradigm affects the clarity of my role within the exhibition-making process.

1.2.1 Disciplines focus and what this research covers

This research focuses on three distinct academic fields: curating, artistic practice and critical coding studies. In terms of curating the topics and discourse discussed is the changing nature of the curator's role and the online *distributive exhibition system* (1.4) (Dietz 1998; Berry 2001; Cook 2004; 2008; Cook & Graham 2010; Ghidini 2015). For the field of artistic practice discusses around arts working with cybernetics, systems and telecommunication (Ascott 2013; Burnham 1968, 1969; Stallabrass 2003; Krysa 2006, 2008a, 2008b; Daniels 2009; Miranda 2013; Larson 2014) are investigated to provide a clear artistic practice context for my own practice to follow. I use the final field, critical coding studio as part of my technical framework for the analysis of my practice-led projects and use discourse from this field around Internet protocol, politics in coding and (Galloway 2003; Galloway and Thacker 2007; Bratton 2015).

What this research involves is a focused studio on Artist-led curatorial initiatives working on the Internet and develop *distributive exhibitions* and exhibit curatorial practice that is a *distributed mode of curating*, but that also engages technically in the exhibition making process, i.e. coding websites, web platforms, programs that run on the web and so further.

1.3 Methodology

My methodological approach for this research incorporated the method of *critical technical practice* (1.3.1). This research approach was used exclusively for the analysis of the case studies presented in this thesis and is seen as the logical method for proceeding with a technically based research project.

During the course of my research, my role within all the projects varied depending on the situation of the project and its needs. That being said, my research, regardless of what my role was, remained consistent in its paradigm and took the form of what I term as a *system maker*. I will define this term in the sections below (1.4). To explain my practice, I am both an artist and a curator. When taking up the position of a curator, I predominantly work with new artwork commissions and/or artworks that are research-driven. Moreover, I tend to position my curatorial involvement as a technical enabler, in other words an individual that an artist can collaborate with, utilising my technical abilities to produce previously unrealisable or over-ambitious projects. Additionally, as a curator, I am especially interested in the site of the exhibition and its systematic structure (regardless of whether it is a project that is online, offline or both). When in the role of an artist, my main areas of focus are systems. Regardless of the artwork or project, my practice consists of developing an underlying system for the work in question.

I will briefly touch upon my abilities (technical) and the methods of a process that I incorporate in both my artistic and curatorial practice. I have a professional background in automotive technology, carpentry, electrical systems (both automotive and domestic), lighting design, and network administration. Artistically, I have worked with and incorporated these elements into my practice, such as sonic and sound engineering, traditional print-making, digital processing (Photoshop and digital video editing). Before beginning my PhD research, I had successfully fused both my technological and artistic experience into a single practice where I operated mostly as a technical curator aiding the visual design of exhibition aesthetics. During the course of this PhD research, I took it upon myself to begin incorporating further computational processes, such as programming, and have since increased my proficiency in computer-based languages, namely HTML, CSS, JavaScript, PHP, Node.js, Python and the C programming language. I have also increased my knowledge on server-based technologies, for instance, Apache or Nginx servers, and become acquainted with the experience of what the computer world terms a 'full-stack developer'[2]. Therefore, the primary quality of my practice is assimilation. I incorporate into my practice craft or artisan base skills, which I use for the development of complex artistic or curatorial systems.

1.3.1 Critical Technical Practice

My own practice acted as the foundation for my research. Through my research, I actively engaged in the creation of several projects and had an extensive period of self-research and development. Starting with the self-research and development period, I sought to actively create new Web platform frameworks to display Internet art. During this period (2015 to the beginning of 2019) I undertook several online tutorial courses to increase my digital literacy, while also deconstructing one of the Internet's most widespread platforms – WordPress – in an attempt to understand and create a viable framework that would allow a curator or artist-led initiative to include several types of online and technical artworks. The art projects I undertook for this research, during the period 2015 to 2019, involved several projects pertaining to two artist-led collectives, PILproject (3.2; Appx.3) and Agorama (3.3; Appx.3).

During this practice-led research period, I took the precaution to document several processes to ensure that my research had an ample amount of context to review and present in this thesis. These documentation processes consisted of active journal keeping through my digital learning period and the development periods of each case study. The final aspects of my practice-led documentation consisted of questionnaires and interviews with a majority of the participants in the projects initiated during my research.

The importance of this practice-led research was to emulate current methodological approaches in the field of Artificial Intelligence that share similar pedagogic issues with those experienced in the arts (Dena 2004). This would, therefore, mean the entire structure of the research took the format of what Philip Agre (1997) calls critical technical practice:

> A critical technical practice would not model itself on what Kuhn called 'normal science,' much less on conventional engineering. Instead of seeking foundations it would embrace the impossibility of foundations, guiding itself by a continually unfolding awareness of its own workings as a historically specific practice. It would make further inquiry into the practice of AI an integral part of the practice itself. It would accept that this reflexive

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[2] A full stack developer is described in the computer world job market as an individual familiar with both server side and user side programming processes and languages. Additionally, a full stack developer will also have the knowledge of taking a project from conception (start) to deployment (finish), and the intimate knowledge on how this complex system should be developed and taken forward.

inquiry places all of its concepts and methods at risk. And it would regard this risk positively, not as a threat to rationality but as the promise of a better way of doing things. (Agre 1997: pp.22-23)

By utilising this method of a critical technical practice through the mode of an inquiry cycle investigation, I developed critical theories related to my research questions (1.2), while also keeping my practice in sync with my research methodology. To conclude, this methodological approach aimed to reveal the changing nature of the exhibition site, contemporary Internet practice, and mode of practice for participants working with new media artist-led curatorial initiatives.

1.3.1.1 Exhibition Analysis

As the focus of critical technical practice, I chose two artist-led initiatives that were part of my personal practice to use for investigating and understanding how artist-led curatorial initiatives affect contemporary Internet practices. The artist-led initiatives chosen were two collectives, which had been established prior to my induction as a PhD candidate. The fact that both groups had an active practice prior to my period of study gave me confidence in using them for my research because of the likelihood that both (PILproject and Agorama) would continue producing artworks and exhibitions, thereby providing me with further case studies to analyse and reflect on.

1.3.1.2 Field Work: Interviews and Questionnaires

During the course of the multiple projects presented in Chapter 3, I accumulated several collaborators, some temporary, while others have become long-term colleagues.

Due to the nature of my practice and the nature of the collaboration for each project, I deemed it important to capture comments and reflections from the artists and curators that were part of the projects my case studies represent. The reason for this was to follow in line with the method of a critical technical practice, whereby each reflection and comment given by the participants in each project served to enhance my own practice and technical thinking, which gave me a better understanding of strategies to employ in future projects.

1.3.1.2 Self-ethnographic Analysis

I considered this one of the core elements of my critical technical practice methodology. It included self-reflective work documented through both my digital learning period and the development of crucial components that pertained to each case study project that had taken place over the last three to four years. This documentation essentially detailed the progression in my system making practice, the advancements of my programming capabilities, and the development of creative computing frameworks that could be employed for online and/or offline distributive exhibitions.

This element was a story of progression, whereby I experimented with several different frameworks, for instance the WordPress platform, to understand if a 'one size fits all' online hub or art website (Goruinova 2012) was achievable. In other portions of this documentation, the reader will find extensive reflections on manipulating HTML elements for better creative dissemination, the development of RESTful APIs (Appx.3.3.2), and so on.

This documentation is technical in nature and uses a specific lexicon of terminologies that are used in new media theory. The following section (1.4) will unpack the terminology used in this thesis, to help facilitate a union between the technical and academic.

1.4 Terminology

Artist-led curatorial initiative:
This term comes from the field of curating and was discussed by Sarah Cook (2008) in connection to artist-led organisations such as Furtherfield (London, UK), whose activities focused on curating new media exhibition or event projects through close working relationships with artists., which I discuss further in chapter 2 section (2.1).

For this thesis focused the definition of this term on my experience working within several small groups or organisations that I have identified as artist-led curatorial initiatives, two of which are discussed in later chapters (3.2; 3.3). In my experience, the term describes a collaborative group organisation and/or project that is focused on making an exhibition or event through close working relationships with the artists involved. Additionally, the makeup of these groups or projects will either be (a) an interdisciplinary group led by an artist or artists, or, (b) an interdisciplinary group led by artistic intention. In both cases, there is not much distinction in modes of practice and still a focus on curating. One interesting thing that I observed within the artist-led curatorial initiatives is that projects that can be viewed as artworks or artistic projects are also undertaken by artist-led curatorial initiatives, the background to which I discuss in section (2.1) and also within my research case studies in section (3.2).

Avant-Garde:
The term *avant-garde* needs no introduction and is widely known as an identifier for particular artist movements in history. However, it has been used as a term to identify types of artistic activities and movements as seen in Dieter Daniel's re-assessment of the net art period (Daniels, 2009). Similarly, my research uses the term to describe forward or advance thinking around exhibition and display concepts, such as the site of art, which is also a long-held preoccupation of many historical avant-garde groups. Thus, this term is specifically used in this report to identify advancements in thinking or innovations in exhibition design.

Distributed mode of curating:
The term distributed model of curating is a unified term I have coined based on the collective work of Sarah Cook (2004; 2008; [Cook and Graham] 2010) and Joasia Krysa (2006; 2008a; 2008b). Each academic used a different term to describe similar notions of curatorial practice in a distributive network. Cook used the term "The Distributive Model" to explain her curatorial paradigm, while Krysa used "distributed curating". I discuss the background of this term further in section (2.1.1).
Throughout this thesis I used the distributed mode of curating to refer to the mode of practice my *artist-led curatorial initiatives* used when production new media art exhibitions and or events.

There is also a similar term *d*

Distributive exhibition model:
The distributive exhibition model is used within the field of curating to discuss a form of exhibition making where an exhibition can live between an online and offline presence. In this thesis I draw from latest definition from Marialaura Ghidini (2015) PhD thesis where she outlined model and its three configurations she'd discovered. The first of these is the extended exhibition, which

describes an online and offline exhibition where either the online or offline presences is the main part of the exhibition. The second is the complimentary exhibition, which describes an online offline exhibition where both online and offline presence are equal but can stand on their own. The last is the distributed exhibition, which she describes as a space for the dissemination of art (Cook and Graham 2010).

I use this term and its associated sub-definitions as the analytic lens to view my practice research projects and critically analysis them.

A space for arts dissemination:

First coined by Cook and Graham (2010) in the field of curating, a space for the dissemination of art describes an exhibition that is activated through the dissemination of context from various channels and or platforms. In this thesis I use this term to also describe Ghidini's distributed exhibition configuration from the distributive exhibition model to avoid confusion with the distributed mode of curating.

Mediated space:

Mediated space, as defined by Maria Miranda (2013), is a situational shift in the perception of space that is mediated by network technology, for example smart phones and tablets. Miranda describes that due to this mediation space such as the non-place loose significance because people are always connected to their personal network, and that this situation carries over into public space, the workspace and personal space. Therefore, an individual interacts with several digital spaces in a physical space. In her thesis mediated space is discussed in the context of network theory and artistic practice.

In thesis I use the term to refer to the current situation of the Internet environment and also use the term's qualities as a way to analyse and describe my exhibition project and coded platform frameworks.

Telecocoon:

For this thesis I use the term telecocoon to describe a user's intimate digital space within network theory, which was defined by Habuchi (2005) in the discourse around network culture.

An intimate digital space involves personal relationships to the person in question that are interactive with through the network, normally through the mediation of a personal smart mobile device such as a smartphone. The term is also used by Miranda (2013) in relation to artistic practice through the notion of mediated space. In this use case Miranda highlights several performative social spaces that are involved in a mediated space, one of which is the telecocoon that are user carries with them at all times through being constantly connected to the network. Throughout this thesis reference is made to a user's personal virtual space that revolves around messaging programs and other closed forms of communication, that include SMS. I also attribute certain aspects of using social media platforms as part of a user's telecocoon, for example Facebook friend requesting and becoming someone's friend on that platform.

Online to offline migration:

In the discussion of new media art, in both curating and artistic practice fields, discuss the transitioning of an online artwork to the offline, or via versa as an act of translation. However, in recent curating discussions Marialaura Ghidini (2015) advanced the topic of online and offline modes of display for exhibitions and described this transition as an act of migration between the online and offline, or vis versa. Ghidini's research takes into account Miranda's notion of mediated space and uses it as an environment condition similar to how I use the term in my research.

Throughout this thesis I draw on this new definition to discuss artworks/exhibitions, or pieces of an artwork/exhibition moving from online to offline, or offline to online.

Multi-platform:
The term multi-platform is a term I developed to describe an exhibition that works within the notion of mediated space (Miranda 2013). A multi-platform exhibition or artwork is modular and has several platforms that can be part of the project's makeup.
I use the ideas from the distributive model of curating's sub-definitions to describe the relationship between platforms in a multi-platform project. Because multi-platform draws from Miranda's mediated space. The use of the sub-definitions from the distributive model of curating focuses less on the relationship between the online and offline and more between the platform's relationship within the context of their project.

Protocological
Defined by Alexander Galloway (2004) as a term relating to or dealing with the subject of network protocol, for instance Hyper Text Transfer Protocol (HTTP), Transmission Control Protocol /Internet Protocol (TCP/IP). In his thesis Galloway views protocol as the solution for when hierarchy is lost, or in the case of the Internet the decentralisation of power. Protocol is how the Internet as a system can exerts control over its nodes, and how something as the chaotic as the Internet functions.
A protocological object, Galloway describes as digital object or program that uses and communicates using numerous protocols, for example the Web browser. However, I expand on this term to include Web standardisation like REST (Representational State Transfer). While standards like REST are not formally protocols, their wide adoption within Web development and the Internet represent a practical trend to favour standards that a company can easily change over formal proposed protocols like those of the semantic web (3.1.3).
I use the term protocological as a mode of analysing the code for my practical projects, and further use the term protocological object to describe myself created platform frameworks.

Uncertain practice and unsitely aesthetic:
Maria Miranda (2015) defined the term uncertain practice as a form of artistic practice operating in a mediated space, which would subsequently produce an unsitely aesthetic for the artwork. Miranda describes an uncertain artistic practice as when an artist works across a mediated space. This in turn produces an artwork that is situated across several possible digital platforms but culminate in a physical display (or platform) that exhibits an unsitely aesthetic because of its situation.
I use these terms to describe a specific type of artistic practice and the artwork's aesthetic or type of artwork that is related to Internet Art.

Internet or Online Art:
To briefly define Internet art in the context of how it is used in this thesis: Internet art can be seen as the practice of engaging with the online space and network technology as a conceptual tool and medium (this includes the appropriation of readymade platforms: Facebook, Instagram, Twitter, etc.; programming: creating platforms and Web applications). Examples of Internet art that use the appropriation of readymade platforms can be seen in Émilie Brout and Maxime Marion's *Ghosts of your Souvenir* (2014-2016) – where the two artists found themselves subtly 'photo-bombing' tourists' pictures at popular attractions across Europe. Then, using hashtags, a popular user technique to extend the dissemination of uploaded material, the artists took to the

social media platform Instagram in search of any images taken by unsuspecting individuals[3]. In this instance, Brout and Marion's project used the online space as both conceptual tool and medium by showing the changing relationship between people and place brought on by Web 2.0 (2.3.2), while also cleverly creating this scripted space between appropriated online platforms and public spaces as their performative medium.

In the instance of platform making or programming, the artist group !Mediengruppe Bitnik created several elaborate projects, such as *Random Darknet Shopper* (2014-ongoing). In this project, the group developed a system, inclusive of physical equipment and a programmed application, that would actively search the darknet and make purchases autonomously[4]. Similar to Brout and Marion, !Mediengruppe Bitnik used the online space as a conceptual tool to investigate society and its relationship with fetish parts of the Web. However, in this project's case, the artwork was a piece that carved its own scripted space for its performative activities as opposed to the former example that actively engaged with a pre-existing and widely used consumer system.

Net art and net.art:
The term *net art* is used in this thesis to refer to a specific period in art history, which took place roughly from the mid-1990s till the *dot com bust* in the early 2000s. During this period, net artists (which are also referred to as the first generation of Internet art) experimented with the early World Wide Web in a variety of ways, such as *tactical media* (Sollfrank, 1997) and *context system building* (Blank 1996). Additionally, during this period, a group of net artists coined the term *net.art* as a label for a specific group of net artists, in particular Vok Cosic, Alexi Shulgin, JODI, Heath Bunting and Olia Lialina (Greene 2003). This particular group of net artists were famous for many high-profile net activities and were featured in Documenta X (documenta.de 1997; ljudmila.org 1997). This group was sometimes used synonymously with net art as a whole (Daniels 2009). However, for this report and my research, net art does invoke individual groups, such as *net.art*, but does not follow this context the other way around. Net art and the term net artist are specifically used to describe a period in time and all the artists associated with the net art movement. In the case of using the term *net.art,* it specifically refers to the small group of artists mentioned above.

Second generation of Internet art:
The second generation of the Internet refers to the period after the *dot com bust* of the early 2000s. The term is not really used widely within academic texts but is used to describe the continuation of online or Internet art after the end of net art by other artists (art.teleportacia.org 2007). Additionally, some artists who were associated with the first generation of Internet art, e.g. Thomson and Craighead, are also associated with the second generation of Internet art, confusing the term's art historical value. Thus, for my research, the term 'second generation of Internet art' refers to the period right after the *dot com bust* until the late 2000s.

Post-Internet art:
In my research, I use the term *post-Internet* specifically to describe this small group of artists and curators previously mentioned, and *post-Internet art* typically consists of projects, exhibitions and other activities conducted between late 2008 until roughly 2013.

This term is sometimes referred to as the third generation of Internet art. However, in reality, the term, similarly to *net.art*, speaks of a small group of artists and curators. Within the writings of the individuals mentioned, in particular Archie Virkant, Maria Olson and Gene McHugh, ideas about

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[3] Links to Brout and Marion's project: http://www.eb-mm.net/en/projects/ghosts-of-your-souvenir [Last accessed: 25/01/2019].
[4] Link to !Mediengruppe Bitnik project: https://www.bitnik.org/r/ [Last accessed: 25/01/2019].

art and the digital are fused to create a vision of the digital medium in a similar light to Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction* (1998 [1936]). While much of this writing drives a more image- and concept-centric discourse for online and the Internet, the ideas are not held by my research to be specific to *post-Internet* art, and are viewed as a wider paradigm shift within Internet practice that is relevant in screen-based discourses (Kholeif 2014) and artistic practice (McHugh 2010; Vierkant 2010; Olson 2011) to name a few.

Platform Framework:
I have defined this term to describe the coding work produced for this research. The term plays on the coding terms *framework*, which refers to creating a programming framework for coding software or web platforms. For example, WordPress.org (to differ from Wordpress.com) could be considered a framework, though traditionally systems like Laravel or Symfony for PHP programming, or express.js for Node.js programming, are classed as frameworks. Essentially, these frameworks allow a programmer to build from a base architecture that tends to favour a specific design pattern of development, e.g. Model, View, Controller (MVC) design pattern. Platform framework is used within my research to refer to base architectures in platform programming, which will be addressed in full in Chapter 4 (4.2.3; 4.2.4; Appx.3.3).

Fork:
Fork is a term that arose from the open-source movement and is defined as when an open-source framework or program is appropriated by another individual or group for their own purposes that they intend to maintain. There is also the term *hard fork* which is a complete change in philosophy from the original project. Examples of *hard forks* have been publicised in various programs and algorithm ecosystems, e.g. *Bitcoin*, which has several 'hard forks' such as *Bitcoin Gold* or *Bitcoin cash*. I use this term within my research to describe the aspect of my practice of appropriating open-source frameworks or bits of found code, which I have then used within the case studies presented in this thesis.

DOM elements:
DOM (Document Object Model) element refers to *HTML objects*. It is a widely used Web programming term and essentially represents abstract object elements, such as the <p> element, <div> element, or <a> element. The representation of HTML elements as abstract objects also refers to the fact that, within HTML version 5 (the current standard), the language paradigm incorporates methods similar to a self-made class-object, which means each element has a number of methods that can be used to create dynamic content in tandem with other languages, for example, JavaScript.

1.5 Structure

Over the course of the next four chapters, my research begins with my context review. Chapter 2 reviews the discourse of several concepts integral to my research. Beginning with the notion of an *artist-led curatorial initiative*, I explore the connection between these types of groups or art organisations and historical examples of artists working in similar paradigms, and how this concept of practice has found a home in curatorial practice-led discourse. Additionally, this chapter also presents the literature related to the Internet platform as a site of art and the progression of the theory and practice from the 90s through to the 2010s with the introduction of smart mobile technology.

In Chapter 3, I present the practice-led case studies from my activities with the *artist-led curatorial initiatives* PILproject (3.2) and Agorama (3.3). Each case study contains a thorough

analysis and my academic reflections for two projects per each group's case study. The critical analysis of these case studies focuses on the *interfaces* (3.1.2), distributed network (3.1.3), and finally the *protocological* effect for each project to better understand the consequences of an *artist-led curatorial initiative* practice on contemporary Internet practice (3.1.4).

Chapter 4 of this thesis takes the findings of Chapter 3 and provides a greater in-depth review of the practice-based content produced through the course of my research. In this chapter, I examine the overall programming paradigm of the Web through the succession of the *API economy* over that of the *semantic web*, to understand the protocol for building on the Web. The final section of this chapter then reviews the *protocol* blueprints that I produced over the course of my practice-led research and highlights the effects of a *creative telecocoon* on contemporary Internet practice, and the disruption of my role as an artist and curator while working with a systems paradigm.

For my final chapter, I return to the guiding questions of my research and explain my findings in relation to my three research questions. Additionally, I also consider the significance of my research findings for those it would benefit most, and how this research has reshaped my own practice. I conclude this chapter with reflections on follow-up research that can build from my practice-led research project.

Chapter 2 – Context Review

2 Context Review

During this research, one element of focus is the context around *contemporary Internet practice* and how to approach this notion. Should it be from purely from the viewpoint of art, or should it include the field of critical code studies? Key research interest was the current Internet environment with which the practitioners interacted – both artistic and non-artistic. The software that powers today's Internet is a much more complex entity than its former 90s version, as shown by Web applications that are able to produce an experience commensurate with desktop software. This trickles down to the masses with the personal webpage becoming something of a professional calling card of capital services, as nearly everyone now has a scattered identity of social media profiles on these Web applications. Independent and amateur software developers no longer need physical hardware in order to get up and running but can do this through various services (also part of the *cloud*), such as AWS (Amazon Web Services), that provide physical infrastructure that users can access and operate under a variety of different computer needs. A new practitioner navigating this terrain faces a steep learning curve, not only with regard to digital know-how, but also in terms of bureaucratic concerns, e.g. terms and agreements for the use of social media platforms, the navigation of universal protocols and their private corporate counterparts, which browser to use, and so on. Thus, when I discuss *contemporary Internet practice* this includes the current socio/politico/economic landscape for Web development, which is inclusive of Internet art.

When relating my own practice to the research question and the above thought process, it became clear that, through the development of art systems for the Internet, my practice was in direct conflict with the current requirements of *uploading* (2.3) content to the Web. In addition to this, the *distributive* exhibition became the main component of this conflict through the reconfiguration of already-scripted spaces. As discussed in Chapter 1 (1.2), this is where the second of my research questions come into play, bringing in the importance of space and the site for art and the exhibition. The exhibition space since the World Wide Web (WWW) became public has mutated several times, notably with the Web's introduction and later with mobile smart technology. The introduction of smartphones has had a dynamic effect on the Internet's social function, allowing people to always stay connected. Yet, at the same time, this complicated technology is very divided, making it necessary for any mobile application to be developed twice over (once for the Android OS, and once again to port the system to the competing Apple iOS, or vice versa).

Artists and independent curators have historically thrived in spaces of limitation, with researchers such as Marialaura Ghidini (2012) observing how individuals, groups, and collectives have found ways around some of these technical barriers through the act of appropriation, while others have discussed the distributed practice and the use of computers and the online system as not only a space for dissemination but as a virtual studio space as well (Jones 2014; Ball 2017(a)). In the midst of all this, *artist-led curatorial initiatives* – historically collaborative and interdisciplinary groups – have had little to no direct follow-up on research since the 2000s. Therefore, the topics focused on in this context review chapter are the background, idea, and practices of artist-led curatorial initiatives (2.1), the changing nature of the site for art and the exhibition (2.2), and finally a look at the artistic landscape system making practitioner (2.3).

2.1.1 Distributed Model of Curating and Modes of Practice

The concept of a *distributed mode of curating* arose in 2008 from two particular studies (Cook 2008; Krysa 2008(a)), each describing a different model of curating that stood apart from any traditional notions of the practice. On one side, Joasia Krysa's association with the term came from the question "What is the position of the curator within a distributed network model?" (Krysa 2006: p.7). Through Krysa's own experience with the artist-led curatorial project *Kurator* (Krysa and Shingleton 2007), and further field research on immaterial artworks, such as biennale.py and runme.org, she introduced the notion of "distributed curating" (Krysa 2008(a): p.101), which acknowledged the redistribution of curatorial labour on the network by such things as automation and software. In regard to the latter, Cook's association with the term revolved around the "placelessness" of the curator or organisation (Cook 2008: p.43), which acknowledges the position of the curator moving towards the role of "production manager" (Ibid.).

However, prior to both these studies, ideas on curatorial practice were already changing. This became apparent when reviewing the practice and research of two institutional curators: Steve Dietz (Gallery 9, Walker Art Centre, 1995) and later Christiane Paul (Artport, Whitney Museum, 2001). Dietz, in particular, wrote about the evolving nature of the curator's practice and exhibition design, indicating a number of different notions such as "Auto-curation" and "Curator As Filter" (museumsandtheweb.com 2008). Similarly, Paul covered notions belonging to the *distributed model of curating* and cited that the network and the actions of artists on the Web emphasised collaboration and a dynamic reshaping of how art is developed, which online curators also experienced as a "shift from the model of a single curator to that of multiple curatorial perspectives" (Paul 2006: p.92). In both cases, Dietz and Paul suggested following in the footsteps of artists for the progression of curating practices, which is another way in which they interlink with the ideas of Cook and Krysa. In regard to Cook and Krysa, I view the combination of their work in the context of a *distributed model of curating* as the solidification of the concept despite existing within two different terminologies. If we look at Krysa's idea for a *distributed model of curating* as the recognition of the distribution of curatorial 'power' through software and systems alike, Cook recognised the same type of curatorial disruption but used the site of the exhibition and finished process of the work of art (Cook 2008: p.43).

This is a notion that is further echoed by Marialaura Ghidini (2015) in her PhD study of online to offline migration patterns for online art and exhibitions, in which she stated the role of online curating to be:

> The curator becomes a provider of a platform, a service and a context who has to generate an interface for display; design and programme the exhibition space (or choose and customise an existing one); implement an organisational structure (that is, the mode in which the content is produced and arranged in response to the workings of the interface) and devise a model of distribution in accordance to the adopted interface. In this process, the curatorial intent and approach to artistic practices, the site and its structure, the artwork, and artistic production, as well as the type of audience engagement and patterns of navigation, are correlated and work in synergy. For, the work of researching, selecting, organising, exhibiting and preserving that are typical tasks of curating offline are re-calibrated according to the requirements of the online interface, and its being part of the networked environment of the Internet. (Ghidini 2015: p.40)

Regarding Ghidini's statement, the curatorial role in an online environment emphasised several things: (1) that to engage with the Web the curator becomes a provider of infrastructure, thereby also engaging with software that automates certain curatorial tasks, similar to Krysa; (2) that each project's approach (including site or platform) follows the intention of the artwork, which

echoes Cook's ideas of a curatorial initiatives procedure to "re-form and rebuild" (Cook 2008: p.43) on a project to project basis.

Yet within the discourse of a *distributed model of curating* there has been a thread of criticism towards the adoption of a 'distributed' way of curating, as noted by Arns and Lillemose:

> Our understanding of curating is different from what is happening at rhizome and runme for instance. We do not discard these activities – on the contrary, we want them to inform future curating – but for the sake of clarity, we believe we should call them something else depending on the kind of activity.
> Is the term 'curating' really appropriate for describing genuinely new forms of online practice? Why call it curating at all? Why not be more specific and call these activities editing, moderating collaborative filtering? They have more in common with these kinds of activities than with traditional curating. (Arns & Lillemose 2005)

The intriguing aspect of Arns and Lillemose's comment is that, if we re-examine the historical examples of online artist-led curatorial initiatives (2.1) and even Ghidini's statement above, the 'curators' of these projects showed a wide range of roles that diversified their practice and potentially pushed them beyond being simply curators. Of course, conversations around the diversity of the curator's role are long-standing in the discourse - for example, in the monthly open discussion theme that took place on the *Curatorial Resource for Upstart Media Bliss (CRUMB)* around curatorial models (jiscmail.ac.uk 2003), which was then developed further in the publication *Rethinking Curating* (Cook and Graham, 2010) where the effects of working new media art and the subsequent disruption to the curator role were addressed as "'modes' in which curators function" (p.156). However, in the context of my research and working on the Web, many of the "ambiguous" qualities attributed to the curator's role bring into question the idea of system making, which can be considered platform building.

Thus far, the predominant idea for this model of curating, at least in an environment like the Internet, is that this type of practice reshapes the curatorial hierarchy and instigates a more inclusive collaborative process between the artist and curator. Furthermore, due to the nature of the online space, there is an embrace in the "placelessness" of the project, allowing for numerous configurations for an online project and for groups and organisations to reinvent themselves based on this circumstance.

Finally, the role of the curator, at least when working on the Web, takes the shape of someone who makes systems and also is an administrator. Regarding Arns and Lillemose's words, both examples mentioned in the section above (2.1) exhibit ambiguous situations for the "curator" role. Moreover, while the addition of "modes for practice" for the curatorial role allows for a curator to be flexible and enter the grey area of creativity (Krysa 2008(a)). For the purpose of my research, 'modes of practice' for a curator does not consider the inclusion of coding Web platforms or coding to support an artist's practice and if this pushes a curator and into a role I've termed *system maker*.

2.1.2 System Maker: System Theory and Aesthetics

Within the discourse of new media art that engages directly with the Internet and telecommunications, the predominant theory discussed is network theory as opposed to systems theory. The rationality comes from the fact that network theory specifically targets the understanding of "systems whose underlying structures are networks" (Goriunova 2012: p.4).

Thus, when engaging with socio/politico/eco literature on the Internet's architecture, i.e., the network, becomes an integral part of interrogation and understanding contemporary relations, such as power (Galloway 2004; Galloway and Thacker 2007; Bratton 2015), social reconfiguration (Mejias 2013; Lovink 2012; Lovink 2013), and the understanding of art and culture on the Web (Stallabrass 2003; Larson 2014). However, from the perspective of artist-led curatorial initiatives and the practice spoken about in the section above (2.1.2), the notion of the network best explains the concept of the distributive exhibition in action rather than the development of such systems (or platforms) that will engage with the network. This is because networks are fluid structures that are reactionary and contingent on participating nodes. Systems, on the other hand, in the context of programming, are engineered, thereby granting an individual or group authority over the sum of the parts. In other words, systems are autonomous and self-organising (whether biologically or by the stakeholders of an engineered project), whereas networks are sustained by systems and are relational and dependent on participants.

The idea of systems in art is seen through the discourse of art and, in general, stems from the writings of Roy Ascott (2013) and Jack Burnham (1968; 1969), and also early art and technology initiatives such as *Experiments in Art and Technology* (EAT) (Melvin 2015). Connected to this discourse are movements that combined art and telecommunication (Grundmann 1984; Chandler and Neumark 2005), which included artists such as Kit Galloway and Sherrie Rabinowitz who created the long-running project *Electronic Café*. While Krysa (2006; 2008a; 2008b) certainly spoke about system development in the context of curatorial practice, academics such as Dieter Daniels (2009) served the purpose of connecting historical discourse between the previously mentioned artists, writers, and movements with net and later Internet art. However, before moving into the net and Internet-based art discourse on systems practice, it is important to understand the context around system theory and aesthetics within art.

The notion of a system (or autonomous self-organising structure or organism) in the scientific realm originated from the field of cybernetics, a multi-disciplinary, collaborative field (Wiener 1985 [1965]). Developed during wartime (Second World War) and later popularised as a mainstream field, the notion of cybernetics became wide-reaching when reading Wiener's book, contrasting disciplines such as psychology and mathematics, communications theory with biology and so on (Ibid.). Thus, it is little wonder why individuals like Ascott and Burnham in the 1960s attributed the cybernetic field and certain of its methods to the world of art. For instance, Burnham in two separate articles for *Artforum* explored the ideas of a systems aesthetic (1968) and the autonomation of real-life systems (1969) in contrast to art. The image we take from Burnham suggests that in the post-war era (leading up to post-modernism) the world changed from an "*object-oriented* to a *systems-oriented* culture" (Burnham 1968) as society moved toward organisational problem-solving. In many instances, this societal conversation at an artistic level played out through the actions of conceptual artists that became "'deviation-amplifying' systems, or individual who, because of psychological makeup, were compelled to reveal psychic truths at the expense of the existing societal homeostasis." (Burnham 1969).

Similarly, around the same period, Ascott followed Burnham's ideas, and described his own artistic practice:

> Behaviour is an important reference in my considerations of space, time, and form. I make structures in which the relationships of parts are not fixed and may be changed by the intervention of the spectator. As formal relationships are altered, so the ideas they

> stand for are extended. I am conscious of the spectator's role. […] the participant
> becomes responsible for the extension of the artwork's meaning. (Ascott 2003: p.98)

Between the years of 1966-67, Ascott produced a two-part essay titled "Behaviourist Art and Cybernetic Vision" to bring attention to the growing trend in modern art classified as 'behavioural', which he linked to cybernetic theory and outlined a technical and social framework, which he termed a *Cybernetic Art Matrix* (CAM) (Ibid: p.110). Interestingly, Ascott attributed this notion of praxis to his role as an educator, thereby freely created ambiguity between his artist and educator roles (Ibid.: pp.103-107). Thus, the art educational course Ascott established in the Ealing School of Art was, in many ways, an outline of a cybernetic system that was connected to his own artistic practice. I would suggest just that: Ascott was already in the mindset of developing whole systems of interplay contingent on participants that shaped the work, thereby creating organic art systems.

With this in mind, the notion of a system practitioner developing from these beginning shares several traits: (1) as Burnham put it, a perspective of a *system-oriented* culture; (2) the inclusion of the spectator in the creation (or completion) of the artwork, and similarly the spectator's ability to affect the work of art; (3) the importance of the *underlying components* of the art system; (4) the implementation of 'real-time systems' and the revealing of these systems as critique. If we take this lineage into account, and that net art (and by extension Internet art) pertain to system theory and system aesthetics – we can see artists in and out of new media reverberating with either one or more of these behaviours. For instance, Cornelia Sollfrank's *Female Extension* (1997), in which the artist developed a fake artist generator, which she used to enter fake contestants into one of the first net art open calls. In Sollfrank's own reflections, she noted that the piece was deeply linked to institutional critique, before ending the reflection with the echo of the birth of the *net.art generator*[5] (Sollfrank 2010). Likewise, British trio Matthew Fuller, Colin Green, and Simon Pope investigated the controlling portal to the Web (the Web browser) in the form of the project I/O/D 4: *The Web Stalker* (1998), which, similar to Sollfrank's project, produced an open-source software artwork though, in this case, a highly complex protocological object (3.1.4), that criticised the standard HTML layout.

To link everything back to the curatorial and the *distributed mode for curating*, we can observe connections through practice between artists who engaged with systems as a medium to those of curators working in a *distributed mode for curating*. Eva Grubinger, curator and initiator of *C@C*, in her own reflection on the project, shared several notions similar to the identified traits of system practitioners and even pushed passed academic commentators that referred to her project as a pursuit of 'software' as a curatorial framework. Grubinger stated that *C@C*'s "greatest achievement […] was the programming of SFTT – the Simple File Transfer Tool. Today PHP systems and other means for multipart uploading of files can often be found on the Web but, at the time, such a tool did not exist anywhere else" (Grubinger, 2006: p.108). This would indicate, similar to the examples given above, that while *C@C* visibly engaged with an autonomous system, and allowed the spectator to become an active participant, *C@C* also took into account the underlying structure that made the system as a whole function. Thus, it is safe to assume when speaking about net or Internet art and by extension the curating, the idea of a system making has become an integral part of the practice of online artists and curators. It is this realm of practice that this thesis focuses on, as it most resembles my own practice and work with the online collectives Agorama and PILproject (3.2; 3.3).

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[5] *The Net.Art Generator* is software developed by Cornelia Sollfrank and was the primary tool used in her performative online work *Female Extension*. After the subsequent online 'performance', Sollfrank released the software as a free open source artwork (Sollfrank 2010).

2.2 Art, Space and the Network

The concept of space – or the perception of the spatial boundaries of artwork, exhibition, or project – has expanded within the arts to incorporate a wide variety of ideas to explain divergent or emergent practices. For instance, during the first quarter of the 20th-century *avant-garde* movements such as the Dadaists, and later the Surrealists, pioneered techniques for exhibition and display that involved immersive installations that created ambiguous relationships between the exhibition and artwork objects. These experiments would later be known as the precursors to artistic practices such as *installation art*. Artist philosophers, like Brian O' Doherty (1976), analysed these situations and assessed that these practices manifested out of an experimental necessity to challenge traditional display aesthetics formally established by institutions. Furthermore, avant-garde classed practices, such as those of the modernists, signalled a situational happening directly related to the period in which such artist movements took place. Thus, when considering evolving ideas of space and perceptual boundaries of artwork, exhibition, or project, they are a consequence of several factors like time and socio/eco/politico factors.

While there have been several expansions to the situation of the artwork and exhibition, the WWW in the early 90s and the rise of movements like net art can be considered one of the biggest upheavals to this body of discourse. Due to the nature of the Internet environment and the pace of change the system experiences, the Web has not only introduced a disrupting factor to the situation of art and the exhibition, but also an environment that is in constant flux and which has reinvented itself several times over the course of its life (2.3). The next sections explore the discourse of evolving art practices and the theoretical and curatorial writings on these practices to better understand the current spatial situation for the exhibition space.

2.2.1 The Site of Art: Overview

The evolution of art and its site of the exhibition has been extensively mapped in historical texts documenting the histories of the *avant-garde* - for example, those of the *Dadaists, Surrealists,* and *Conceptualists* (O'Doherty 1976; Altshuler 1994; Kachur 2003). This would be a continuing trend into the 90s with the introduction of Marc Augé's concept of the *non-place* (Augé 1995) that would become an influential idea in academia and which, in turn, would attribute the notion of the *non-place* to movements such as land art and the site-specificity of the artwork (Mayer 1995; Kwon 1997). With the introduction of the WWW, the 90s witnessed a wealth of upheaval to spatial standards, bringing to light new ways of thinking about space and the site of art (Berry 2001; Cook, Graham & Martin 2002; Daniels 2009). The primary disrupting factor was decentralisation; prior to the Internet artists and curators alike needed to attain a public platform to present their work and content to an audience, whereas the WWW presented an alternative mode of content dissemination that allowed anyone with a computer and an Internet connection to have access, thus bypassing traditional gatekeepers (Greene 2003; Daniels 2009).

The majority of discourse on net art history can be seen as a period of academic re-contextualisation of previously-used theories, such as connecting net art and its activities to the concept of the *avant-garde* or the art cannon (Frost 2009). For instance, in Josephine Berry's doctoral thesis, she took the stance of "reading net art through the historical prism of avant-garde attempts to contest the artwork's autonomy and the artist's singularity through two primary vectors: dematerialisation and global, spatial extension" (Berry 2001: pp.17-18). Another such example is the essay by Dieter Daniels (2009) that called for the revision of the 90s net art

history, brought to the forefront the classification of *avant-garde* for the activities of early net artists and projects, and this had a similar tone to Berry's thesis that qualified net art as a practice that reshaped thinking about art. In an alternative perspective, Julian Stallabrass wrote how net art used the idea of the Internet as a "space for information exchange" (Stallabrass 2003: p.56). However, contrary to Berry's perspective, Stallabrass asserted that the Internet is not a medium *per se*, but a "transmission system for data that potentially simulate all reproductive media" (Ibid.: p.12).

In terms of art practice on the Web after the 2000s, questions around a *post-Internet* form of art arose alongside that of the online v. offline discussion. Beginning with *post-Internet* art, it is difficult to understand the exact impact this small group of artists and curators had on the site of art. However, examining the literature about *post-Internet* (McHugh 2010; Vierkant 2010; Olson 2011) there is a shift in perspective towards the spatial situation of the exhibition or site of art. Take, for example, Artie Vierkant and his thoughts on a *post-Internet* reality:

> "Post-Internet is defined as a result of the contemporary moment: inherently informed by ubiquitous authorship, the development of attention as currency, the collapse of physical space in networked culture, and the infinite reproducibility and mutability of digital materials." (Vierkant 2010)

In view of Vierkant's ideas, we can see that reality shifted for this artist in particular. Take, for instance, the statement "the collapse of physical space in networked culture," a completely opposing view of the Internet to that seen in the critiques of Internet consumption by Gere Lovink (2012, 2013) and Ulises Ali Mejias (2013). In terms of debates around online v. offline, this discussion originated from the net art period of the 90s, in particular from the attempts of institutions and commercial galleries to display online art offline or impose other forms of control in contradiction to net art ethos (Greene 2003). For example, one famous case was Documenta X (1997) and its commissioned website for the festival that year by Vuk Cosic. In Cosic's recollection, Documenta planned to take down his Web commission after the festival ended and put the website onto a CD for resale to art goers. In protest, Cosic duplicated the commissioned website's code and republished it on his own server, thereby maintaining its free accessibility to all Web users (Cook et al. 2010)[6]. Later developments in the online v. offline discourse after the 2010s saw subtle changes towards the acceptance of the online, with critic and curator Domenico Quaranta noting that the debate had shifted to "a more mature understanding of the contemporary world as an inextricable unit of real and virtual, a unit in which the mediation—in any form—becomes a critical step in our understanding of reality" (Quaranta, 2014: p.28).

2.2.2 The Internet Platform and Network as Site

The history of the Internet platform as a site for art begins with the introduction of the Web, though some historians would argue that the concept of the Web platform refers back to the 80s' BBS, where such *artist-led curatorial activities* like THE THING originated from before the WWW in the mid-90s (Daniels 2009). The platform as a concept has had several different conceptual interpretations: Goriunova's historical evaluation tracing the concept's political narrative from the English Civil War, before outlining a contemporary definition of "a set of shared resources that might be material, organisational, or intentional that inscribe certain practices and approaches in order to develop collaboration, production, and the capacity to generate change" (Goriunova

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[6] Documenta has since republished Cosic's Web commission, which is still freely available here: https://www.documenta12.de/archiv/dx/english/frm_home.htm [Last accessed: 05/11/2019]. Vuk Cosic maintains to this day his 'stolen' version of the Documenta site: http://www.ljudmila.org/~vuk/dx/ [Last accessed: 05/11/2019].

2013: p.8). For clarity, I will only be covering the practical discourse relating to Web platforms, beginning from the WWW and the introduction of HTTP and HTML for a consistent context in line with my practice paradigm.

For institutional settings, the new media curator Steve Dietz (1998) outlined a number of different online/offline exhibition arrangements, bringing forth the conceptual idea of a distributed exhibition. The importance of Dietz's work cannot be stressed. Through his analysis of online, or online + offline institutional exhibition, Dietz observed several configurations of distribution between online exhibition platforms and their offline counterparts (Ibid.), which would give rise to the *distributive exhibition model* (Cook and Graham 2010; Ghidini 2015; Ball 2017b). One important thing to note is the distinction between a *distributed model of curating* and a *distributive exhibition model*. While the *distributed mode of curating* has been discussed in depth due to its connection to an *artist-led curatorial initiative*'s paradigm (2.1.2), *the distributive exhibition model* refers to the actual makeup of an exhibition or project, i.e., the number of platforms involved (both online and offline) and the relationship between these platforms. The idea of a distributive exhibition model derived from the practices of net and Internet artists who relied less on a fixed space and more on modes of information circulation (Cook and Graham 2010: p.155). What is attributed by the model is: first, that working in a distributive network means there is an absence of a fixed exhibition space, allowing for a multi-spatial dissemination of artistic or curated content; second, that within the absence of a fixed exhibition space the role of the curator had to change to meet the demands of the art in a distributive environment (Cook, 2008: p.39).

More recent developments in *the distributive exhibition model* came from the doctoral research of Marialaura Ghidini (2015) that investigated an artwork migration from an online platform to an offline one. Ghidini's contribution to the field can be summed up in two key points. The first was the development of three exhibition types under the distributive model's umbrella, each detailing the level of distribution within a *distributive exhibition*: (1) the *extended exhibition*: "a Web-based show that is integrated with offline formats of production and sites of display to *re-present* the online component for a different exhibition context" (Ibid.: p.99); (2) the *complementary exhibition*: "The 'complementary' exhibition instead reaches completeness in the migration, in the integration of the online component with offline formats of production and sites of display" (Ibid.: p.100); (3) the *distributed exhibition*, which equated to an amalgamation of sites for the dissemination of art (Ibid.: p.158). The second contribution by Ghidini came in the form of language used for the artwork's movement between platforms and replaced the commonly used idea of 'translating' with the 'migration' and 'integration' of an artwork, thereby producing a more tactile feel for the language used for discussing immaterial artworks.

This development in the exhibition model is central to understanding how artists and curators alike use the online space in practice. It is also the element that can indicate how the distributive exhibition model has evolved to match the current line of artistic practice. For instance, in the following section (2.2.2.1) it will be shown how the historical activities of net artists of the 90s and early 00s have shaped the current understanding of a distributive exhibition, which also indicates the direction for more recent studies on this online exhibition model (Goriunova 2013; Ghidini 2015). The later section (2.2.2.2) will focus on newer artistic concepts for space in a mobile smart technology environment – to better understand the current playing field and set the stage for this thesis' research question: "How have artist-led curatorial initiatives and perceived advancements in space affected the distributive exhibition model?".

2.2.2.1 New form Public Space

In 2004, Josephine Bosma published an online essay entitled "Constructed Media Spaces", which described the development of a new public domain that incorporated the Internet. While slightly misguided in her selection of the terminology "public domain"[7], her essay described how constructed media spaces were appropriated by net artists and subsequently used to form new variations of public space that she termed "public domain 2.0" (Bosma, 2004). While this thesis disagrees with Bosma's use of the label "public domain 2.0" because of its links to copyright law, it does agree with the identification of new formations of public space, which was anchored to the Internet platform.

This notion of the platform as pseudo-public space can be seen in the previously reviewed writings by Berry (2.2.1), where she cited net art's dependency on its site, the Web - described as a functional site-specific medium (Berry 2001). A further indicator of this distinction can be found in Annet Dekker's (2014) research on the conservational needs of net art. In the study, Dekker stated, "net art is built and distributed through a complex, intricate, and interrelated system of networks that presents an assemblage of art, technology, politics, and social relations – all merged and related to form a variable entity" (Dekker 2014). In other words, she highlighted the central importance of the net art platform, which acts as both container (for the assemblage of artistic activities, all classified as artworks) and an artwork. Thus, what can be assumed for this period of net art and its idea of space on the Internet is that it revolved around the personal website and the interconnected network (HREF) to the site.

With this understanding, we can now begin to understand the artistic practice that revolved around the online space. Take the instance of the essay by Joachim Blank on what makes up a net art practice, in which he described two modes of operation: "Context Systems" and "Researchers, Troublemakers, Individual Perpetrators" (Blank 1996). For the first, Blank explained the WWW's potential for establishing autonomous spaces run by artists, "and to do this not as an individual, but as a collective group project". For the second, he outlined the idea of using the Web as a tactical medium (Ibid.). Within these two modes of operation, we can begin to see the site-specificity for net art. Blank's ideas on platform building were very much in Bosma's observations on the development of a new public space. In addition, because of the implication that this form of system building is collaborative, the notion of an Internet hub suddenly becomes a point of connection – or, in other words, a public space for meeting with others. As to the second of the modes of operation, the use of the Internet as a tactical medium, this explicitly describes a scenario of circulating traffic, i.e., Internet users, and more importantly refers to Augé's (1995) notion of the non-place and its compatibility with the Web at large.

2.2.2.2 Mediated Space

As stated before, it is difficult to ascertain the influence of technological development on the particular movement of post-Internet art, especially because many of its practitioners were strongly opposed to the label of *new media* (Vierkant 2010; McHugh 2010; Olson 2011). However, one particular study by artist and academic, Maria Miranda, has been identified as an important guide to contemporary artistic practices within a networked society. The crux of Miranda's research was related to what she termed "uncertain" practice and was contextualised as the interplay of artists on a distributed network with their works located across various sites – both online and offline. This created what she called an "unsitely aesthetic" due to the "paradoxical multi-sitedness *and* situatedness of the work and its reception" (Miranda 2013:

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[7] The term public domain relates to intellectual property and copyright, and specifically describes those pieces of creative works, such as those from Shakespeare and Beethoven, that no longer fall under copyright [in the UK 70 years after the death of the originator]. Thus, they are part of the public domain.

p.39). What is particularly important from this study is the identification of a changing praxis between the artist and the Internet – something which she cited as a transitional period that she witnessed around the end of net art. Thus, within her study, we can identify a rupture point. Central to this process is Miranda's analysis of the mediated space within a networked culture – which she essentially described as a situation where public space has now become a mediated one through the introduction of mobile units and the increasing network interactivity between people and mediating technologies.

The idea of mediated space is a combination of several media theories that changed the landscape of digital media, while also questioning our notion of spatial perception. One example is Scott McQuire's investigation of the changing urban landscape – where he emphasised an increasing "dislocation of 'place' from 'space'" (McQuire 2008: p.21). The idea brought forth here was that of *rational space*, which was defined as an environmental condition on the contemporary situation, where "social relationships" have become "radically open" (Ibid.: p.22). Stated in another way, this described the experience of the social self as a scattered Web of interactions. Moreover, within a mediated space we also find the idea of the surveilled space, via the research of John McGrath (2004), whose work took a different approach to surveillance, through his background in theatre. From his research, we begin to understand the idea of surveillance as space, which was described as the junction between surveillance and the person being surveilled. This became a performative space within a networked society (Ibid.), a view that gives Miranda's mediated space an interesting performative aspect, one which was derived from voyeurism by a non-specialised audience, or derived from the increased dissemination to audiences outside the normal art context. It also gave mediated space an interesting quality, that began to denounce the idea of the non-place, which Miranda suggested is "now filled with either private connections or noisy devices" (Miranda 2013: p.82).

In this instance, we can see the dichotomy between the spatial usage of today's artists and that of the 90s net artists. Ghidini has written about how artists operate on the Internet today, stating that they are appropriators of different platforms (e.g. YouTube and Facebook):

> "This has led to an increasing growth of artistic gestures operating on Web-based platforms, many of which do not require a high level of technical expertise, i.e. Web coding and platform building; rather, they occur through 'confiscating', re-arranging, customising ready-to-use Web interfaces, often hijacking their structure and mocking their inner technical workings. At the same time, such gestures operate 'through' Web-based platforms in that they give life to artworks which are not intrinsically dependent on the interface adopted for their future existence or distribution and reception; rather, they often disengage with the interface to take up other forms and formats, from a publication in a bookshop to a radio show." (Ghidini 2012)

It is through this combined picture, that of the post-Internet artist and the observations of Ghidini and contemporary artists' operations, that we can begin to understand how Miranda's concept of mediated space can be perceived as the environmental change for current situations. With the introduction of smart mobile technology, the Internet became a tool that could accompany people wherever, and this further increased the democratic nature of the online space, which can be felt in the views of post-Internet artists and their distancing from the technology.

2.3 The Network: March to Download Culture

Critical media theorist Peter Lunenfeld (2011) described computers as the youngest of three culture machine siblings: the first being the atomic bomb that symbolised fear amongst the populace in the 20th Century; the second being television, the one that captured the attention of society; the third, the WWW, Lunenfeld explained, had the greatest potential of the three, through its capacity to allow users to equally engage in downloading and uploading culture[8] while being systematically connected to everything. Historically, the introduction of the WWW within artistic circles saw the rise of what Lunenfeld termed *upload culture*, with other theorists like Alexander Galloway noting the tactical use of media and the hacker mentality (2004), which re-enforced earlier artist writings on net art practice, such as Blanks' "What is net art;-)?" (1996).

However, after the *dot com bust* of the late 90s and early 00s, the WWW experienced a paradigm shift that was categorised as *Web 2.0*. Goriunova describes *Web 2.0* as "an umbrella term, which has even been claimed as a trademark, that has been used to address the diversity of technical means enabling Internet users to participate, exchange, link, map, upload, post, edit, and comment—all in all, to engage in social creation online." (Goriunova 2012: p.10). It is difficult to fully understand the full ramifications of this sociological shift on the Web; however, I feel it is best categorised by the conceptual road map of the *semantic web*, by the WWW's creator Tim Berners-Lee. To give a little context, the term *semantic web* was floated around the same period as *Web 2.0*. Its origin comes from an early paper by Berners-Lee, which outlined a fictional situation where computer *agents* were able to facilitate from Web searches personalised services to the respected searcher (Berners-Lee, Hendler, Lassila 2001). At its core, the *semantic web* called for a universal semantic ontology for data that computers could read autonomously and intelligently, without AI (ted.com 2009). Thus I see the *semantic web* as the foundation for the age of mass data, and the main technological trigger for the participatory *Web 2.0*.

The push of the participatory Web was described by Lunenfeld as the continuation of the diabetic consumer culture introduced by television, i.e. a consumer ideology, or *download culture*. Artistically, there were several different waves of Internet-based artists (teleportacia.org 2007); however, *post-Internet art*, while small and brief, represented this social and ecological shift on the Web excellently. Take Gene McHugh's (one of the curators that popularised the term *post-Internet*) statement:

> On some general level, the shift of the Internet to a mainstream world in which A LOT of people read the newspaper, play games, meet sexual partners, go to the bathroom, etc. necessitated a shift in what we mean when we say 'art on the Internet' from a specialised world for nerds and the technologically-minded, to a mainstream world for nerds, the technologically-minded and painters and sculptors, and conceptual artists and agitprop artists and everyone else. (McHugh 2011:18)

The point being emphasised here is that the Web had transitioned from a landscape where technology was at its centre, to one where it had become invisible, or 'democratic'. And this can be seen clearly in the distinction between *post-Internet art* and its forebear *net art*. While the 90s and early 00s are characterised by a type of system building within the arts (2.1.2; 2.1.3), the work of *post-Internet art* is characterised by the engagement in a consumerist culture (McHugh 2010; Olson 2011) and that of remix culture and appropriation (Lessig 2008; Ghidini 2012).

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[8] Lunenfeld describes download and upload in human society as: "Downloading means pulling data into a system and connotes moving information from a main or central source to a peripheral device. Uploading, by contrast, carries associations of moving data not only from a periphery to a core but also from one device to many, flattening out the hierarchy of production, distribution, and reception." (2011, p.1)

To practice Internet art today, an engagement with technology is still vital, albeit somewhat invisible (Galloway 2012: p.25). In this case, practitioners circulate around seamless interfaces linked to social media platforms that simultaneously connect them to a wider networked audience. This entails a multi-platform practice because the practitioner has to interact with several different social media platforms and services to remain relevant on the participatory Web. A point of interest here is "art on the Internet", which categorises the type of conceptual involvement that has dominated the mainstream art world's imagination about Internet art. This is not to say creativity cannot thrive in a centralised Web. However, for artists that increasingly challenge and *upload* critical content, having everything happen in a centralised portion of the Web brings new institutional challenges. Take, for instance, artist Benjamin Grosser, who has coded numerous browser plugins that affect the Facebook platform aesthetic: in an online conversation between me and the artist, he described a situation in which all of his artwork was at risk of being destroyed if Facebook deemed it undesirable (facebook.com 2018).

2.3.1 Web 1.0: A Brief Overview of Artistic Web Practice

The history of *Web 1.0* is well documented by historians (Naughton 1999; Introna and Nissenbaum 2000; Stallabrass 2003; Greene 2004; Battelle 2005). However, one note to make is the 'bittiness' of this history, meaning each historical narrative about the WWW revolves around different cultural, economic, and technological aspects of the Web. To make sense of this fragmentation, this section will focus on several *key* components that make the Web what it is today, namely the desktop browser, search engines, and the 'dot com' bubble. Interestingly, when reviewing the artistic histories documented by new media historians we see the trajectory of artistic activities narrated by these histories running thematically parallel to real-world events. This synergy between the activities of artists and those of the budding WWW also shows that Internet artists, whether under the net art tag or not, have been present at every pivotal turn in the Web's development path. Examples like *Web Stalker* by I/O/D (1998), the *File Room* by Antoni Muntadas (1996), or *Beacon* by Thompson and Craighead (2005) serve as good examples of activities that mirror these historical events.

2.3.1.1 The WWW Portal => The Browser

Naughton's historical narrative (Naughton 1999) highlighted the significance of the browser in the Internet's history and how five months after the alpha release of the first image-based browser, *Mosaic*, HTTP traffic, which accounted for 0.1 percent of Internet traffic at the time, increased tenfold. Naughton described Berners-Lee's pioneering software program as "a programme that stood between the user and the vast and disparate information resource of the Net" (Ibid.: p.238). Thus, it is also no wonder that the subsequent narrative of what is known as the "browser wars" also dominated the pages of Naughton's narrative on the Web's history. To briefly explain the "browser wars", this period of the Web began with the introduction of the now-defunct Netscape Navigator in 1994, followed by Microsoft's Internet Explorer in 1995. Upon the arrival of Microsoft's browser, the company and its rival, the previously dominant Netscape, entered into a commercial war of attrition, roughly from 1995 to 1998/99, and released version after version of their platform in a race to gain market superiority. This period ended with the subsequent break-up of the Microsoft Corporation after the company violated antitrust laws through monopolistic practices that used the Windows operating system to distribute Internet Explorer. Netscape, on the other hand, having sustained heavy financial losses competing against the tech giant was sold to AOL, but not before open-sourcing its browser's source code (Ibid.).

The significance of this period cannot be understated. During it, net artists, working in tactical media, developed works critically reflecting on this capitalistic colonisation. A previously touched upon work, *Web Stalker* by I/O/D (2.1.3), directly spoke about this era in the development of the Web by proposing an alternative vision to those of Navigator/Internet Explorer. Matthew Fuller, one of the I/O/D trio, remarked in an essay for the *Web Stalker* project that, "Winning the Browser Wars would be a chance to construct the ways in which the most popular section of the Internet - the World Wide Web - would be used, and to reap the rewards" (Fuller 1998); the rewards, in this case, would be unprecedented financial gain from the growing Internet market. The importance of I/O/D and their work on *the Web* Stalker emphasised the importance of Berners-Lee's original proposal to CERN, which subsequently became the WWW, and why data stores were to be separated from the software for displaying this data to a user:

> The only way in which sufficient flexibility can be incorporated is to separate the information storage software from the information display software, with a well-defined interface between them. […] This division also is important in order to allow the heterogeneity which is required at CERN (and would be a boon for the world in general). (Berners-Lee 1989)

This separation is foundational and the basis of the Web's decentralising power. With systems of data storage separated from the means of visualising that data, users had the freedom of choosing the content they wanted to explore through a generic programme. What this fostered was an economical system whereby information providers, i.e. the server-side givers from Berners-Lee's model, provided access to their data under a unified Hypertext protocol to any browser programme. It's clear, from I/O/D's work and writing on the *Web Stalker* project, that this was the group's main artistic critique of the 'browser wars', and also a foreshadowing of later events such as the dominance of Google's own browser, *Chrome*.

2.3.1.2 From Chaos to Order => The Search Engine

With the arrival of the WWW and the first browsers, users of the network found a new sense of freedom driven by Berners-Lee's client-server model of the Web. However, this introduced an additional problem to the already complex system, namely *search*. The term 'search', within the discourse of the Web, refers to the organisational indexing of the Web's content. Similar to the history of the Web browser, *search,* or the search engine, is marred by the history of corporate competition (Battelle 2005), technological advancements (Introna and Nissenbaum 2000), consumer controversies, and the struggle to maintain neutral algorithms over search results – for example, the scandal of 'preferred placement' and the search engine AltaVista (Rogers 2000). Simultaneously, this historical narrative of the Web was also mainly dominated by the story of Google and its rise to economic power (Battelle 2005).

Within the art historical narrative, 'search' was also a background character, with authors touching upon its brief history in introductions to Internet Art (Stallabrass 2003), or instances where this element of the Web became the target/medium of an artistic artwork (Greene 2004; Paul 2008). One particularly key aspect of the search engine issue for the arts was discoverability (Neddam 2010). In one incident that involved the net art group *etoy*, the group became involved in a legal dispute over the ownership of their domain name *etoy.com* with a corporate Web retailer that had registered it. This also elicited the comment that consumers "of every kiddy's favourite corporation were confusing customers who also risked being exposed to pornographic and violent (a.k.a. European and arty) content" (metamute.org 2000). *etoy*'s subsequent reaction was the project called *toywar.com*, the DNS reclamation project that was

rumoured to have put *eToys* (the corporation) out of business. The area of *search* also speaks of the archive and, prior to the whole indexing of the Web by companies like Google, projects such as Antoni Muntada's collaborative project *the file room* sought to provide an archive on cultural censorship, thereby acting as a search engine index in its own right as the project's subscribers began indexing censorship concerns for other Internet-based companies like AOL (Stallabrass 2003).

Later artworks from the 2000s investigated the survey-ability of search engine queries like the example of Thomson and Craighead's *Beacon.* Within this project, the artists stated that *Beacon* was an "archive comprised of over one million searches made between 2009 and 2020 and forms a historic snapshot of human activity during a decade of unprecedented technological change" (thomson-craighead.net). Yet, at the same time, this artwork also spoke of the accessibility a person or company has over the data submitted to a search engine, which highlights the expansion of technology and the introduction of an API economy (Ch.4).

2.3.2 Web 2.0: A Brief Technical Overview

What is Web 2.0? This term has been thrown around a lot over the years and has taken on several different meanings from "the Web as a Platform" (oreilly.com, 2005), to specifically combined technologies known as Asynchronous JavaScript And XML (AJAX)[9]. It has been characterised as a democratic environment (paulgraham.com 2005), or what was sometimes considered the 'Participatory' Web (Goriunova, 2013). Whatever the case, this chapter of the Internet marked a line in the sand for a different type of progression, one that affected the Web's architecture, economy, and the social/cultural function (users' participation) developing in the virtual realm. The term itself originated with, and was made popular by, the founder of the O'Reilly Media Company, Tim O'Reilly. This took place via several conferences given by O'Reilly's company and a series of online articles detailing the dichotomy between a Web 1.0 company and a Web 2.0 company (oreilly.com, 2005). Interestingly, the original claim that there were "throngs of geeks" at O'Reilly Media's event (as described in Wired Magazine by correspondent Ryan Singel)[10] actually misrepresented the attendees; in fact, the event was mostly attended by high-profile executives and VPs (paulgraham.com 2005).

Probably one of the best overviews covering this iteration of the Web can be found in Goriunova's *Art Platform and Cultural Production on the Internet.* In her analysis, Goriunova discussed the contrast between Web 1.0 and Web 2.0:

> O'Reilly and his confederates stress the technical side, maintaining that the previous (Web 1.0) versions of online creation and collaboration were only open to people (understood as companies) who had software packages with which to, first, create content with some other word, image, or video processing software, then create an html version of it with an html editor, and then upload the data with a file transfer application. […] By contrast, and still in technical terms, Web 2.0 platforms allow any user to create, upload, and edit data within the browser window without the need for special desktop software: All applications are served through a Web browser that allows interaction with any content. (Goriunova 2013: pp.10-11)

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[9] Asynchronous JavaScript And XML also known as AJAX is a combination of different programming technologies and protocols which allows websites to speak with servers asynchronously without having to reload the page. Data can take the form of XML, however JavaScript Object Notation (JSON) is commonly used. For more information please see the W3 standard "XMLHttpRequest Level 1": https://www.w3.org/TR/XMLHttpRequest/ [Last accessed: 20/12/19].
[10] Link to original article from Wired.com: https://www.wired.com/2005/10/are-you-ready-for-web-2-0/ [Last accessed: 20/12/19].

Essentially what this means is that the type of platform service that became commonplace for Web viewers to visit were those that offered a high degree of interaction or individualistic participation. This gave rise to 'server platforms' (or Web applications) such as Myspace (2004), Facebook (2004), blogging platforms like WordPress (2003), YouTube (2005) and so on. What this entailed for the period has been written about in countless media and cultural texts, from artistic appropriation and remix culture (Ghidini 2013) to the analysis of how democratic corporate platforms such as YouTube evolved (Lovink, Niederer 2008).

However, there is an underlying story to this iteration of the Web, one which Goriunova specifically highlighted, which was that this "umbrella" term only went so far and was unable to address the politics of the Web's architecture. During the 2009 Web Summit, one of the featured events presented the creator of the Web in conversation with the man who coined the term 'Web 2.0'[11]. On stage together, the two jostled over topics, and O'Reilly jested that maybe Berners-Lee was a socialist for releasing the WWW for free. In many ways, this conversation emulated the underlying development of a broadening of the way we think about Web development. On the one hand, there was Berners-Lee and the semantic web with its universal notation system and on the other hand, there was O'Reilly championing for reinvesting in new media by capitalism.

2.4 Summary of Research Context

To return back to the research questions and relate them to the context given above, a primary focus is on the cause and effect of actions of artist-led curatorial initiatives. As stated in section 2.1, the term encompasses a broad range of activities and practices that are characterised by the types of subject with which the artists engage. As identified, my practice resembles what other researchers have termed the *distributed mode of curating* and the development of *distributive exhibitions*.

To first summarise the mode of curation; this method of practice is observed for its flexibility, and several researchers observed the curatorial position changing to take up non-normative support roles, e.g. broadcaster (Ghidini 2015). While this is an accurate observation borne out by this research (Appx.3), the notions of systems described by Krysa (2008) and the facilitation of autonomous self-run systems, e.g. computer viruses, seem a better explanation for the fluidity of a distributed curatorial practice. This is shown in the analysis of this chapter which identifies similarities in trends for the transformation of the curatorial role, namely where the modes of practice are a means to develop and or facilitate a system for the dissemination of the exhibition's content (2.1.2). Additionally, in reviewing the history of artist-led curatorial projects, each case exhibits situations of a developing ecosystem of artists, users, and the projects' facilitators (2.1.3). Thus, when addressing the distributed mode of curating, this thesis moves beyond modes of practice and acknowledges that engaging with this type of practice is to develop, support, and/or facilitate systems. Because no single system is the same, this also helps clarify the idea of a curator or artist-led curatorial group whose mode of practice changes from project to project.

Regarding the notion of the *distributive exhibition model*, this type of project is intrinsically linked to a distributed curatorial practice and it is important to distinguish between the two (2.2.1) to better understand the implications of this project's effect on the exhibition site in the discourse of new media. As identified in section 2.2, the site of art is an interesting discourse that relates the advancements of a site to that of the *avant-garde* or an avant-garde 'styled' practice. This points

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[11] Video of the full conversation can be found on YouTube: https://www.youtube.com/watch?v=KY5skobffk0 [Last accessed: 10/12/2018].

to how this form of grass-root or self-organised activity emphasises innovation in social constructs. For the notion of an artist-led curatorial initiative, these types of collectives have been recorded historically as having a tight interplay between their artist counterparts. Furthermore, much of the historical narrative interweaves artistic and artist-led curatorial groups together, especially when approaching the 90s, at which time there was an increase in the ambiguous nature of the curatorial position and signals - specifically for the *distributed mode of curating* – a link to innovation for the exhibition site (2.2.1; 2.2.2). However, while curatorial discourse has capitalised on earlier notions of changes to public space and the various historical uses of the Web platform (2.2.2.1), recent artistic research (2.2.2.2) regarding the introduction of smart mobile technology and its reshaping of social relations and public space has paid little to no attention on how active artist-led curatorial initiative practitioners are reshaping the *distributive exhibition model*.

This brings us up to the point of *contemporary Internet practice* and developing an exhibition in the current Internet environment. For section 2.3, it was important to set the context for what the basis of the WWW is: the client and the server. While the WWW presents an elegant and simple model of distribution and decentralisation, the history of the Web is bursting with the story of control over its architecture. For instance, while the narrative on the browser and the field of *search* and the 90s was only touched upon (2.3.1.1; 2.3.1.2), both are currently under the control of Google. This means Google can essentially dictate its own paradigm through a variety of elements, such as page rankings, i.e. search, or, whether or not a platform is compatible with its browser. In addition, if we examine social media platforms e.g. Facebook, Instagram (Facebook), Twitter and YouTube (Google) in the same light, each of these social networks also impose their own development and *upload* paradigms. For artists and creative practitioners, this indicates a dependency on these superstructures for audience engagement, which was analysed in depth (2.2.2.2). Yet, when focusing on the scope of artist-led curatorial initiatives with a distributed mode of curating that includes a member that can code, we find again that the field has not had any new contribution to knowledge that interrogates the idea of a system maker within this landscape.

The context taken forward for the following chapters is the notion of an artist-led curatorial initiative that engages with a *distributed mode for curating* (i.e. system development and facilitation), and how my own practice affects notions of Web development. Additionally, in light of recent artistic research relating to the usage of space online, this thesis analyses the uptake of this artistic discourse into my exhibition making practice to understand how the distributive exhibition model is evolving.

Chapter 3 - Practice Research and Knowledge Output

3 Practice Research and Knowledge Output

The last chapter identified that there has been very little investigative and practical research into the activities of practitioners that can code the platform involved in *distributive exhibitions* (which I term a *system maker* paradigm)*,* and also working under the notion of *mediated space* and the accompanying *uncertain* artistic practice. In an attempt to fill that gap, this chapter presents two practice-led case studies of two separate artist-led initiatives that pertain to my own personal practice. The first of these projects is PILproject, an online collective that began as Agorama's first commission in 2015, which I became a member of after the initial project[12]. The second is Agorama, a collective that critically explores network technology that I co-founded in 2014. While the projects share beginnings, over the past 4 years both have experienced individualised developments including conceptual focus, collaboration styles, and exhibition-making.

Before discussing the case studies in their analysis sections, it is important to discuss the research I conducted during the time period covered by this thesis. Therefore, the following sections of this chapter focus on previous studies undertaken (3.1), and the analytical tools used. After the introduction, this chapter discusses the three areas of analysis (3.1.1; 3.1.2; 3.1.3), before finally interrogating my practice-led projects (3.2; 3.3).

3.1 Past Research into Uncertain Artistic Practice

The principal method of examination used has evolved from previous research undertaken by me on artistic practices within a *multi-platform* environment (Ball 2017(a)) and the increasing reliance on personal computers and other smart devices as tangible, non-studio distribution platforms (Ball 2017(b)). In both papers, the objective was to use the contextual research undertaken for this thesis and apply it critically to other artists and their practices to better understand these types of practices using a *critical technical practice* methodology (1.3.1). For instance, the first paper's analysis centred around the interfaces of what were perceived as *multi-platform* and/or *unsitely* projects, and the projects' distributive networks (inclusive of the artist's own webpages) to better understand the general effects and outcomes of this type of *avant-garde* work and its impact on the cinematic experience.

During the course of researching these two papers, several artists and artist groups were investigated in an attempt to determine if there were any significant changes in an online praxis. A further point of interest was to interrogate the notion of a distributive exhibition model in contrast to academic writings on artistic practice, specifically from Ghidini (2012), Miranda (2013), and Jones (2014). Each study took as a certainty an artistic paradigm that had arisen since 2008. The first was concerned with the artistic appropriation of already existing online infrastructure, as occurs on Facebook, Instagram and so on (Ghidini 2012). The second focused on an alternative means of production, namely the *studio laptop* (Jones 2014). The final aspect took into account an environmental situation – *mediated space* – and more specifically the type of artistic practice that was observed through this lens: *uncertain practice*.

The first of these papers centred on the laptop studio, which was seen by me and my research as an interesting development in the use of space, primarily due to an interesting situation that was observed during the research – one that signalled the transformation of the secluded artist studio into a space where research, development, and broadcasting (or exhibition) happened simultaneously (Ball 2017(a)). While the paper did focus on the performative power of this multi-

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[12] PILproject is currently in hibernation.

purpose 'space', the core of the study situated this practice as part of the notion of *uncertain practice*, as described by Miranda (2013). My research shows that artists are now able to facilitate several processes through a single space, which is mediated through technology.

The second paper focused on two different artistic projects, and more specifically on the notion of building distributive systems that could act as self-contained solo exhibition spaces or a purposefully built project site that resembled a distributive exhibition (Ball 2017(b)). This investigation revealed interesting observations of artist network constellations that resembled, to a degree, the distributive exhibition models spoken about in curatorial studies. Moreover, it highlighted distinctions between current forms of Internet art and artistic strategies and that of the current curatorial discourse on the *distributive exhibition model*. While this paper had an explicit focus on artists working with moving image projects online, the paper also used two primary modes of analysis that are pertinent to this research. The analytical strategy began with a brief analysis of the perceived project's interface, and followed this with an analysis of the distributive network it was entangled in.

It is important to note that the decision to focus on artistic practice rather than other curatorial practices was a conscious one. This was because, as identified in the previous chapter (2.1), artist-led curatorial initiatives have a 'follow the artist ethos', which enhances curatorially produced projects via the uptake of artistic methods. Moving forward, each study presented a very specific insight into the projects undertaken for the case studies, specifically the idea of an environmental change for the practice conditions and production of art. In the following sections, we will unpack three distinct areas. The first two, *the interface* (3.1.1) and *the distributive network* (3.1.2), were carried over from the previous study on building distributive artistic systems. The third, *critical protocological review* (3.1.3), is an additional point of investigation specific to my research and is geared towards investigating the underlying architecture and what conflicts arise from the integration of these cultural systems with the wider network.

3.1.1 The Interface

In terms of critical technical practice, what is the interface? The focus of this research is the investigation of the interface through a critical and technical lens to better understand its effect on practice and the site of art and the exhibition. Before describing the analytical approach to be used, a quick look into the *interface* discourse is needed to clarify the perspective. While there are several perspectives for critically analysing the interface historically, a major discursive foothold has been grounded in the idea of *remediation*. An entry point for this thought process is Marshall McLuhan, specifically *Understanding Media* (2002 [1964]), wherein media, such as the camera obscura and photograph, become a media embodiment for elements such as sight (camera obscura, photography), sound (gramophone) and so on. This is where the phrase "the message is the medium" (Ibid.: p.9) comes into play as it describes humans' relationship to new media.

This idea was taken further by Friedrich Kittler in his publication *Gramophone, Film, Typewriter* (1999), where he encapsulates in his argument the various developed media into the Internet container, which he elaborated on in a later essay "There Is No Software" (Sale and Salisbury, eds., 2015: pp.81-90). What does this mean exactly for the interface? In this case, let us consider Lev Manovich's *Language of New Media* (2002). In this publication, Manovich pushed in a similar fashion the idea that new media are remediations of older media, and that Internet was primarily the remediation of cinema, and thus the language of the cinematic or cinema could be used in discussing the Internet in media theory (Ibid.: pp.69-71).

This has positioned the interface as a tool for mediation between humans and their tools and in many cases, because of the popularity of Manovich's thesis, Internet media has a connection to the language of cinema, e.g. the interface as a window[13]. However, in the decision to focus on the interface as a point of analysis for this research – and taking into account my own practice as a *system maker* – the prevalent notion previously described becomes unrealistic when fusing it with technical insight, especially because the Graphical User Interface (GUI) stems from engineering and design, rather than traditional aesthetics. Alexander Galloway offers a different perspective, one more in line with a critical technical view of the interface. For a start, Galloway argues that the *interface* is not a tangible thing but an effect and, moreover, is one with historical precedence, an aesthetic, and finally a politics (Galloway 2012: pp.46-47). Pulling the discourse away from a container perspective to an effect has an interesting consequence from a technical perspective. For instance, if the interface is not a medium but an effect, the effect - in the case of Internet art - is a consequence of an interaction between the *backend* and *frontend*. To follow this path further, it would signify that a UI (User Interface), again in the case of Internet art, can be considered the frame or "edge of the work" (Ibid.: pp.42), which technically is an interpretation of the data stream the interface is rendering. Depending on the aesthetical and political approach of this design, an effect is produced that is the contrast between the frame (politics) and the body (aesthetic) (Ibid.: p.51). More importantly, focusing on such a critical framework also brings computer code into play, thereby leaving behind this idea of interfaces as aesthetical mediation tools for media in favour of system theory and the aesthetic that manifests from systems, i.e. both the front and backend.

In this sense, the analytical frame enacted in a previous study conducted during this research (Ball 2017(b)), will be carried forward. To reiterate the analytical approach, this would entail that for each project analysed in the case study (3.2; 3.3), the first step is to identify all of the relevant interfaces tethered to the project's system structure, thereby identifying each *node* significant to the project in question and their links to the wider network architecture. This is followed by a critical look into the perceived node's *interface effect* to ascertain a purpose in the overall distributive system and a discussion aimed at understanding its network relation and distribution (3.1.3).

The final observable finding is the analytical framework that Ghidini developed further in her doctorate thesis - i.e. the *extended, complimentary* and *distributed* model (from the distributive exhibition model) - can be expanded and used outside of a one-to-one ratio (i.e. between a single online site to an offline site), and used to understand the complex relationships for understanding the system aesthetic of a complex online and/or an online/offline art system.

3.1.2 The Distributed Network

What is meant by a project's distributive network? It must be stressed that the *distributive network,* in this context, is a term apart from the general field of network theory and, in this case, is intended as an analytical lens combining several factors for the investigations presented in this chapter. One aspect is the site of the work or art or event itself, and the makeup of these sites of activity through the unravelling of its interface (3.1.1). The second is the intertwining of these sites of activities with that of the individual/group/organisation's wider network footprint, i.e. artist

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[13] For additional referencing please see: Bolter, D. and Gromala, D. (2003) *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency*. Cambridge: MIT Press; Friedberg, A. (2006) *The Virtual Window: From Alberti to Microsoft*. Cambridge: MIT Press; Hookway, B. (2011) *Interface: A Genealogy of Mediation and Control*. PhD. Thesis. Princeton University.

websites, blogs, community-oriented platforms. The third and final aspect used by this thesis for its context of the *distributive network* is the connection to social media platforms, i.e. the predominant networks used by people on a daily basis.

The main point of constructing a *distributive network* framework is to take into account several pieces of research (Ball 2017(a); Ball 2017(b)) and practical observations on the developing theory of distributive artworks and exhibitions. This entailed the use of the framework devised by Ghidini (2015) in her analysis of online exhibition/cultural projects' migration to offline spaces and the distributional effect between the on and offline. In her analysis, the distributive model has three main configurations: that of the *extended* exhibition model, the *complementary* exhibition model, and finally the *distributed* exhibition model (not to be mistaken with the *distributed mode of curating*). Each refers to the relationship of distribution between sites, e.g. the *extended* model details a relationship where one of the distributed components is not a viable element without the larger whole; thus, it extends the content. Similarly, the *complementary* and *distributed* configurations of the *distributive exhibition model* represent the inclusion of Miranda's notion of an expanded site (Ghidini 2015: pp.158-9). She specifies relational attributes that detail compositions where distributed components may exist in tandem, i.e. acting as a whole but able to stand on their own in out-of-context situations, to full-on "space of art's dissemination" (Cook and Graham 2010: pp.56; Ghidini 2015: pp.156-157).

While the framework provided by Ghidini's contributions is a clear analytical tool for investigating various online/offline formations, this thesis seeks to expand on the framework through the integration of Miranda's notion of *unsitely* (Miranda 2013: p.41-42) and Caitlin Jones's (2014) observations of the *laptop studio*. One reason for this is because Ghidini mainly focused on projects that existed online first, and thereafter moved into a state of migration from the *or-bits-dot-com* online platform[14] to another functional site (Ghidini 2015: Ch.4). For the projects examined in this chapter, this would prevent a deeper understanding of system relations and the aesthetics of distributive forms that were conceived as *unsitely* or *multi-platform* from the beginning. For instance, in the previous studies carried out during this research, it was observed that artists, in their online projects, were building interesting configurations of *distributive networks* that resembled *distributive exhibitions* and included the interlacing of non-artwork-based platforms, for instance, the artist portfolio website (Ball 2017(b)). Additionally, the notion of a *laptop studio* practice was observed to have perceivably enhanced broadcasting capabilities by causing ambiguity between the site where a creative project is finally staged and that of the site of its research and development (Ibid.).

3.1.3 Critical Protocological Review

Galloway expresses the idea of a protocol as a form of *control*. Essentially, he writes that protocol at its core is anarchic, yet with contrasting hierarchical protocols and obstacles, e.g. TCP/IP to that of DNS (Galloway 2004: p.8). He states in his analysis:

> The argument in this book is that bureaucratic and institutional forces (as well as proprietary interests) are together the inverse of the protocol's control logic. […] Protocol gains its authority from another place, from technology itself and how people program it. (Ibid.: p.121)

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[14] URL Web access for Or-bits-dot-com: https://or-bits.com/ [Last accessed: 20/12/19].

In the same instance, he addresses social/capitalist issues, such as monopolising technology by market shareholders, e.g. Google, and essentially removes them from the ideology of technological protocols:

> The market monopoly of Intel in the field of microchips or of Microsoft in the field of personal computer software appears to many to constitute a type of protocol, a broad technical standard. But, again, market monopolies of proprietary technologies are the inverse, or enemy, of protocol, for they are imposed from without, are technically opaque, centrally controlled, deployed by commercial concerns. (Ibid.)

It is within this declaration, "the enemy of protocol", that this thesis finds its interest, in particular as regards its primary research question 'how have artist-led initiatives affected contemporary Internet practice?'. Hence, this thesis intends to focus on Galloway's "enemies of protocol".

In the previous chapter (2.3), it was shown how the vital components of the WWW have gradually been consolidated, as in the case of the Web browser, which Galloway states is a "complex protocological object" (Ibid.: p.76). This would indicate that through the act of consolidation by GAFA (2.3) that the Web's progression has been *non-protocological*. Returning to the case studies presented in this chapter (3.2; 3.3), this would mean - to understand, on a protocological level, what is happening - taking a careful look inside the actual systems embedded in all the projects to understand how the architecture that sits beneath multi-platform interfaces and a distributive network (3.n) is deployed.

One point to emphasise about the term *protocol:* there is a distinction between *actual protocol* - in other words, TCP, IP, HTTP, HTML - and *pseudo-protocols*, which are described by this research as formal Web standardisations, such as REST (Representational State Transfer)[15].To explain this further, we could turn to the Web browser. Web browsers are *complex protocological objects*, which signifies that they are a collection of various protocols, from initiating connections through TCP/IP that are resolved through a user's DNS inputs, to the actual receipt of hypertext documents, and the rendition of these documents' content (HTML). In turn REST, which is an industry-standard in API development (w3.org 2004), in a similar fashion to the Web browser, encapsulates several *actual protocols* (Fielding 2000); however, REST is a standardisation for building *complex protocological objects*, such as an API server. This is an important distinction, because API servers are highly guarded by their maintainers and are subject to change, i.e. reducing services, stopping services, implementing new services, and invigilating said services. Take the case of Instagram's API that is owned by Facebook. Facebook set up a roadmap to consolidate its various platforms' API under one umbrella, the Facebook Developer's platform, by 11 Dec 2018:

> Instagram Graph API: Features

> The following features are now available for Instagram business profiles:

> Content Publishing Beta [NEW] - Available to Facebook Marketing Partners and Instagram Partners only. Post an image to Feed with or without a caption.

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[15] For further information on the origins of REST and its uptake as a w3 standard please see: Fielding, T. (2000) *Architectural Styles and the Design of Network-based Software Architectures*. PhD. [UNIVERSITY OF CALIFORNIA, IRVINE]. Online: https://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm [Last accessed: 16/03/2019]; W3 Consortium, *REST*. Wiki. Online: https://www.w3.org/2001/sw/wiki/REST [Last accessed: 16/03/2019].

Business Discovery [NEW] - Discover and read the profile info and media of other business profiles.

Mentions [NEW] - Read public media that a business has been photo tagged or @mentioned in. Post comments on behalf of a business, on media in which it has been @mentioned.

Insights - Help businesses access and analyse valuable metrics about their own Instagram business profile. Enable them to understand and optimise the performance of their organic content on Instagram.

Comment Moderation - Drive interactions at scale. Enable businesses to more efficiently interact with their audience through comments under their media on Instagram.

Future updates on the Instagram Graph API will include:

Support for Non-Business Profiles [FUTURE]: Basic permission for non-business profiles will be supported in early 2019. (https://developers.facebook.com)

While it shows that Facebook did provide a notable amount of time to developers and its various business partners to adhere to these changes – 30, Jan 2018 (Ibid.) – the disruption, as can be seen from the blog post, indicates the loss of projects and access to those outside of a business profile, i.e. artists, independent researchers, hobbyists, and amateurs, until further notice. Thus, in a similar fashion to the Web browser, APIs, in this case the REST pattern, can be used to exert forms of control.

Finally, the activities of previous artist projects have been used to contextualise the underlying conflict beneath the WWW slick interface. Similarly, my own practice, categorised as that of *system maker,* will be used to investigate not only the uptake of artistic strategies, such as tactical media, hacking, programming (to name a few) but also whether my practice drives protocol.

3.2 Case-study: PILproject

This case study pertains to Post-Internet Landscapes (PILproject) and focuses on the projects initiated during the research period of this thesis. Additionally, this case study relies on the accompanying Appendix 3 (Appx.3.1) that pertains to PILproject. To give an outline of this distributive content, the Appendix corresponding to this case study catalogues a wider project history of the artist group, as well as a descriptive introduction to PILproject's core mission and practice methods. The following section interrogates the projects initiated specifically for this thesis, which took place between 2016 and 2017/18.

There are three projects presented in this section, *PIL 2.0: Russia. Be Blinded by an Inner Light* (3.2.1), *Trolling is the New Punk* (3.2.2) and *The One, The Many* (3.2.2). The latter two projects – due to the size of each project, in addition to the deep interface and protocological connections in the exhibition systems developed –are presented as a single case in this chapter.

Regarding PILproject and the diversity of the projects presented below, the main point to take away is that the artist-led initiative produces both artistic *and* curatorial projects simultaneously. As an artist-led curatorial initiative, similarly to Agorama's creative dissemination activities,

PILproject works between online/offline modes for exhibition and event making. Additionally, during these activities, PIL has played with other forms of dissemination, such as publishing. A more artistic approach can be seen in PIL's tactical use of mediated spaces, which acted as a site of performance.

3.2.1 PIL 2.0: Russia. Be Blinded by an Inner Light

PIL 2.0: Russia. Be Blinded by an Inner Light (VRC, DCA, Dundee) represents the group's second *chapter* exhibition series. As part of the *chapter* project's foundation, PILproject sought to collaborate with Russian artists Rostan Tavasiev, Ksenia Plisova, and SHIT_POSTING. This was an important aspect for the exhibition context, as it was centred around Russian politics and digital culture, thus it is deemed a necessity to engage Russian artists, whose work could speak directly to the exhibition's theme.

The development of the exhibition took many stages, which incorporated a visit to Russia by PILproject members Juan Crespo and Enrique Tutor Torres to interview various artist groups and curators about the state of Russia and its digital art scene (part of the research and development for the project), an online performance staged on Facebook, a specialised online magazine publication by the group SHIT_POSTING, and a multi-platform exhibition. During these different stages, my own role and Crespo's fluctuated quite significantly from researcher to curatorial facilitator, from technician to artist.

As for my practice focus on system making, a point to make is that during this period, my programming capabilities were still at an intermediate level. Furthermore, the main PILproject platform - pilproject.net – was designed and developed in tandem with an outside professional who was no longer working with PILproject. This separation from the development process of pilproject.net prevented further development of the platform for the purposes of the *PIL 2.0* exhibition (Appx.3.1). Because of these factors, my practical focus centred on the development of dissemination systems and tools that could aid this system and simulate a space for dissemination for the exhibition's content. Thus, the type of work I carried out for *PIL 2.0* included using scripting languages such as Apple script, the appropriation of the Facebook platform, and the utilisation of the Webrecorder.io platform as a documentation tool.

To discuss my specific role in this project, I worked on this project as a curator and co-curated the exhibition with my colleague Juan Crespo. Further to this I also acted as an art fabricator, through making of specific artwork props (Rostan Tavasiev), and finally was the exhibition's main technical installer that also used basic scripting languages to link the online and offline parts of this exhibition.

3.2.1.1 Multi-platform Interfaces

In a review of the project, I have identified that the online exhibition system consisted of two main sites: the Facebook platform (as part of Rostan Tavasiev's artwork)[16] and pilproject.net[17]. The physical exhibition intentionally presented to audiences an exhibition with missing information to encourage visitors to explore the project as a whole, by giving indicators that the exhibition encompassed multiple platforms. For example, regarding curatorial essays and writings on the exhibition theme and artist, audiences had to explore PILproject's platform for extended information on the artists and their work, while for a curatorial essay, visitors were encouraged to

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[16] https://webrecorder.io/PIL-Project/rostan-tavasiev-its-complicated-hidden-hikkimori-2016
[17] Please visit http://pilproject.net/gallery (Last viewed: 09/08/2018).

engage with the art writing blog curatingthecontemporary.org and read the published article about the exhibition and PIL's research there[18]. Likewise, the element of the digital magazine created by SHIT_POSTING – which had a limited printed run for the exhibition – served as another outlet for cultural content around memetics for audiences. Additionally, there is one artwork within the exhibition, similar to Max Dovey's commission *Breath(BRH)* (3.2.1.1), which relied on both the online and offline elements to constitute a physical participatory sculpture.

Fig.1.PIL 2.0: Russia. Be Blinded by an Inner Light. Exhibition Installation. Photo taken by Alejandro Ball and Juan Crespo.

Focusing on the physical exhibition first, the approach taken was to present a research-oriented display that would contrast two Russian artists. The first content presented to audiences was the investigatory documents and objects collected and compiled by PILproject from the initial exchange visit Crespo and Tutor Torres took to Russia and the research period that followed (Appx.3.1.2). From this point, audiences were welcome to cycle through the exhibition in any order desired to engage with the artists' work. Interestingly, the positioning of the exhibition was heavily influenced by the fact that neither artist was able to travel from Russia for the installation. Thus, Crespo and I had a lot of creative input into the final displays (Appx.3.1.2). Because of this extended input, the PILproject was able to approach the physical installation as a single installation, while taking care to avoid collisions of context and audience misunderstanding on where one artwork began, and another ended.

Events and plans for the online pilproject.net gallery developed certain complications. The first was the fact that the original designer of the website had moved on to other projects, thereby

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[18] Link to article: https://curatingthecontemporary.org/2016/11/17/pilproject-the-meme-the-roskomnadzor-and-memetics/ [Last viewed: 25/09/2018].

creating a technical barrier. For example, in the case of Plisova's physical installation included audio but online on pilproject.net the audio was absent mainly due to the lack of access to the HTML that prevented embeddable elements, such as a Soundcloud, an audio track or video. This then forced Crespo and me to use the gif version of the moving image piece[19]. Similarly, it was not possible to change the page background of the gallery website due to the technical barrier previously explained. Thus, a decision was taken to make the focus of the display informational, which also prompted the decision to present gaps in the information provided in the physical exhibition as an encouragement to lead audiences to the online displays.

Ksenia Plisova
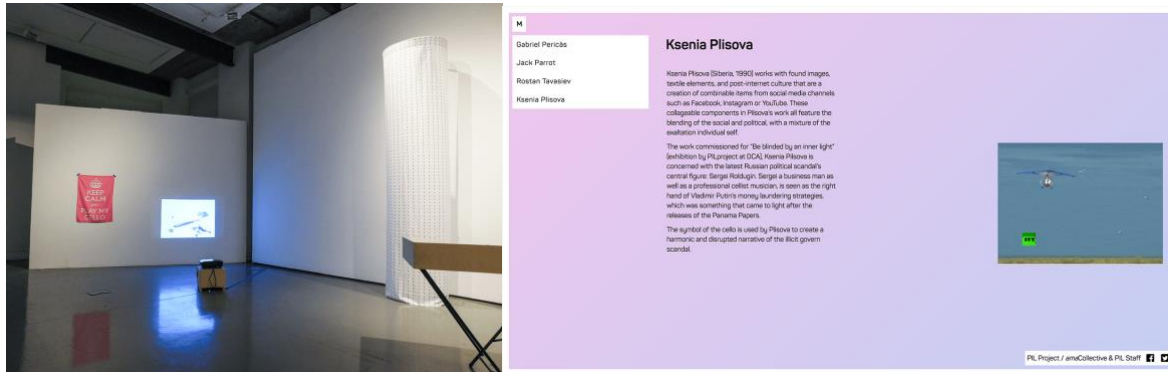
Fig.2. Ksenia Plisova, *Untitled* (2016). (Left) Exhibition Installation, photo taken by Alejandro Ball and Juan Crespo. (Right) Online Exhibition. Screen Shoot taken by Alejandro Ball.

So in this case, while the physical exhibition was reasonably straightforward, the online segment of the piece encountered several problems due to technical barriers. Thus, the object presented to Juan and me by Plisova did fall within the curatorial brief – apart from the audio track Plisova provided. But, at the same time, PILproject viewed this new medium as a welcome addition because of expanding definitions of what constituted a meme (Ball 2016). Yet, in terms of integrating the digital elements with the online, the limitation set by the pilproject.net Web developer also became the conditions that compromised the curatorial integrity of PILproject's practice.

To explain further, the platform framework developed by the original Web developer was created with the intention of carrying out very specific Web activities, namely collecting static meme images to be placed into the archive and allowing for the upload of gif images to the gallery pages for online artists' exhibitions. However, even in the span of about a year, convention around elements such as image file size and upload limits changed. For example, the original developer set an upload limit of 2 megabytes for all digital media, which prevented large formatted gifs with more animation frames for smoother visuals from being uploaded, thereby forcing PILproject to alter the original gif files by removing animation frames, which resulted in Plisova's gif animation appearing sped up in its online form, compared to the physical exhibition version. Additionally, the platform framework for pilproject.net intentionally left out the capabilities of uploading video and audio elements and the developer stuck to the original brief very strictly (i.e. only static images and gifs) and did not implement the basic multi-media Web operations in

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[19] For her digital work Plisova provided PILproject with a gif, audio track and a PNG image of a violin silhouette. It was agreed with the artist that these elements would be used for the creation of the moving image piece and digital resource for both the online and offline exhibitions and that this would be carried out by Juan and myself on behalf of the artist. The gif and audio track were edited together as a moving image piece, and the PNG image was used to create a background image that was translucent with a similar pattern to the curtain Plisova physically made for the exhibition (Appx.3).

the Content Management System (CMS), which in turn prevented the integration of Plisova's audio track.

Rostan Tavasiev
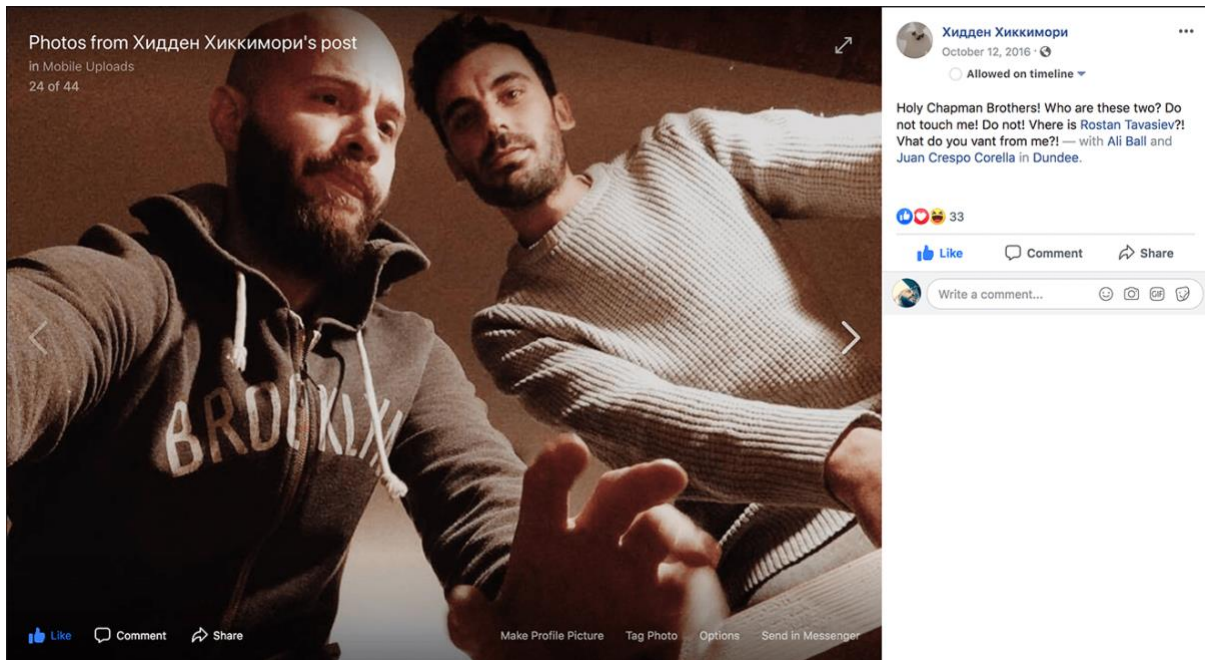
Fig.3.Rostan Tavasiev, *It's Complicated* (2016). Online performance. On Facebook. Screen shot by Alejandro Ball.

For PIL 2.0, Tavasiev brought the character *Hidden Hikkimori* out of stasis and developed a narrative for the character sculpture such that, after a long hibernation, *Hidden* suddenly wakes up in the dark (inside a crate in-transit to London) unaware of his whereabouts. This narrative was played out on his Facebook page. Thus, this became the first point of entry for non-local audiences to the *unsitely* artwork. The online performance consisted of users of the social media platform 'friend requesting' Hidden, and then observing a stream of posts around several topics previously agreed upon by Tavasiev and PILproject. As part of this performance, users were able to participate by commenting or posting directly onto Hidden's social wall. There was no central 'events' page, typically seen as Facebook's system to create a focal point for an event. This strategy was avoided to enact Facebook as a pseudo-public space where the character *Hidden*'s posts would be seen by the subscribed users in a more natural form, as if *Hidden* were an actual person, thereby breaching the virtual *telecocoon* (Habuchi 2005; Varnelis 2008) intimate space of the participating user.

Fig.4.Rostan Tavasiev, *It's Complicated* (2016). Exhibition installation. Photos taken by Alejandro Ball and Juan Crespo.

For the physical installation, Tavasiev sent the blueprints for *Hidden* to PILproject for fabrication (Appx.3.1.2). Initially, *Hidden*'s setup only consisted of a single sculpture; however, after discussions with the artist, it was agreed that PILproject would add to the artwork's narrative by creating a crate that would be used to ship *Hidden* and other vital exhibition materials to Centrespace in Dundee, and finally use this prop (the crate) to further enhance Tavasiev's vision. Thus, the final installation consisted of the sculpture (*Hidden*) and the prop (the crate) enacting the scene of *Hidden*'s arrival to Centrespace. The final element of the installation was the link back to *Hidden*'s Facebook profile page. This was done by installing a computer that sat inside the installation prop with a keyboard and mouse so audiences could actively participate in the project by posting directly to *Hidden* from inside the gallery.

Due to the situation of the project, i.e. a physical installation and Facebook performance, the site of pilproject.net's gallery interacted naturally with the other sites due to the fact that each site's interface enacted a different aspect of the project. In contrast to Plisova's work, the pilproject.net display for Tavasiev utilised gifs that were posted through Facebook, thereby removing the method of migrating and integrating content across sites creating an interesting space for the dissemination of art (Cook and Graham 2010).

SHIT_POSTING

In terms of this element's placement in the overall exhibition, as a digital zine, SHIT_POSTING's contribution could easily migrate between the on and offline – thereby allowing for its integration in 'sites' to be quite flexible. Because of this, the digital zine was viewed by PILproject as another direct link between the online and offline for visitors to Centrespace, whereby the audience attending the exhibition were presented with the printed zine when leaving the show and providing them content beyond the gallery space and, similar to Tavasiev's Facebook performance, enter the audience members' personal space. Additionally, the online version of the special edition zine expanded on the content PIL 2.0 had at its disposal for dissemination, which will be explored further in the following section.

3.2.1.2 Distributed Network

The distributive network for this project changed the dynamics of the base-platform PILproject established in its previous projects, especially those from the first 'chapter' project. In the previous iteration, PIL had established a distributive network that revolved around its hub (or webpage), which had self-contained core features of PIL's mission. For instance, the gallery

section of the page contained an online exhibition of the collaborating artists' produced work; however, in the case of PIL 2.0, Rostan Tavasiev's performance on Facebook changed this dynamic.

The change described above came with the alteration of the PIL hub's use in the previous 'chapter' exhibition. In the first exhibition, PIL focused on the distribution of content from pilproject.net first, before cycling outwards into its social media channels and collaborating partners. With *Hidden*'s performance, the online focus centred on the performance activities, i.e. *Hidden's* social media profile. Additionally, the physical installation also cycled audiences back out into this wider distributive network through active participation with a tangible effect – meaning through the computer interface situated in *Hidden's* installation prop (Fig.4), and the Apple script developed by me (Appx.3.1.2) to allow the browser page to refresh every couple of minutes. This meant gallery-goers had immediate gratification when interacting and had encouragement to continue in their own time outside of the exhibition. In this case, pilproject.net and the PILproject Facebook page[20] both became support points for Tavasiev's online performance through outward distribution, i.e. as the audience visited the collective's information and online sites, clear links were given to these visitors to 'Friend Request' *Hidden Hikkimori* on Facbook.

Addressing this configuration, for this project the network focus was *Hidden*'s profile page located on Facebook. This acted as the point of junction for all activities surrounding *PIL 2.0* in the online space. Additionally, because of the connection between the performance space and the gallery space, i.e. the computer interface for communicating with *Hidden* directly from the physical exhibition, the artwork as a whole resembled a type of closed-looped system. Because of the nature of the project *It's Complicated,* and its *unsitely* orientation, PILproject was able to use this *uncertain* artwork as a reactive distribution tool, mainly because Crespo and I were active participants in *Hidden*'s online performance helping to instigate participation and thereby allowing the two of us to have an extended focus on the online space that helped to facilitate the dissemination of content for other parts of the exhibition.

SHIT_POSTING's special edition zine for the exhibition added an extension of shareable content within this distributive network and allowed for the exhibition's information to be digested in an alternative format. Furthermore, because the zine is viewed by this thesis as a hybrid research work, its content (that retained its context regardless of whether it was consumed on or offline) became the supplemental guide for the position of a memetic investigation, as well as a link back to pilproject.net and *Hidden*'s online performance space. In the case of the University of Dundee's exhibition department, their support role was dissemination, which specifically targeted the Dundee locality[21]. Due to this circulation focusing more on the exhibition at Centrespace, PILproject's strategy was to use this dissemination of information, and the visitors it brought, to inform them through informational handouts and communication given by gallery invigilators.

To conclude, the distribution of Tavasiev's performance (representative of both online and offline) is the anchor for the wider exhibition. In reflection, this is to do with the type of artwork

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[20] The PILproject Facebook page can be found here: https://www.facebook.com/postinternetlandscapes/ [Last accessed: 29/11/19]
[21] Media circulation through the Dundee area. Record for PILproject's exhibition 'PIL 2.0" Russia. Be Blinded by an Inner Light': https://www.dundee.ac.uk/cooper-gallery/exhibitions/pil-2-0/ [Last accessed: 20/12/19]; https://www.thecourier.co.uk/fp/news/local/dundee/304691/putin-rides-memes-showcased-dundee-exhibition/ [Last accessed: 20/12/19]; https://curatingthecontemporary.org/2016/09/30/openings-exhibitions-october-2016/ [Last accessed: 20/12/19]; https://www.artrabbit.com/events/pil-project-20russia-be-blinded-by-an-inner-light [Last accessed: 20/12/19].

Tavasiev conceived, meaning a participatory piece that appropriated the Facebook platform – thereby also gaining access to a very large audience base. In terms of the farthest point in the distributive network, this was used to bring the audience toward Tavasiev's PILproject commission with the strategy that, once the audience was engaged through PILproject's facilitation, they could then be cycled out to the other elements of the project.

3.2.1.3 Critical Protocological Review

In response to the protocological effect this project had, PIL 2.0 exhibition sought to enact a space for the dissemination of art that would involve three types of sites or 'hubs' to link to the wider network. As described in section 3.2.1.1, one of these three planned sites created conflict for PILproject's exhibition due to technical barriers it presented for Crespo and me that prevented its integration into the online exhibition plan as hoped. As PILproject's second curatorial project, one of the intentions for the exhibition was to utilise pilproject.net in a similar fashion to the previous *chapter* exhibition (Appx.3.1.1) - it would act as PILproject's main site outside of social media thereby allowing users coming in from other parts of the exhibition's distributive network (3.2.1.2) to arrive and have further information disseminated to them about PILproject. This, in turn, created a dependency on Tavasiev's artwork *It's Complicated*, meaning that PILproject had to rely on the site of Tavasiev's performance, Facebook, to disseminate further exhibition content. In this regard, pilproject.net's role as one of the three hubs for the distributive exhibition was reduced to an informational one, rendering it more of an *extended* element than a hub in a distributive system.

However, the project experienced a significant amount of success in this new configuration, mainly due to the nature of *It's Complicated*'s composition. These compositional elements can be divided into two: Tavasiev's appropriation of Facebook, and the sculpture with links back to the online space. The first of these is not very technical but is crucial to the artwork's performance. Essentially, this was the bypassing of Facebook's terms of creating a user account and creating individual accounts for his artworks and employing human agents to control them, thereby preventing the flagging of these created accounts as non-human-accounts. Through this action, Tavasiev's project was able to encroach on a user's personal or intimate *telecocoon* space through 'friend requesting' and becoming part of said user's social sphere.

As for the gallery, in the previous iteration of *It's Complicated* at Moscow Museum of Modern Art (MMoMA), links to the online activities were conveyed through non-interactable screens that created a separation of sites. For the PIL 2.0 exhibition, it was decided to take this link a step further and provide offline audiences with a live link directly to the performance on Facebook. Two methods were used for this: first, creating a program script to embed into the hosting machine that would be used in the gallery causing the page to reload every two minutes (Appx.3.1.2), and second, creating a temporary fake PILproject user account on Facebook that could be used by the audience to write messages and post media content on *Hidden*'s profile page. This artwork can be seen as a looping system in terms of how its elements encourage users to experience each portion of the project. While there is an element of encapsulation - in that the loop seems closed, thus framing the project - its use of the Facebook site allowed for the project to act as a complex system in which PILproject was able to add modular elements, e.g. HREF links back to the PILproject meme wall archive, the offline exhibition information webpages, and SHIT_POSTING's special issue zine.

As to pilproject.net, in its first iteration in *PIL 1.0* exhibition it was the foundational hub for the project and collective as a whole. Its operations allowed for the uploading of meme content,

which could then be rendered as the meme wall, or an archive index. Moreover, its 'gallery' pages (3.2.1.1) were also developed as curatorial sites, which use an operation very similar to a drag-and-drop arrangement. In this first chapter exhibition, the platform acted as a type of super hub or a container, where PILproject housed several different elements and activities within one site. In *PIL 2.0*'s case, pilproject.net's role as a central hub was reduced due to a modular extension of the exhibition that was used to host exhibition information and, while content such as the digital PDF of SHIT_POSTING's special edition zine does exist in pilproject.net's repository, this was easily distributable through social media channels occupied by the distributive exhibition.

Reflecting on the wider distributive model, this research identifies that the failing of the exhibition system for PIL 2.0 was due to the lack of a fixed online space outside of social media. In this instance, pilproject.net's ability to act as a hub for the creation of a space for the dissemination of art was greatly hindered because the platform was originally developed with very specific limitations. Thus, when deployed within *PIL 2.0* under new circumstances and a fresh perspective of types of artists to engage with, its framework failed to enact its function. In this regard, it is observable that within a distributive system a more modular purposefully built approach should be taken when considering multiple platforms, especially those acting as a project hub.

3.2.2 Trolling is the New Punk & The One, The Many

Later projects changed the work relationships within PILproject and saw the group enter a more traditional artistic role. The first of these projects was the artwork *Trolling is the New Punk* (2017), which was a commission for the online group exhibition organised and curated by Off-Site Project. This project sought to engage with the operational aesthetic of an Internet troll by spamming popups to users who engaged with the artwork. The second was an online commission *The One, The Many* (2017) for the art organisation Art Gene. This project also followed the same research direction except, instead of purely investigating the Internet troll, the piece actively engaged with the operational aesthetic of the popup window as a vehicle for creating meta-narratives. While the projects PIL 1.0 (2015) and PIL 2.0: Russia (2016) both took the methodological approach of an artist-led curatorial initiative, the latter projects: *Trolling is the New Punk* (2017) and *The One, The Many* (2017) have a similar form to PIL's work with the Digital Artist Residency (2015), which takes a more traditional artistic approach (Appx.3.1.3).

My own role within these projects was to focus on the development of a system of delivery that would emulate 'trolling' behaviour – thus focusing on form – while my collaborator, Juan Crespo, focused on the conceptual thought process.

In terms of what I specifically did for these projects: For *Trolling is the New Punk* I was the principal code for the popup engine program and created it through close collaborative conversations with Juan Crespo. In this project we were equal partners, where I was the technical side and he the conceptual side. For *The One, The Many*, I was an artistic collaborator and the coder that created the parallel platform where the popup engine was situated. Further to this I wrote the poem, which Juan then curated over through the selection of memes which we attached to the popup engine program.

3.2.2.1 Multi-platform Interfaces

The primary effect that I was aiming for with each project's interface was, as previously stated, the enactment of "Internet trolling" behaviour. Through PILproject's brainstorms on the subject, Juan and I identified several keywords that I would use to build a 'trolling' programming script. These keywords included: spam, annoyance, confrontational, personal-space-violation, interaction (as opposed to participation) (Appx.2.2.1). The end result was a JavaScript script that intermingled with any chosen HTML element present on the webpage, which could be activated depending on the specified user interaction the creative agent (PILproject in this case) decided to choose. Once one of these targeted HTML points was interacted with by a user (e.g. passing a mouse cursor over an image, or clicking a link or button), the script would activate and spam the user with a pre-determined number of popup windows, each linked to a different resource (another Web page, image, video, etc.).

This point of interaction (rather than participation) was explored in different ways between each commissioned artwork. For instance, in the case of *Trolling is the New Punk* and the exhibition it took part in on the curatorial platform offsiteprojects.org, heavy consideration was given to embedding the development popup (or trolling) script in a way that was in line with the type of desired participation on which the curators had focused their platform. The project *The One, The Many* explored a different avenue of interaction, which focused on collaging together the popup windows with a visual text-based poem in an attempt to create a meta-narrative.

Trolling is the New Punk

Trolling is the New Punk was embedded into the primary interface of the offsiteproject.org website (Fig.5; Fig.6). This platform, developed by Cargo Collective, is based on the *Handlebars.js* platform framework, which is a templating engine with frontend capabilities. The predominant aesthetic and layout of the CMS featured an interface that actively monitors the display site of the webpage while calling on a sidebar to command the layout changeover. A specific quality of the framework is to work with functionality that allows the reveal of hidden HTML components, meaning (in the case of offsiteproject.org) that a user is not navigated away from the main installation page, instead this hidden HTML element appears in the foreground with the actual visual display still in view in the background. An aspect to consider about this type of interface is that it's similar to the act of stealing a moment away from the visual displays to view the accompanying wall text or printout for more information in a physical gallery.

Fig.5.Online group exhibition 'Politics of the Absurd'. Curated by Off Site Projects. Screen Shot by Alejandro Ball.

Fig.6.*Trolling is the New Punk* (2017). Popup engine operation. Screen shot by Alejandro Ball.

In the case of the artwork produced for the exhibition, PILproject sought to distinguish its work through the development of a project that focused on the idea of an Internet troll, which involved embedding a reactive system that enacted programmatic behaviour when a user interacted with the artwork. In this sense, PIL's decision focused on building a system inside the offsiteproject.org website. This entailed the development of a popup window engine that would actively read for a popup blocker on the user's browser, which would prompt the user with an alert window that issued the warning that to experience the artwork they had to turn this feature

off. Once this was established, the engine's operation had attached functions to certain DOM elements to fix them with certain interaction causality. This means that the engine could be used alongside HTML to create the effects of a mouse passing over a specified activation point triggering the function, or potentially creating a clickable feature that would equally start the engine.

In working with offsiteprojects.org, PIL decided to use a clickable activation point which caused an *unsitely* aesthetic that called up popup windows from the Twitter platform (specifically Donald Trump's Tweets). In the case of *Trolling is the New Punk,* ten windows were spawned with each a specific size to capture one tweet only. The arrangement for these popup windows was disbursed around the user's screen, while also creating a meta-narrative event. An important feature of this engine was not to intrude on the already existing platform framework used by offsiteproject.org but to elaborate on it through an embedding practice.

The One, The Many

The PILproject *The One, The Many* was encapsulated in a slightly more sensitive space. With Art Gene being a National Portfolio Organisation (NPO), the webpage became an entity that was vital to the dissemination of the institution's activities to a wider audience (Cook and Graham 2010; Cook, Graham & Martin 2002; Paul 2006). Because of this, PIL went through several different options to produce the commission for the Art Gene Digital U site. In the end, what was decided was to create a space that was between two sites. The first of these interfaces was the Art Gene Digital U site. The primary observation about this site is that it fits the typical aesthetic that is found with several smaller institutional webpages and is predominantly static. On this interface, PIL had two interventions. The first was the main page site listed on the Digital U page, the next was embedded memes that were located throughout the Art Gene site. The idea behind this was to develop a context around the concept of the Internet troll but to utilise the conceptual framework, not only as a tongue-in-cheek one-liner but also to build a meta-narrative around Art Gene and its locality of Barrow-in-Furness.
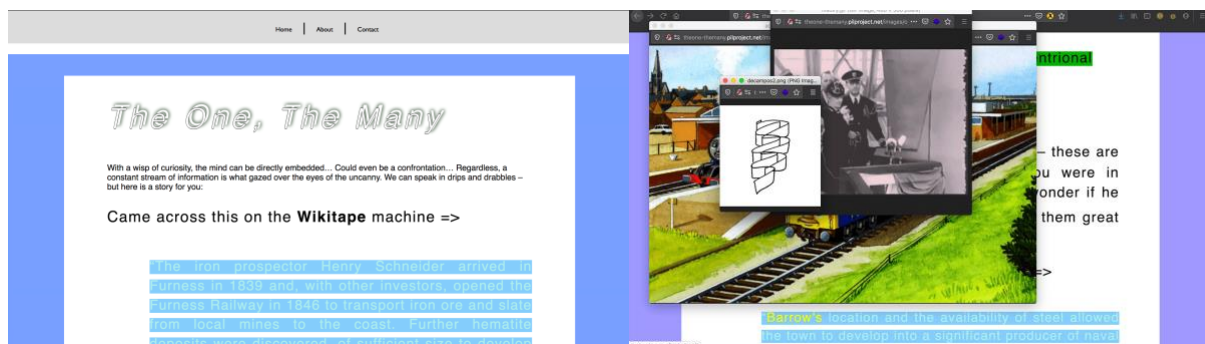
Fig.7.*The One, The Many* (2017). (Left) Interface, developed by Alejandro Ball. (Right) Popup engine operation. Developed by Alejandro Ball. Screen shot by Alejandro Ball.

The second interface was the platform PIL developed that took the aesthetic of the Art Gene site but enacted the idea that this space was a takeover, potentially by a rogue group of hackers. The idea was to mix these spaces in a multi-platform way that would allow users to experience a subtle dialogue between the two spaces and PIL's many interventions.

3.2.2.2 Distributed Network

The distributed network for these artistic projects predominantly revolved around social media platforms and other traditional forms of communication dissemination such as mailouts that circulated information outwards to redirect online user traffic back to the online sites' exhibitions. This meant that each project's distributive network was anchored to a fixed platform, which was surrounded by a network of different social media accounts belonging to each of the exhibition's stakeholders. The site pilproject.net added further points of dissemination by becoming a modular node, which could attach itself to the wider network thereby redirecting people back to the PILproject social media presence before being forwarded to the project, or directly to the online exhibition. When examining both examples, the distributive networks seemed to have funnelling points or specific paths of discovery, which mainly happened through: (a) an organising institution or curatorial communication strategy, and, (b) PILproject's communication of the projects. To further explain this operation, a user on Facebook/Twitter sees a post then, through this post, if clicked, they are directed towards the online space. For PILproject's dissemination – in both cases – this 'funnelling' pattern was also used to streamline communication and direct people to the fixed location of the artworks.

A critical observation is that 'funnelling' an audience through a specific channel reduced the artworks' capacity to exist outside of the boundaries of the exhibitions for which they were commissioned. In previous iterations of PILproject's 'chapter' exhibitions (Appx.3.1), the sites of various social media platforms were used as performative spaces. In this sense, platforms such as Facebook became an artistic site whereby the artwork then became either easily migratable components, and/or performance. With this to consider, engagement in these previous exhibition projects became multi-dimensional whereby online users were instantly engageable, and able to consume art within their *telecocoon*. In the case of *Trolling is the New Punk* and *The One, The Many*, both works of art were conceived to be displayed on a pre-existing art platform. Taking into account the ecology that has been described around this distinct type of online platform, PILproject's commissions were created to be accommodated into this type of media assembly, thereby fixing the online projects to a single form of space/site – as opposed to previous projects that used a methodology that considered both online (and multiple online platforms) and offline modes of display.

3.2.2.3 Critical Protocological Review

In both project cases, the main artistic system, or program, was the popup engine (Appx.3.3). Interestingly, because of how the script works, it can be considered a type of embedded system, whereby the script/program is to be specifically used within a webpage as an artistic intervention. The way this works is because the operations activated by the script are essentially those of the Web browser. In this sense, the popup engine enacts core browser API functionality. Because of this, the platform that this program lives on becomes a tangible site and is similar to a physical site hosting a site-specific artwork. For instance, when developing the artwork - taking into account the construction of the architecture/infrastructure of the Web platform (*The One, The Many*) or singular active piece (*Trolling is the New Punk*) - embedding of the popup engine has to take into consideration the webpage, its technical specifications, embedded security systems, and finally the administration of it.

In *Trolling is the New Punk*, the focus was on creating an interactive intervention within offsiteprojects.org to allow the artwork to pull content and materials into the viewing page of the art user in order to bypass the limitations of having to embed several media <iframes> or lead the user away from the online exhibition site while still enacting the performative gesture of a trolling individual. The context for *The One, The Many* was created through the use of a multi-

platform methodology. The PILproject created a parallel platform (Appx.3.1.3) that would represent a 'fictitious' section of the Art Gene webpage, where PILproject could embed the popup engine. This decision to create a parallel platform came about because the project encountered some obstacles due to Art Gene's hesitancy to embed foreign code in their site for fear of security risks and/or damage to the main Art Gene webpage.

In reflection of these projects, in both cases the exhibition systems experienced a degree of distributiveness. This happened between the different stakeholders' network footprints and, in the specific case of *The One, The Many,* encompassed an additional platform for the artwork apart from the main exhibition site. These types of projects, at their core, are browser-based artworks, or systems that are platformless, or have less emphasis on a fixed site like a webpage as the script's functionality focuses on triggering actions pertaining to the actual browser program. When considering this form of artwork (or even curatorial intervention/effect), this system in a wider exhibition is very flexible as seen in the examples given in this case study (3.2.2).

3.3 Case-study: Agorama

The case study for Agorama incorporates this chapter and Appendix 3 (Appx.3.2). This chapter's content focuses specifically on the projects initiated during the research period of this thesis. To give a better outline of the content that is distributed between this section (3.3) and the Appendix, this section will analyse the projects that were initiated specifically for this thesis and realised at the end of 2017 and the beginning of 2018. The accompanying Appendix will catalogue a larger project history of the collective, along with a descriptive introduction for Agorama's core mission and practice methods.

Two projects are presented. The first is the collaborative *multi-platform* exhibition *Geltung [validity]: perception of a natural right* (3.2.1), and the second is the online screening platform *Kubos Nero* (3.2.2). One thing that was considered while compiling this case study and the analysis of its projects was that, within Agorama's collective practice, there is no standard project format. In other words, projects could stem from curatorially based projects involving several artists, partnering organisations, and so forth. Projects could also focus on enhancing other cultural projects through Web extensions (or other forms of intervention), supported by my principal practice as a system maker.

3.3.1 Geltung [validity]: perception of a natural right

The project itself was conceived as a *multi-platform* exhibition that would incorporate newly commissioned artworks or progressive research-based artworks by four artists. Due to its scope, *Geltung* will be analysed in stages to take into account the various artists' works and the wider framework developed for the multi-platform exhibition (meaning online and offline).

As for my practice's focus, the main objective was to situate myself at a point of collaboration, whereby I could employ my system, making a practice to aid each of the artists. Furthermore, as the person on the curatorial side of the project with the most computer/Web programming experience, I also focused on creating a *complex distributive exhibition* system that could sit in a *complementary* pattern to the online, thereby allowing for the online exhibition to stand on its own within its own context.

In terms of participation and collaboration, I worked closely with Diogo da Cruz and Petra Szemán on their online artworks and, through this, I became the system maker for their concepts. In the case of Max Dovey, I acted as a hands-on technician and helped to install his piece *Breath (BRH),* which was equally dependent on the online and offline (3.2.1.1). For the final artist, Felicity Hammond, my role became more of a facilitator and adviser for her online project.

To describe my role in full, for this project I was a co-curator for the overall exhibition with my collaborator and co-curator Inês Costa. During the development of the project Inês took the lead facilitating with the artists for the physical exhibition, while I focused on coding and developing the online exhibition. Further to this I sought to provide my coding abilities to the artists, whereby 2 artists (Diogo da Cruz and Petra Szemán) decided to work closely with me. For these two projects I code both artist platforms, the main exhibition platform completely myself. I also acted as the exhibition's AV technician for installation.

3.3.1.1 Multi-platform Interfaces

When discussing the multi-platform nature of *Geltung [validity]*'s exhibition structure there are two primary things to take into account: the physical exhibition staged at GENERATORprojects, and the online exhibition, which encompassed the exhibition landing page and four separate artist online projects. There were two points for audiences to interface with the exhibition's content and the stringing of these elements. While following through with this analysis we begin with the exhibition's interface as a whole, i.e. the landing page and overall physical site, before discussing the individual artworks and their online/offline aspects.

Beginning with the offline exhibition, *Geltung* was conceived from the beginning as a multi-platform exhibition that would have two hubs: one circulating around the online landing page, the other around GENERATORprojects. Therefore, when devising the architecture for the online space, the strategy of construction was to attribute "continuity" (Galloway 2004: p.64) between various webpages rather than cement the entire online exhibition into a single Web application.

For instance, the online aspect of the interface development was designed around the idea of constructing a meta-space so that the users entering the landing page were given the ability to view separate projects from the artist, while not having to navigate away from this base landing page. This was something specifically built into the self-developed PHP platform framework (Appx.3.3), to create a workable interface that would have two operations. The first was to enact the ethic of an exhibition site, with clean text and white aesthetic (similar to a white cube), which would entice the user to navigate the page and discover more information about the project, who the participants and collaborators were, and provide the hyperlinks guiding users to the artworks. The second operation would provide the links to the artworks, meaning the interface was enacting the idea of a crossroads, or junction, to separate rooms where each artwork existed.

> *Convention:*
> < a href="http://your-url.com" >
>
> *Agorama's implantation:*
> < a href="http://your-url.com" target="_blank" >

This was done by the simple operation of opening each hyperlink into new browser tabs, similar to the functionality found on social media platforms such as Facebook and Twitter.

Geltung[Validity] exhibition overview
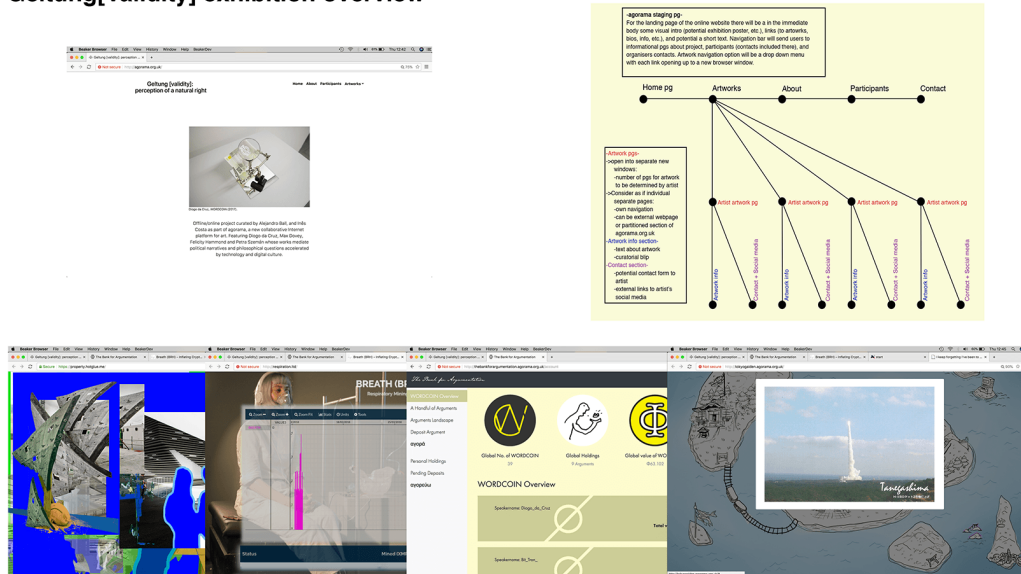
Fig.8.Geltung [validity]: perception of a natural right. Online exhibition distribution chart. By Alejandro Ball.

When contrasting this operation to the physical site, the effect of the online interface is to expand the space of viewing in a natural progression. One aspect that affects the *continuity* of the Web is very much bound up with hyper-reference-links (HREF) and their implementation. In general, when clicking on a HREF the user's current browser tab is forwarded to the site of the Web address attached to the HREF. From my perspective, this hinders the User Experience (UX) when encountering art because of disruption to *continuity* (Galloway 2003: p.64), i.e. the user is pulled away from the exhibition hub. In this sense, similar to a physical exhibition, the technique of opening new browser tabs keeps the user 'inside' the exhibition when navigating to artworks. The exhibition, as a whole, has two aspects to consider: the online representation and offline representation. In each case, both were conceived to act as their own internalised exhibition, while simultaneously sending outbound links to each other. In this regard, the two 'sites' are considered by this research as *complementary exhibition* components.

Moving on to the actual artworks, each created the illusion of a new room in the exhibition that was simulated by opening parallel browser tabs[22], which were all related to the online exhibition. In this case, the artworks enacted two things with their interface (in no specific order), one of which was the effect of elongating the space of the online exhibition, as described above through the operation of opening parallel browser tabs. The second was to act as an artwork[23], thereby providing a complementary exhibition pattern between the online and offline exhibition spaces and artworks.

Diogo da Cruz

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[22] It is a little-known fact that a user does not need a mouse to fluidly cycle through all of their browser tabs. A user can easily on most browsers (this works on the big two: Google Chrome and Mozilla Firefox) simply press the keys 'ctrl+tab' to cycle right through their tabs, and press 'ctrl+shift+tab' to cycle left through their browser tabs.

[23] In the case of Max Dovey, what was shown for his online element was in fact a vital component of the actual physical artwork presented in the gallery (Appx.2.2.2). As the platform was his only online element, it was agreed to use it as an extension of his physical work.
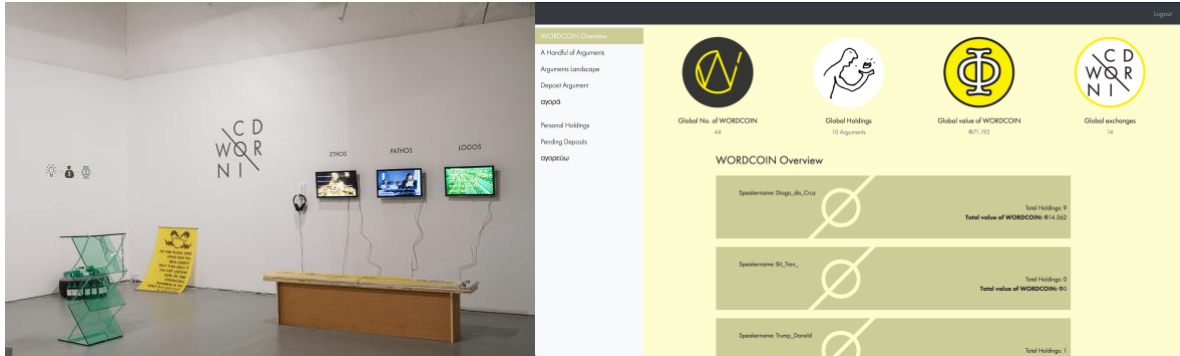
Fig.9.Diogo da Cruz, *WORDCOIN* (2018). Left exhibition installation. Right online interface for *The Bank for Argumentation.*

Diogo da Cruz acknowledges that, at its core, WORDCOIN is a *multi-platform* project that can present itself through various channels and contexts (Appx.2.3.2). When considering the composition of the project on a physical level (vinyl, printed labels, digital prints, an inflatable chair, Perspex podium), each one of the elements does exhibit a migratable quality. This is further emphasised by da Cruz's use of the WORDCOIN site, which serves as part documentation page, but also as an installation component, and acted as the tangible link to the online exhibition site.

The Bank for Argumentation was proposed by da Cruz as a progression in his project for the exhibition, which simultaneously acted as an endpoint to the project for the time being (Appx.2.3.2). Diogo's initial thought for the project was to create an online bank where individuals could sign up for an account. Once granted an account, the user could submit a written argument to Diogo, who would actively login as an administrator and value these submissions and convert them into WORDCOIN currency for the user's account balance. The site's UI was conceived in two parts. The first was a standard login form for returning users that also doubled as a registration form for new users. The second portion was a user control dashboard, where a registered user could access their account details, deposit a new written argument for conversion into WORDCOINs, and a trading centre (that da Cruz named the argument landscape) where users could trade arguments for other users' arguments.

As a whole, WORDCOIN then encompassed three spaces: GENERATORprojects, da Cruz's WORDCOIN webpage, and the Web application *The Bank for Argumentation,* with each acting as an independent aspect while also forming a single, albeit *multi-platform*, artwork.

Max Dovey

As opposed to the projects developed by the other artists in the exhibition, Dovey's project focused many of its assets into a single point, the sculptural installation in the gallery, which also included the online element. This online element was a viewing platform that Dovey had created using various data-based services, for example producing graphs from captured data, and acted as part artwork information, part research background, while providing a live gratification point for participating audiences.
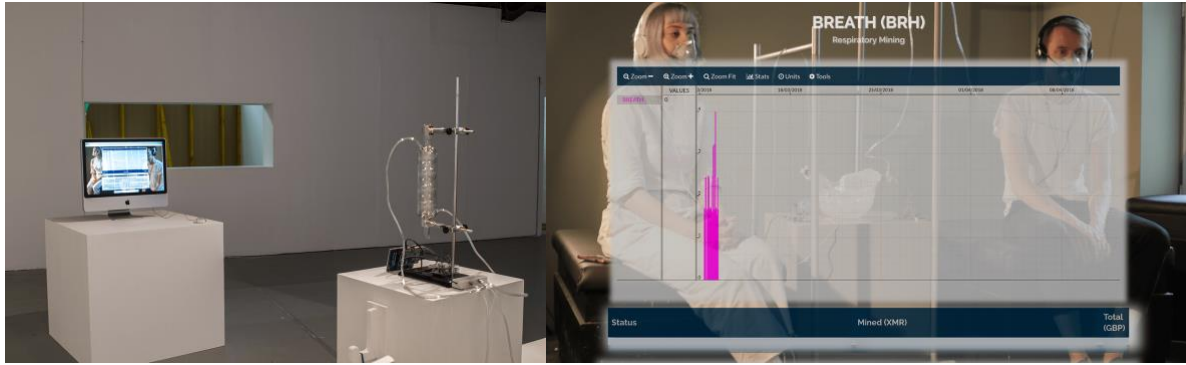
Fig.10.Max Dovey, *Breath (BRH)* (2018). Left exhibition installation. Right online interface for *Breath (BRH)*, developed by Max Dovey.

The end result was a functional machine-sculpture which an audience member could breathe into and through this action enact the blockchain algorithm, thereby generating monetary value through the use of their breath.

This energy would then be read by the Arduino processor and then transferred to the Raspberry Pi with a display, where the computational process would take place. This process was the actual blockchain algorithm in action to convert the audience's labour into hashable content driving the creation of value for the currency Dovey had devised: BRH. Through this operation, each of the artwork's components, i.e. the sculpture, the computer flanking the sculpture showing his online component, and the participation station, in many ways created a single interface and put the artwork in an interesting distributive state.

Looking at the online aspect, while informational and visual, there wasn't much for a user navigating the online exhibition to grab onto, and this was a strategy that was agreed upon because Dovey wanted to focus on the participatory system in the gallery. The online portion in its own context among the other online components alluded to its *unsitely* nature through the actively changing graph, which captured the live participation efforts of gallery audiences.

In this case, the online aspect, compared to the offline aspect of the work, shows more signs of an interface effect that properly activates in tandem with the other project components, while on its own, or outside of an exhibition context, it observably becomes a documentation object. Interestingly, Dovey also expressly stated that he did not consider Breath (BRH) a *multi-platform* project and felt it more akin to an *unsitely* or *uncertain* project (Appx.2.2.2). Thus, we could say that Dovey's overall interface culminated in the collaging of *media ecologies* (Fuller 2005) which, when viewed separately, distinctly showed missing content. This project exhibits a *distributed* condition over, say, an *extended* or *complementary* alignment between the pieces, whereas the other artworks in the exhibition exhibited *complementary* alignments in terms of its *distributive network* (3.3.1.2).

Felicity Hammond

In the initial proposal from the curatorial brief, Felicity Hammond submitted an immersive installation that had its wall and floor painted green – thereby creating a giant *greenscreen* environment. For the online aspect of the work, Hammond thought to play further with this *greenscreen* element by creating the online work from photographs from the live exhibition and replacing the green surface with digital renditions from her project's appropriated materials.
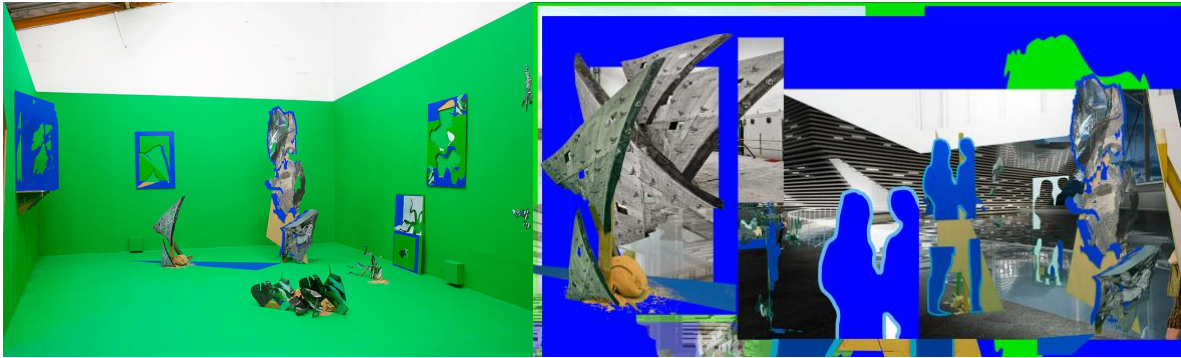
Fig.11.Felicity Hammond, *PROPERTY* (2018). Left exhibition installation. Right online artwork interface developed by Felicity Hammond.

The final product was an immersive enclosure that really isolated the audience member, transporting them out of the space into a digital realm. The online component became a collage of the various images she took of the physical exhibition, the digital representations of her sculpture object present in GENERATORprojects, and visual research on a green background. When commenting on these two polar opposites, Hammond did admit that she was happiest with the physical installation, while the online element fell short of her expectations. An interesting aspect of this is her admission that she came up against technical knowledge barriers which prevented a realisation of the online work closer to her concept (Appx.2.3.3).

Additionally, the outcome of the multi-platform interfaces, in this case, reflected a *complementary exhibition* pattern of exchange between the elements for its distributive network, which also reflected Hammond's final thoughts on the project.

Petra Szemán

Szemán's work, a progression of a previous project, involved a three-screen projection for *Geltung [validity]*. For the online portion of the exhibition, Szemán and I discussed the development of an interactive map that would act as a meta-narrative of her time in Japan, which was also the major inspiration for the three-screen installation.

With regard to technical hands-on activities, my role within Szemán's work fell into several categories, for example, audiovisual (AV) technical adviser in terms of the videos' required format and the easiest configuration for physical installation. As for the online aspect, Szemán was really attracted by the idea of collaborating on an online piece, as this allowed her to realise something beyond her personal digital skills (Appx.2.3.4). To this end, we collaborated closely through email exchanges on various ideas and a draft platform framework for the UI and UX (Appx.3.3).

Additionally, Szemán, similarly to da Cruz, decided to create a distributive component with complementary qualities for her distributive network. In other words, the online and offline site could work within their own contexts, though when in concert they acted as a whole artwork. Because of this, Szemán's work is easily digested outside its project's context.

An interesting aspect of the whole work was the division of elements, meaning that in the gallery space the audience was presented with a three-screen rear screen projection with wireless headphones that had a sonic narrative of Szemán's voice recounting the life experience of travelling to Japan and its influence on her character as a whole.

Fig.12.Petra Szemán, *I keep forgetting I've been to Tokyo: Gaiden* (2018). Left exhibition installation. Right online artwork interface developed by Alejandro Ball.

The online side of the project became a visual mind map, which was illustrated by her and had, hidden away in its folder, selections of her personal journal from the trip, YouTube videos, images, gifs, etc. In the development of this framework, Szemán expressed the type of aesthetic that she was looking to achieve and the type of website operations she was looking to realise: points of interest were highlighted when hovered over that revealed path guides from one point of interest to others on the mind map and popup windows that would show content like text and digital media when a point was clicked.

One interesting note on the work, learning through interviewing Szemán, is her acknowledgement of a multi-platform configuration between the two elements of the project, but also her preference to not exhibit the online aspect in its own context. Szemán's reason why is due to the online platform being conceived as part of a larger whole (Appx.2.3.4).

3.3.1.2 Distributed Network

As previously stated in the introduction to this chapter (3.1.2), the distributive network for the exhibition *Geltung [validity]* incorporated a large distributive network through its various stakeholders. Considering that the exhibition had two principal organisers – i.e. Agorama and GENERATORprojects – four participating artists, and finally a parent organisation – North East of North (NEoN) – the project as a whole involved seven nodes in its distributive network, inclusive of both online and offline aspects. And each of these seven points in the distributive network had its own entanglement with social media platforms.

Examining the distributive network for the exhibition, there is a particular effect that is imposed on all the project nodes, namely that each node had its own interlinking network. For instance, in the case of da Cruz's online segment, *The Bank for Argumentation*, this node has directly attached to it da Cruz's own network interlinked with his artist page, social media accounts, in addition to the distribution directed from Agorama's exhibition portal and the surrounding network. In this case, the node attained its own ecosystem, which acted as a content giver and a communications tool for the wider research project WORDCOIN, and circulated users back to the wider exhibition ecology. There was a similar distributive network for each of the other modular nodes in the exhibition.

Examining the network structure from Agorama's exhibition page point of entry, there was a similar reciprocal exchange happening in that the portal node cycled individuals out to the project's artists and collaborators, in addition to directing traffic towards the artworks. Therefore, as the artwork node, this main exhibition junction has the dual effect of giving context and communicating the wider exhibition project.

The redevelopment period for Agorama, which took place during the commencement of this research (Appx.3.2), permanently fixed the organisation's distributive structure in an alternative multi-platform setting, which deviated from common institutional/organisational Internet practice. For instance, with the change from fixed website to that of a true multi-platform space, the interconnecting network would now be dramatically different from project to project, dependent on the number of platforms interlinking project events, and created various entry points rather than a fixed number, i.e. the organisation's page, and their multiple social media accounts. An additional factor of this modular nature, or multi-platform structure, was that Web pages from outside the Agorama subdomain structure were able to be implemented into the distributive network as modular pieces. In the case of *Geltung [validity]*, two of the four commissioning artists produced external platforms to the subdomain structure, and directly highlighted this modular infrastructure and its direct effect on a distributive network. A direct consequence of this is that, with multiple entry points, space for the dissemination of art was created because of the elongation of the project's space, due to the nature of each node acting as both a content-giver and communication channel for the larger ecosystem as a whole.

3.3.1.3 Critical Protocological Review

At this stage in my practice, my abilities had significantly increased in the realm of digital literacy and programming (Appx.3.3.1), which also highlights a shift in my practical approach to exhibition making from a curator to system maker. Because of this, many of the lessons learned through the experience of the *PIL 2.0* exhibition (3.2.1) and the commission *Trolling is the New Punk* (3.2.2) were re-evaluated to enact a different methodological approach in the online development of *Geltung [validity]*. At this stage of Agorama's development, there was an embrace of the collective's placelessness, which meant that Agorama would rely less on a fixed online site, in other words, a fixed or super hub platform (3.2.1.3), in favour of a more modular approach. Essentially, this would mean focusing project dependencies on a sub-domains structure (separate websites that still fell under the same domain name agorama.org.uk). In this sense, it was conceived that *Geltung [validity]* and forthcoming projects would be comprised of modular platforms made for the specific project.

Simultaneously, the use of the subdomain structure would allow for the development of new content, thus the expansion of Agorama's network footprint, while preserving and archiving older still-living Web projects. In the instance of *Geltung [validity],* this meant a wider variety of online content, rather than fixing a limitation to each online work of art imposed by a Web hub. Furthermore, for artists who already had programming experience or wanted to attempt their own Web installation (in this exhibition's case Max Dovey and Felicity Hammond), these externally developed projects could be easily connected inside the online exhibition network through HREF links (3.3.1.1). In the example of *Geltung [validity]*, the main online 'exhibition' site was a simple information webpage, which acted as a crossroads to a wider environment of distributive projects that used the simple operation of opening new browser tabs for each artwork link clicked by the user, thus rendering the browser as a navigable exhibition site.

For artworks attached to this distributive system, this meant that previously experienced limitations, such as those from *PIL 2.0* (3.2.1), were now non-existent. For example, in Szemán's work, she produced a 3-screen moving image piece that relayed a journey of self-discovery. The idea of an interactive mind map was chosen by Szemán as her complementary online piece. However, da Cruz's ambition focused on realising the final component for the WORDCOIN project, *the Bank for Argumentation*. If the online exhibition had focused its efforts around a

single online platform, neither of these online artworks could have come into existence in their current form. Why? The reason is because of the base architecture. After evaluating *PIL 2.0* and the pilproject.net hub, it was observed that to create a platform that could encompass a wide variety of experimental online art was a near impossibility. Furthermore, in the case of Dovey and Hammond (both developed their own online artworks), both artworks would have had to compromise on their online contributions through the act of adhering to Agorama's exhibition hub. Additionally, this would have also tied Dovey and Hammond's online components to Agorama's online platform permanently, thus reducing the artwork's distributive and dissemination power.

In view of this, by allowing Agorama's main online presence to become a pseudo-online hub for the purpose of interlinking dependencies (i.e. the artworks to exhibit), the infrastructure for the online exhibition system became a conceptual framework focused on modulation with the functionality of circulating local audiences and online users through a collaged network of experimental online art.

3.3.2 Kubos Nero Screening Platform

The approach of this project, in terms of my practice, was to achieve a Web application that could counteract the use of mediated platforms, i.e. YouTube and Vimeo. What this entailed was the development of a screening platform that would enact several aspects of cinema and artistic moving image exhibition techniques, such as designing a minimal interface that would recall a *black cube*, and provide the user with a limited set of controls over the playing operation of the screening video (for instance, providing basic play and pause functions, sound control and full screen options, while at the same time removing advanced options such as fast-forwarding through the video).

As for interaction with the artists, my role within the project did not include the selection of moving image pieces. Additionally, I had no contact with the artists and my role was that of a pure system maker with the sole focus of designing and developing a piece of Web architecture for an offline project.

To clarify further on my role for this project, I was not the curator for the event, and acted as an AV technical advisor and technician for the physical event. For the online platform, I was the principal person that initiated the project by Approaching NEoN directly with the idea to extend the screening event to online audiences. In terms of the development of the platform, I once again coded the platform from the ground up.

3.3.2.1 Multi-platform Interfaces

Kubos Nero Screenign platform (NEoN) Overview
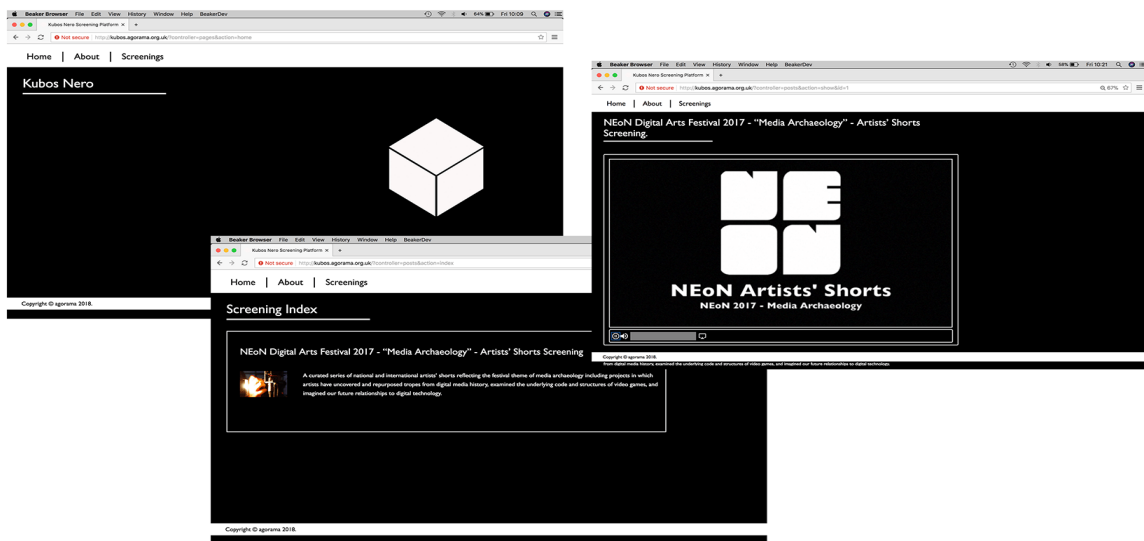
Fig.13.Kubos Nero Screening Platform. Online interface flow chart. By Alejandro Ball.

For this project, an analysis of multi-platform interfaces is somewhat redundant due to the configuration of the project. As an extension to a precursory event, the *Kubos Nero* platform existed on its own for the duration of the NEoN Festival. Thus, this section only focuses on a single interface.

With regard to the platform framework used, this was the self-developed MVC PHP architecture that was also employed for the *Geltung [validity]* online exhibition landing page (Appx.3.2) and was specifically developed with the *Kubos Nero* project in mind[24]. Another aspect to take into account is that, due to the development of the coding architecture used (Appx.3.3), the interface can be broken down into two segments, the landing and about pages, and the screening section.

The interface itself was conceived to have a page flow whereby the user would land on a landing page of the website – which for the NEoN Festival remained a neutral aesthetic (Fig.13) – which would then be topped by a navigation bar that presented the user with three navigation choices: Home (landing page), an About page, and finally the option Screenings. The landing page was originally intended to have the presently showing screening embedded on it, thereby allowing audiences to instantly access the screening content; however, this was later scrapped in favour of allowing the user to navigate through the site naturally towards the Screening tab of the platform.

In reality, when looking at the interface, the desired effect for the overall design and UX was to conceive a space whereby the cinematic would be enacted, thus the attribution of black for the background with sleek white lines that attempted to flatten the interface and direct attention to the media objects embedded into the page, i.e. image graphics, text, screening listings and, of course, the screening content itself.

The second segment of the interface – the screenings – was divided into a further two parts, the first being the screening *index*. This was chosen to specifically emulate a blog roll, i.e. the up to

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[24] This framework was subsequently used for *Geltung [validity]* after the successful implementation of version 1 of the architecture.

down topology structure for the UI, so that each new screening would appear above the previous entry and would create a natural UX pattern of a user scrolling from the latest entry downwards. Each entry was designed to be enclosed, allowing each one to be distinctly separate from others. Finally, I decided that only the title of the entry would be hyperlinked within the structure.

The individual screening post's main point of focus, and where the majority of the focus of the interface lay, was the <video> element. The majority of a <video> element's UX relies on the user's chosen browser - the three main Web browsers, i.e. Chrome, Firefox and Safari, each responds to the element in slightly different ways. Due to the big three[25] having separate behaviours in terms of UI design, there are several projects which have been initiated to avoid compatibility issues[26]. However, when interacting with the <video> element on a HTML design – specifically those of the full screen operation – special care must be taken to ensure this vital function works on all big three browsers. In other words, strict programming logic must be implemented that determines the type of browser a user has so that the correct Webkits are employed to render the page and its functionality correctly (Appx.3.3). This is due to the interactive controls attributed to a video player that utilises more complex forms of CSS, and the inclusion of JavaScript (JS) scripts that are used to enact the animations for the controls and give these controls the ability to manipulate the media file that is playing.

This elevated level of language complexity brings into account the various different ways CSS files are interpreted by each browser and, additionally, the variance in JS engines used[27]. Because of this, a compromise had to be achieved in the UI and UX of the <video> elements' operation to achieve a coherent aesthetic across the three major browsers.

3.3.2.2 Distributed Network

The distributive structure revolved around the different platforms involved in the 2017 NEoN Festival and included physical dissemination channels, such as the NEoN 2017 Digital Festival printed guide and word-of-mouth during the physical screening event. However, due to the Kubos Nero Screening platform being an online extension to this physical event, this section focuses squarely on the online distribution of the screening platform and its content.

The primary modes of dissemination were proposed to be (a) on the NEoN webpage and located on the events listing page (northeastofnorth.com 2018), and (b) through NEoN's and Agorama's social media connections. In terms of the operation of dissemination, the plan was to first stage the *Artists' Shorts Screening* event, with the intention of utilising the distributive networks of each stakeholder (Agorama and NEoN), thereby creating a circulation of users around the extended screening platform. Additionally, the link to Kubos Nero on the NEoN events listing page was viewed by Agorama as a crucial point of linkage in anticipation of non-local online users navigating to the NEoN festival programme, and local online users who happen to discover the event listing after the event took place, thereby granting them immediate access to the artistic content on show and allowing for the screening to be extended beyond its physical remit.

Unfortunately, in an analysis of what actually happened, the dissemination plan outlined above failed. This was primarily due to NEoN failing in the Web distribution of Kubos Nero, meaning

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[25] My reference to the 'big three' speaks of the three dominant web browsers: Chrome (Google), Firefox (Mozilla), Safari (Apple).
[26] Reference Normalize.css open-source project: https://necolas.github.io/normalize.css/ [Last accessed: 13/12/2020].
[27] If we look at the big three browsers, Apple has their JavaScriptCore engine, Google has the V8 JavaScript engine, and Mozilla (Firefox) uses the SpiderMonkey engine. This does not take into account Microsoft's (Internet explorer, Edge browser) proprietary JS engine.

that in the end the link to the screening platform was not attached to the event's online post. Similarly, documentation of the period of the NEoN 2017 Festival (Appx.3.2.3) shows that circulation of the screening platform via social media also fell short of expectations with not a single post being shared about the platform on either Facebook or Twitter.

An important note to make about this examination between the online dissemination plan and what actually took place is that, while this was a significant issue in tracking the complex system of Kubos Nero and its potential reach, due to the online ecology created for the NEoN digital festival there were several nodes floating around the network that pertained to content that connected back to Agorama, for example, *Geltung [validity]*. Thus, it can be assumed that online users did have opportunities to reach Kubos Nero through links to Agorama's other NEoN festival contributions. However, while this thesis proposes this as a safe assumption, it remains an assumption. Realistically this feeds back into the complex system created for this online extension and the potential shortcoming of the system developed, specifically in its ability to modulate its content via other protocological means, such as embedded Web content.

3.3.2.3 Critical Protocological Review

The development of this extension took several forms. The first of these was to follow the ethos established in the overall Agorama framework, the creation of modular infrastructures that could be attached to events and provide an expansion of the events space. For the Artists' Shorts event, this meant extending the activity into the virtual realm. Interestingly, an effect of this contextual development was the elongation of the event's temporal footprint; the artistic content was available regardless of the physical event and created a pseudo-archive for the artistic content while simultaneously becoming its own complementary node. However, there was a secondary factor in the development of this piece of infrastructure, which was to also devise a platform that could be a tool for initiating an online independent curatorial screening venue. A fundamental flaw in moving image social networks like YouTube is the harvesting of personal user data. Furthermore, in the terms and conditions for the use of these types of platforms, more times than not there is a 3rd party ownership contract made between the company and the user upon creating an account.

In reviewing the platform created, fundamentally it operated exactly as intended - a modular hub that could attach itself to a large project or event (such as the NEoN Digital Festival) and extend moving image-based content into the online space. However, in terms of the dissemination of the platform's content, the circulation of the Artists' Shorts screening video files was greatly hindered by the separation of the Kubos Nero platform and the NEoN central hub site. Reflecting on this aspect, it is now appreciated that this type of modular platform needs to take into account what it is being attached to right from its development stage. In other words, it will be part of the distributive network for the dissemination of art or in the NEoN Digital Festival and will be attached to a large art platform hub. In this case, it was identified that Kubos Nero could have greatly benefited from expanded embedding capabilities, meaning video embedding or the use of <iframe> HTML elements. In that instance, Kubos Nero would have had the same capabilities as YouTube or Vimeo, hosting the content on a base-platform (Kubos Nero in this case) and disseminating it through to the wider NEoN online network without the need to have the platform's HREF link disseminated to users. With this type of pliability, Kubos Nero could have used this operation (<iframe>) to reduce the number of platforms a user would have to navigate

to in order to reach the online screening, while also conforming to NEoN's dissemination strategy without compromising the conceptual framework with which Kubos Nero was designed[28].

3.4 Overall Case-studies Reflection

This chapter set out to investigate two examples from my practice and analyse the exhibition systems developed within each project presented. The aim was to understand: i) each project's exhibition platform structure and interface to ascertain the system's aesthetic and visual conveyance and ii) each exhibition system's method of dissemination to understand its feedback loop or system operation. These two elements are viewed by this research as the two most important criteria for looking critically at the making of online/offline and online-only exhibition systems, i.e. comparing the theorised plan to that of the actual project deployed. The final analytical section of each project was capped off with a protocological reflection of the whole system, its elements, and further improvements to my overall practice and methodology for future projects. In this regard, each collection of projects brought forth a number of findings which are discussed below.

Within my own practice, I observed a diminishing of a central project or curatorial hub in favour of a modular approach that focused, on a project by project basis, on the development of new platforms. The increase of social media use, and the number of social media sites available to users, means that the circulation of project or artwork information now happens primarily in these pseudo-public spaces, and reduces the need for a central online hub. Reflecting more deeply on this observation, if we examine other examples of contemporary artist-led curatorial projects, especially those centred around a single unifying platform or website, not only does this place limits on the artwork dependent on which platform framework chosen but also space becomes a commodity. For example, the organisation offsiteproject.org has a platform on a fixed site that is only able to accommodate one exhibition or event at a time. In conversation with the organisers of offsiteproject.org (Appx.2.3.1) simultaneous projects are accomplished through the appropriation of other commercial platforms, such as the group's Google Maps online Residency programme[29]. Another example can be found in the curatorial platform digitalartistresidency.org, where PILproject established a project (Appx.2.1.1). This platform allocates a given space within its site for a project, and through this allocation of space on a single platform a hierarchy is established (whether intentional or as an indirect consequence), e.g. 'the current' project label and the 'past' project label. However, in the case of Agorama's adoption of a modular approach that relied on a subdomain structure, a base-platform was established to accommodate several projects simultaneously, along with other types of activities (e.g. Kubos Nero) on an equal footing, creating the impression of a rhizome (Deleuze and Guatteri, 2005).

Also noteworthy is the identification of types of platforms that I have employed within both PILproject and Agorama: webpages, Web applications, Web scripts, and complex *unsitely* systems. To explain further, these platform model types are tangible Web architectures that can be built and refined with each use. I consider them tools for building a diverse range of online and/or online/offline exhibition systems. These platform models (or systems) are: the modular Web application (e.g. Kubos Nero, Agorama pseudo-hub, and *The Bank for Argumentation*), the modular website (Felicity's online PROPERTY, Szemán's online Tokyo Gaiden), the complex

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[28] A point to note about <iframe> HTML elements is that they allow for embedding of not only the visual content but also the scripting or operations of the content, meaning, in the case of Kubos Nero, the operations of the cinematic experience, i.e. no fast-forward or skipping option would have carried over to any site that used its <iframe> code.
[29] Link offsiteproject.org: http://www.offsiteproject.org/ [Last accessed: 20/12/19].

unsitely or closed-looped system (e.g. Breath(BRH), It's Complicated, WORDCOIN) and, finally, the embedded system (e.g. popup engine, prompt games[Agorama prototype webpage]).

Another finding is that my own online artist-led curatorial activities can encroach on new levels of space and push the spatial boundaries and perception of the site for art and the exhibition. This is achieved through the act of entering the personal *telecocoon* of an art user and is seemingly only achieved through the appropriation of the social media space, i.e. direct connections to a user's personal media space. It can also be achieved through the development of a mobile-ready system (which has its own limitation related to the mobile manufacturers' development policies).

My role's characteristic throughout all the project show deviations from a curator's practice. further when working on projects that can be viewed as artistic (3.2.2) my practice did not reflect a clear artistic practice. In all case, I intended towards system making and working with a paradigm that focused on coding (or learning how to code) *distributed exhibitions.* On reflection of this change in practical paradigm, I found my roles transformation in relation to these finished projects, and similar to the notion of a *distributed mode of curating*, into a system administrator/maintainer, even technically a network administrator, or webmaster. The indication of this transformation is identified by me as not being inline anymore with Cook and Graham's 'modes of curating' due to the technical knowledge needed by a network administrator or webmaster.

Chapter 4 – The Creative Telecocoon

4 The Creative Telecocoon

Following on from the previous chapter's findings (3.4), this chapter addresses the primary questions of my research (1.2). In particular, it focuses on the diminishing role of a central project or curatorial hub within my practice, and how my case studies evidence encroachment of an individual's personal digital space, the *telecocoon*, and how the presented frameworks (4.2) play a core role in my research findings.

As previously stated, the use of a central hub - meaning a dedicated art platform or webpage for curatorial practice - was seen to be a diminishing component in my workflow, especially in the development of distributive artistic or exhibition systems. While it is not my intention to discount a project that uses a single Web art platform, in my practice I have observed that each artistic project brings its own set of aesthetics and technical challenges. Thus, an attempt to fit these projects into a single rigid framework creates more challenges to the creative process by increasing levels of compromise. In the previous definition for an online "art platform", Goriunova (2013) described this virtual site as a media ecology, i.e. collections of various different components such as a database, embedded media content, Web forum, and media repository, all under the roof of a single platform. While Goriunova stated that the online art platform was a pliable entity that could be "a stand-alone website that, together with other actors, forms an ecology of aesthetic production, but it might also take place as a subsection of a large platform, or even as a space between a corporate service, artists' work, hacking collaborative engagement, and a moment of aesthetic fecundity" (Ibid.: p.2), her research case studies also only focused on singular community-oriented online platforms.

This definition of the online art platform suggests that these types of Web architectures are consistent with a single website such as a WordPress site, at least within curatorial discourse. This was also a distinctive characteristic of Ghidini's research, where her case study analysis focused on the migration of exhibition content from one singular platform (online) to another singular platform (offline) (Ghidini 2015). However, an important advancement that Ghidini contributed to curatorial discourse about online art platforms was the inclusion of Miranda's concept of *mediated space* in her case study analysis. While Ghidini's introduction of *mediated space* into curatorial discourse is a welcomed advancement, her implementation of the notion was only the first step in replacing the previous discursive frameworks laid down by Berry (2001) and Bosma (2004) on the site of art (and the exhibition) on the Web. This factor of the art platform's definition also played into the second finding discussed in this chapter, the invasion of the personal *telecocoon.* Through my practice-led research, the notion of *mediated space* became an invaluable theoretical tool for successful collaboration and building artistic or exhibition systems that Miranda termed as "unsitely aesthetic" (Miranda 2013: p.15). It has also influenced the idea that 'site', or the online art platform, is an abstract idea.

As explained in the context review chapter (2.2.2) and in my research about online artistic practice in the previous chapter (3.1), the notion of *mediated space*, which is a combination of several different social theories in tandem with media theory and technological progression (2.2.2.2), had at its centre the notion of the *telecocoon* (Habuchi 2005; Varnelis 2008). In other words, under Miranda's theoretical rubric, not only was the online site abstracted but also the personal network of a person, in other words their personal digital space, also experienced an abstraction. Returning to the online art platform and more generally the online platform, the abstraction of a digital self would imply that each person has a different social configuration that indicates different levels of personal importance. In a review of my participants' questionnaire

and interview answers, social media is not particularly a site for the personal (Appx.2.2; Appx.2.3). For example, several of my project participants indicated how the social media platform Instagram elevated itself (in their perspective) above other social platforms for the distribution of artistic and curatorial content. This showed that, for my participants, platforms of this type represent a form of pseudo-public space. In the matter of the *telecocoon*, this would indicate that this form of personal digital space would revolve around peer-2-peer platforms such as messaging applications (WhatsApp or Facebook Messenger), SMS, or potentially even mobile apps and mobile-ready content. This thought process would also fall in line with Habuchi's study on Japanese teens and their *telecocoon* space, in addition to Varnelis and Miranda's research on the spread of mobile technology.

My research into system making and coding online art platforms (or distributive art or exhibition systems) highlights a change in a fabrication praxis for platform building. In other words, while individuals like Steve Dietz (Cook et al. 2010) and Marc Garrett (Appx.2.1) described themselves as serial platform builders, my practice while working under the notion of mediated space suggests that I am a serial *protocological* object maker and, by extension, that my practice allows for the coding of platforms or distributive systems that can encroach on the *telecocoon.* In the following chapter, the platform frameworks that were established during the course of my research are discussed. Each of the platform frameworks presented in this chapter has become a tool for my own practice and is used in the development of a flexible distributive artistic or exhibition system. The subsequent breakdown of this chapter is as follows: section 4.1 discusses my research findings around the Web's development ecology, such as the REST (Appx.3.3.2) and enhances the notion behind the *protocological* object and how this type of system making affects the *telecocoon*. The following section (4.2) delves more deeply into the established frameworks and discusses each framework in detail. Finally, the last section (4.3) is a recap, reflecting on this chapter's discussions and further contributions to knowledge.

4.1 Current Web Development Ecology

During the initial stages of my study, my practice-led research was founded on the *semantic web*. Fundamentally, the *semantic web* figures into my research as a sort of world or environment condition for the technological underpinning of the Internet. In essence, where 'Web 2.0' described an economic and potential social change (or engagement) with the Internet, the *semantic web,* with its legacy attached to the creator of the WWW (Sir Tim Berners-Lee) and its ideology of open data, represents the development side that leads to a more interconnected digital landscape. Through my practice, I essentially discovered that the *semantic web* is embedded into the current Internet only ideologically. What is this philosophy? It's essentially about opening up data for development purposes. Yet at the same time, in Berners-Lee's original proposal (Berners-Lee, Hendler, Lassila 2001) every piece of data was to have a *universal resource identifier*, meaning data would be freely available online and accessible. Yet, in my observations, Berners-Lee's notion of opening up data, which is a common occurrence, has come attached with a very specific issue: control. In other words, data is open and widespread, however it is also consolidated and specifically used for consumer purposes.

While the original proposal for the *semantic web* was quite vague in its implementation (Berners-Lee, Hendler, Lassila, 2001; ted.com 2009), technologies such as Resource Description Framework (RDF), OWL, and the query language SPARQL were developed (w3.org 2014). Yet, none of these systems became standard, despite several companies such as "Google, the BBC, HealthData.gov, Yandex, Yahoo!, and Microsoft" employing their own versions of semantic technology (manu.sporny.org 2014). Through my research, I observe this proprietary

implementation of semantic technology to be part of the *API economy*. To explain further, the *API economy* is a combination of several different developments since the 2000s, namely *AJAX,* and an economic shift towards providing software and data services (Krintz, Wolski 2013), the Internet of Things (Yamakami 2018), a design pattern geared towards seamless interfaces (adaptivepath.org 2005) and, of course, the API.

The importance of this identification indicates a shifting paradigm for Web developers, particularly for how online platforms are built. The development of proprietary Internet APIs began to create various levels for coding on the Web, similar to programming on a desktop computer. Certain coding languages such as the C programming language are mid- to lower-level semantics because of their functional capabilities of closeness to assembly (your computer's native language). Languages such as JavaScript are considered higher-level languages because their operations are unable to affect lower computer functions, for example, memory management. In a comparable fashion, the Web, through this technological development, has grown its own layers or even *stack* (Bratton 2014), meaning there is a hierarchy that affects platform building. Some platforms, which I term *readymade platforms*, such as Cargo Collective, HOTGLUE, WordPress.com, Wix, Squarespace to name a few, allow for users to develop platforms on this higher level I just described. However, fundamentally the creators of these platform frameworks are creating *protocological objects*. These *protocological objects* are, in turn, made up of widely agreed upon standardisations*,* for example, AJAX and REST (3.1.4), alongside base Internet protocols such as HTTPS, TCP/IP, UCP/IP, and DNS. This can also be considered part of the lower coding level of the Internet.

Thus, a creative practitioner has a choice in platform making: (1) to potentially appropriate an existing platform (Facebook, Twitter, Instagram), and/or develop their art platform on a higher level (WordPress.com, Cargo Collective, Squarespace); (2) push past this higher level and develop an abstract art platform on the lower coding level of the Internet.

4.2 Creative Telecocoon Frameworks

As previously described, during the course of my practice-led research I established several Web frameworks geared towards creating distributive artworks and exhibitions. Each of these platform frameworks began as open-source code and tutorials, which I used not only for development purposes but to educate myself and assimilate the technical skills into my system making practice. The platform frameworks, which I term *creative telecocoon frameworks*, use appropriated code collaged together by me with my own written code.

During my research, one of my first tasks was to learn the WordPress *readymade* framework and attempt to manipulate it to create a pliable art platform, which could accommodate a diverse array of Internet art. However, I struggled to harness the WordPress framework to create a single serving art platform, or Web hub, that could become a swiss-army knife for Internet art display. Essentially, as my digital literacy in Web technology grew, something became apparent: that a predominant number of software programs, online services, and other technologies, in general, are built with the design philosophy "separation of concerns" (Laplante 2007: p.85). This is a paradigm that has carried over from early Unix system development, which actively combats what the development field terms as 'bloat', which refers to software programs, computer operating systems, Web services and platforms such as social media fundamentally trying to offer too many operations instead of focusing on doing one process well. The outcome of systems that attempt to do too much is excessive software infrastructures that are difficult to

maintain, and inevitably become slow, due to internal conflicts between programme processes over time.

At a certain point my maker's notes flagged the problems my own practice was experiencing with the maintainability (keeping it running) of a system (Appx.3.3). Additionally, when revisiting example platforms, such as runme.org, C@C, offsiteprojects.org, digitalartistresidency.org, Art Gene to name a few, something became clear. Each platform, to a certain extent, imposed its vision of what online/Internet art is, and was only pliable through a significant amount of recoding. For instance, in the case of my experiments with the WordPress framework[30], JavaScript files could be attached to a new post through the platform's CMS. However, this would then locate an external dependency in the middle of the HTML page rendering, which causes loading time issues for end-users. Additionally, one could script JavaScript directly into a new post, but again this is not an optimal way for platform development because (a) it causes the same loading issue as loading an external script, and (b) WordPress by default automatically adds a <p> element to every line in its CMS interface thereby destroying the script by processing it as regular text. To correct this, an art platform using WordPress would need either an external plugin to disable this default feature or a development overhaul of the framework's lower-level code (which, in the case of the latter, would prevent the framework from being updated by WordPress's regular security updates). Thus, I switched my practical research to focus on coding smaller modular Web frameworks that could still utilise server-side operations, such as PHP or Node.js systems. Moreover, from my perspective, this move to coding my own platforms also aligned this form of Internet art with a notion of site-specificity.

As stated in the previous chapter, the site of art can be expanded. However, this is only via very carefully developed projects that take into account mobile adaptability (size and scale of the display) and effectively communicate with various platforms on a protocological level in maximising the projects' distributive qualities (matching them to their native environment). In light of a mediate space of engagement (Miranda, 2013), the stage is set and the technological computational platforms are available to artists, curators and other creative people to bypass nearly every gatekeeper and provide the user with a happening, performance, interactive, or participatory experience; it simply needs know-how. These protocological objects, or online platforms, are built on the current standard for Web development, but a key feature is that they, in contrast to our examples of pseudo-protocological objects (3.1.4), are the allies of protocol, and thus are in favour of decentralisation and distribution. The frameworks outlined below are meant to be manipulated at will, and only represent a starting point for a project, whereby the practitioner utilising them will eventually fork these templates and devise their own personalised toolkit.

4.2.1 Modular Website

In my research, the modular website is seen as the simplest form of a Web framework. It consists of 'bare-bones' Internet languages like HTML/CSS, and it does not use a backend system, i.e. a database or another type of server-side request. On its own, this type of online platform is very static, meaning the level of dynamic content is limited to images and small gif animations and not capable of containing its own video content, unless the system maker uses <iframe> elements to embed the video from an outside platform. Yet it is also extendible in its UI capabilities through the addition of JavaScript. In this case, the modular website can easily

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[30] This platform is live and reachable at the URL: http://prototype.agorama.org.uk [Last accessed: 19/12/2019].

accommodate video content and attribute computational effects in creative ways[31]. Similar to the modular Web application (4.3.3), this type of online art platform is seen by my research as a singular platform that is meant to house one thing: a project's information, an *embedded system* (4.3.2), or some other creative content, and do that one thing well.

While JavaScript, as will be discussed in the section below (4.3.2), is the core language for creating an *embedded system*, it is a multi-purpose language that is also generally used by Web designers to create dynamic UIs and UXs. For example, if we examine the developed art platform *Tokyo Gaiden Map* (Appx.3.3) for Petra Szemán, this platform is in essence a *modular website* because it consists of a core HTML and CSS architecture and uses no backend request processes. However, it is also overlaid with JavaScript (in this case the JQuery library), which allows for me to add features like the highlighting effect a user experiences when they hover their mouse cursor over designated 'click points'. Moreover, there are added features such as clickable popup elements that are HTML and written into the code but remain hidden till a user clicks on one of these 'click points'. The Szemán's art platform's *modular website*, despite being the simplest of platform frameworks, is quite pliable when used for a specific purpose.

I consider these types of platforms well-suited for pseudo-hubs (i.e. a single-use curatorial or project platform) that link out to other art platforms within a distributive exhibition or network. Additionally, these types of platforms are also good for individualised projects. The example I provide is a project that was developed in the early stages of my research and represents this type of single-use, or individualised project (Appx.3.3). When reviewing this development project, it is seen that the platform dedicated to the project *Deep Throat Done* (Appx.3.3.1; Appx.3.3.2) has a simple interface. However, it is extended beyond its HTML and CSS capabilities through the implementation of JavaScript, first through the activation of the media video, and secondly through the overlaying of the ASCI converting JS script. Through this operation, I was able to craft a video media experience reminiscent of Vuk Cosic's original *The History of Cinema: Deep Throat* and bypass the technical complications of Adobe Flash (which the original piece uses) and the obsolescence of the proprietary language in Web browsers. Additionally, JS is also employed in the automatic loading and playing of the video content by the simple action of muting the video[32].

Likewise, these types of framework can easily house embedded systems within them, such as the example of *The One, The Many* and *Trolling is the New Punk,* for a particular project's or portfolio's purpose (Appx.3.3). Similar examples of these types of platforms can be seen in the work of Jodi[33]. To an extent, Flash-based online projects are considered to have this combination, i.e. modular website plus embedded system because Flash is a client-side enactment.

4.2.2 Embedded System

The embedded system is another basic entry tool for a system builder. It is essentially just a script, JavaScript, that is created to enact operations over the user's Web browser. According to my own tests the script works on both desktop and mobile browsers, though for the latter it functions very differently, as will be discussed below.

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[31] An example of this type of dynamic self-hosted video content can be seen in my practice-based project *Deepthroat Done*: http://deepthroat-done.agorama.org.uk/ [Last accessed: 20/08/19].
[32] As of 2018 web browser manufacturers have implemented a policy to prevent auto-playing media content. This restriction can be bypassed through the simple action of muting the said video media content.
[33] Please note, the analogy of the embedded system to that of Jodi's work only indicates the type of project page/platform in client-side operation, and what is observable to my technical eye and experience. It is not known what style platform combination Jodi uses.

To explain further, an *embedded system* has client-side affairs, meaning that what is being enacted is not happening on a server somewhere else (though the webpage will exist on another server). This is because JavaScript is built into the Web browser, which is normally called a JS engine[34]. Because of this inbuilt functionality, the scripts that activate a user's Web experience are less dependent on the platform on which they are situated, and more on the circumstances under which they are deployed.

Examples can be seen in the popup engine developed by PILproject (Appx.3.3). This embedded system (if we remove the webpage wrapper) basically operates the function of creating new browser windows. This is a similar operation as noted in Chapter 3; however, the difference comes in the interaction. JavaScript allows for extended UI functionality through the implementation of programming functions, thus HTML elements such as 'onclick', 'onmouseover', or 'onmousein' to name a few, can be used. This element is implemented as:

<div class="my-class" onmouseover="myFunction();"></div>

In the example above, this DOM element has the attribute 'onmouseover', which now means if the user at any point floats their mouse pointer over this HTML DOM the function 'myFunction()' activates.

Another example of this is from my experimental playground on prototype.agorama.org.uk (Appx.3.2), where I created two different types of embedded system games. These examples help further establish the computational operations allowed by an embedded system.
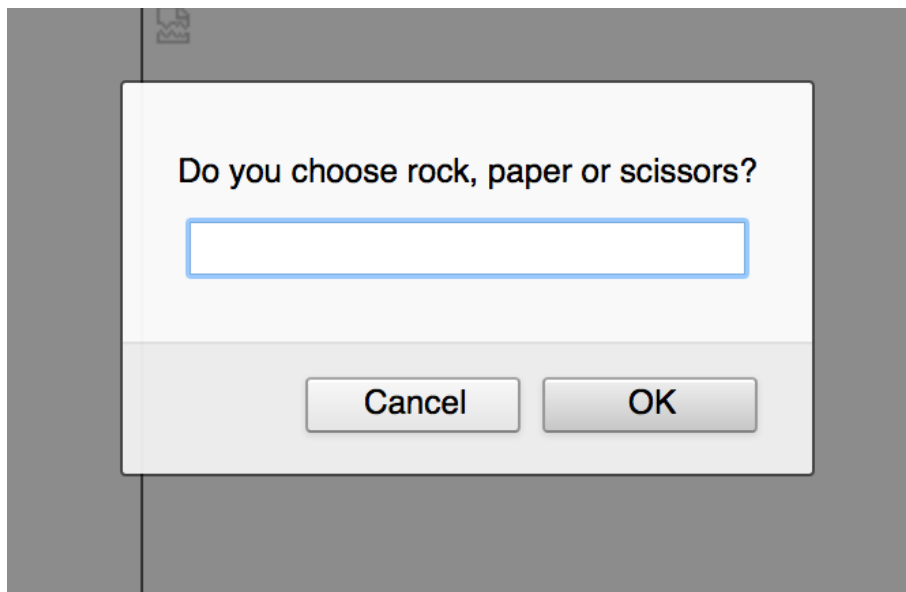
Fig.14.Prompt window example. Taken from *Embedded systems*, developed by Alejandro Ball.

The games (Appx.3.3.1) both use in-depth logic to provide a basic video game. However, for these embedded systems, I use the browser prompt and alert operations. To explain this further, a prompt and an alert is an internal popup window that is completely rendered by the browser. The alert is an alert window that can present a user with additional information, e.g. a privacy policy that has to be read before entering a webpage. On the other side, we have the prompt

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[34] There are several different proprietary JS Engines. The big three browsers -Firefox, Safari and Chrome - each deploy have their own JS Engine. Each of these 'engines' enacts JS slightly differently, though not to a large extent.

operation, which is similar to an alert, but it allows the user to input data, for example 'type yes to agree' or 'please enter your name'. For the prompt embedded games, I used a combination of both prompt-inputs and alert windows then created the frontends for: 'Dragon Slayer' and 'Rock, Paper, Scissors'. Each of these games exists without the need for a webpage and can be embedded in multiple platforms.

The most important aspect of an *embedded system*, which also distinguishes it from JS scripts discussed in the *modular website* (4.3.1), is the use of the browser's API system (not to be mistaken with REST API). Thus, when discussing an *embedded system,* mobility is an essential part of the operation. This is because it only relies on the site of the browser rather than the actual website (or Web application). This can be seen specifically in my development of the *popup engine*, which is located in different *modular websites*, and in one specific case, it was located within offsiteproject.org's Website.

To review the basics of this embeddable script:

```
// Popup blocker detector
    var test = window.open("",'test',"width=400,height=400");
    if (test!= null) {
      test.close();
    } else {
      alert("Please make sure your popup blocker is disable for the good stuff!");
      test.close();
    }
// Popup trigger
var popupTrigger = function() {
  var WindowOne = {}
    WindowOne.action =
window.open('https://twitter.com/realDonaldTrump/status/857605104417026049', "mywindow1",
"location=1,status=1,scrollbars=1,  width=600,height=400");
    WindowOne.action.moveTo(20,20);
}
```

In the code above, there are two principal functions of the *popup engine*. The first is a popup blocker detector; the second is the actual trigger. In both cases, the script is targeting the browser specifically through the calling of the 'window' object. The 'window' object, also known as 'global.window', is the browser window where Web content is loaded. Thus, this script can be moved from platform to platform without much change (unless the developer would like to attempt a re-configure of the engine's operation) because it is only affecting the browser, rather than manipulating HTML and CSS content of a designated website. The one complication in the *popup engine* was discussed earlier (3.2.2) with PILproject's online commission with Art Gene. In that case, PILproject did not have access to the underlying HTML architecture because of security reasons, and therefore we were not able to enact an intervention over the Art Gene site as previously planned. Yet, the flexibility of the *embedded system* is that, through clever Web distribution, a system maker is able to employ these types of systems, as in the example of *The One, The Many* (3.2.2; Appx.3.2.2) where it was decided between PILproject as the Art Gene online curator to create a distributive or *unsitely* artwork and use visual aesthetics to tie everything in together.
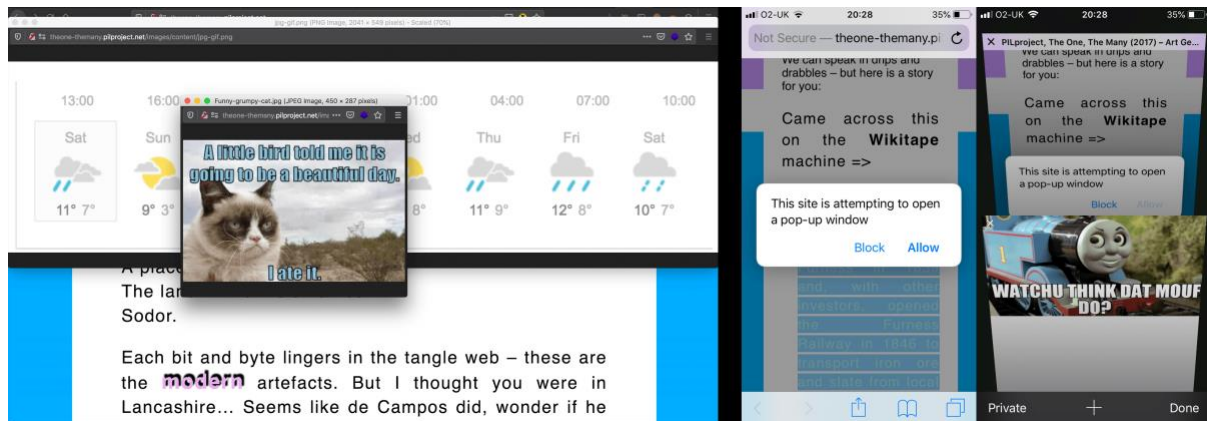
Fig.15.Example of desktop popup window operation (Left) compared to mobile popup window operation (Right).

The one complication that the *embedded system* faces is the site of the mobile platform, i.e. the smartphone, tablet, or device. The site of the mobile browser is a different programme altogether from its desktop counterpart. First, with the lack of a mouse device all operations rely on touch inputs, and because of this certain types of browser API operations happen differently. For instance, in the case of the *popup engine,* the first half of the system's operation, i.e. the popup detector, will prompt the user to turn off the device's popup blocker […]. The second problem is how the engine deploys the newly spawned windows. On a desktop screen, real-estate is ample, so when the new windows appear, they are very visible to the user. For the mobile browser, this operation causes new browser windows to appear. The user is then forced to manually navigate to each new window, which creates a separation in the system's operation and thereby its aesthetic. On the other hand, my *prompt games* operate perfectly fine on both desktop and mobile browsers. This final aspect is an important point of consideration for a system maker paradigm.

4.2.3 Modular Web Application

The modular web application can be considered a step beyond the modular webpage; additionally, it is the prototypical 'platform' on the Web. At its core, it uses HTML, CSS, and JavaScript, though this would be purely for the platform's client-side operations. Nevertheless, the primary difference in this form of an online platform is the inclusion of server-side languages such as PHP, Python and Rudy[35]. In addition, many times, but not always, these types of platform include a database (MySQL, MongoDB, CoachDB, etc.), or some other form of server-side operation that is not possible on a modular webpage (4.3.1).

A prime example of a *modular web application* would be any WordPress platform because of its reliance on a database (MySQL) and its core architecture being written in PHP. This under-the-hood platform framework is built using server-side PHP language and a MySQL database to record and track all data input into the Web application. The combination of these creates a templating engine whereby one HTML and CSS design document is used and 'templated' together to create multiple pages, e.g. home page, about page, contact page and so on. Additionally, the Control Management System (CMS) that most users are acquainted with on a WordPress platform acts as the bridge between the user and the system's server-side operations and its database; everything that is input into this - for instance, a blog post - is directly recorded to the database while also making server-side requests.

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[35] In the last decade JavaScript has also been elevated to a server-side language, through the version called Node.js, which essentially instantiates a JS engine (normally found in a web browser) on your computer's desktop. Node.js is similar in syntax to [Vanilla] JavaScript, but operationally different.

Of course, WordPress is not the only framework for creating a *modular web application*, and there are several other development environments such as CakePHP, Symfony, and Laravel, all of which are PHP designed frameworks that are viewed as coder friendly. An interesting discovery of my own when examining the original PILproject platform was that the developer had used Laravel in its development. During the development of Diogo da Cruz's *The Bank for Argumentation* platform, I also used the Laravel platform framework (Appx.3.3.2). While it is not my intention to focus on the Laravel platform framework, it is important to discuss the reasoning behind my decision to use it, and how I was able to manipulate the code for the purposes of *WORDCOIN*.

One of my main reasons for moving away from WordPress was the difficulty of breaking down the existing 'purpose' of the framework (i.e. a blogging platform). This especially became true when attempting to accommodate da Cruz's vision of creating a pseudo-bank which could register new users and create accounts for them that would include an account balance and the ability to deposit new arguments, which could be valued by da Cruz, and allow users to trade these argument holdings with other users. While it was not absolutely necessary for the platform to have a templating engine, one was used to speed up development and streamline the design process. As can be seen from da Cruz's online platform, its operations behave very much like desktop software, using differential logic, e.g. if-else statements (which would also be true for a WordPress site). Thus, we can say a *modular web application* is, in fact, an online program, or a distributive program, as opposed to its desktop counterpart. The discoveries I made through deconstructing the WordPress.org platform framework and then using the Laravel platform framework for da Cruz, led me to investigate this kind of online platform further and served as the inspiration to move forward with a simplified version of a *modular web application* framework for my own creative system making purposes.

The result of this research culminated in the development of two platforms that were used in Agorama's project case studies (3.3.1; 3.3.2) - the *Geltung [validity]* exhibition hub (Appx.3.3.2) and the *Kubos Nero* screening platform (Appx.3.3.2). In hindsight, the *Geltung [validity]* exhibition hub probably could have been a simpler *modular web application* that only used a templating engine, but *Kubos Nero* needed the full list of operations available to Web applications, mainly because of the hope that the platform could become a site hosting multiple screenings (similar to YouTube or Vimeo). Due to this requirement, the platform needed access to a database in addition to server-side coding logic so that record screening information could be stored and used for rendering when a user navigated to the page. In reflection of this development, *modular web applications* are highly distributive compared to their *modular website* counterparts because of the online software capabilities that lend themselves to the Internet's current service-based economy. This distributiveness is further emphasised through HTML's ability to embed content through <iframe> elements, which we can see examples of through YouTube or Vimeo's dominance as a personal video archive.

4.2.4 Complex or Closed Looped System

What is a closed-looped or complex system? The description that I have arrived at during my projects is that it falls within the description of Miranda's term, *unsitely*, which describes an artwork that is stretched beyond a physical object through performative research methods, the use of social media and, in the case of my research, Web development services, Web applications, and APIs. An API is simply the practice of providing a development interface for hardware or software that allows others to build or develop on top of it. When it comes to the

Internet, the practice consists of providing data, software, and/or infrastructure privately (Business API) or public (Web API) (ibm.com 2018). Its architecture still consists of a client-server model; however, there are several mediating software programs now in operation between the client and the server. This middleware software is called AJAX, not a technology, but rather a conceptual guideline to implement several technologies geared towards enhancing the user experience by taking advantage of asynchronous server requests/responses (adaptivepath.org 2005). Essentially what AJAX achieves is to decouple the user's visual interface from the data displayed, allowing for a webpage to update itself without reloading, and consequently brings Web applications closer to their desktop counterparts.

The project with Tavasiev revealed a lot about this type of *unsitely* project for my research. On reflection, the project utilised social media to reveal an underlying performance that incorporated human agent actors as points of interaction for users, thus it can be said that *It's Complicated* (3.2.1) fits more within an organisation theory framework. However, when layering on technical elements that can create an autonomous distribution - for instance, in the case of Dovey's work *Breath (BHR)* (3.3.1) - the sculpture encompassed an autonomous system that carried out the functionality of the performance while an audience member activated it. This signifies to me that the term *unsitely* can be expanded to include system building.

I consider this as a closed-looped or complex system, or potentially a protocological object, whereas the other frameworks discussed in this chapter were developed on the basic layer of the Internet, i.e. HTTP, TCP/IP, and DNS. The *closed or complex system* exhibits several different processes, both technical and organisational, which render an *unsitely* project (or distributive exhibition) because the underlying connections of such a system is protocological in nature. This would mean my practice as a system maker creates protocological objects through technological and organisational means, which in turn suggests that the distributive exhibition model and *unsitely* project are protocological objects by nature.

4.3 Reflection on Developed Frameworks

As I progressed in digital proficiency, my practice as a system maker became more infrastructural and I was able to bend code and apply it to artistic projects and exhibition structures, advancing the level of intrusion into a user's personal digital space, the *telecocoon*. This was because the frameworks worked on project to project allowed for ever more complex computational procedures to take place (4.3.2). Good examples of this came in the form of Rostan Tavasiev's organisation system piece *It's Complicated*, and Max Dovey's *Breath (BRH).* Moreover, I was able to push this forward through *Agorama*'s artistic project *Moses the Lonely Londoner* (4.3.1) - which took the form of an *unsitely* project that encompassed an AI chatbot that a user could speak to over Facebook Messenger - engaging levels of proximity between the artwork and the user's personal digital space.

In other developments, the frameworks pushed the idea of distributiveness by using the more complex Web application form of an online platform. Because this type of online platform resembles a desktop software application in functionality, I was able to start pushing systems that distributed their services in a similar fashion to larger corporate platforms, for instance in the case of the <iframe> element and the sharing of video content. The *Server Co-op* project was able to push this forward through its own embedded content onto the Art Gene Digital U exhibition platform[36].

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[36] Link to Art Gene Agorama: http://www.art-gene.co.uk/digital/agorama-server-co-op/ [Last accessed: 06/11/19]

Another important aspect that I observed and happens to be related to a finding from Chapter 3 (3.4) where I discussed the idea of pushing Cook and Graham's notion of 'modes of curatorial practice' to one that has ambiguity regarding roles (i.e. whether artist or curator) is that, as my practice progressed, the boundary of whether I was an artist or curator became even less clear indicating within my projects that my role was deviating from the label of a curator or artist.

4.3.1 Culmination of Developed Framework Tools: *Moses the Lonely Londoner*

Recently within my practice, I have had opportunities to push my research further forward, specifically in light of the *Complex or Closed-Looped System* and it is apparent that not only did this form of system resemble Miranda's *unsitely aesthetic* but also, in terms of distribution, it resembles Ghidini's *distributed exhibition* (Ghidini 2015). What this indicates to me is that at the heart of both conceptual theories is a *Complex or Closed-Looped System*. This thought encouraged me to push my own practical research into the development of such a system. I was able to achieve this through the implementation of a *stack* (Bratton 2015), that was put together through the combination of my developed frameworks (4.3.1; 4.3.2; 4.3.3), my own API delivery systems, open-source peer-to-peer (P2P) technology[37], and a fork of an open-source AI chatbot framework. The culminating project belongs to my artist-led curatorial initiative, Agorama, and is an autonomous artwork called *Moses the Lonely Londoner* (Appx.3.2).

My role within this project was creative lead that developed the concept for the project with the support by other Agorama members (Max Dovey and Inês Costa) through brainstorming sessions. In terms of building the project I was the sole coding creator, that fork and repaired disused open-sources systems, created a REST API system for Moses to communicate with Facebook, and the coder for the generative video. In this case, *Moses the Lonely Londoner* represents also a new level of technical and digital literacy I had attained through the course of my research.

Moses the Lonely Londoner[38] uses as its base architecture several of the frameworks presented in the chapter, in addition to the newly added ones mentioned above. It's through this intermingling of systems that I have become aware of how much of a system maker's practice works on an Internet protocol level and that both Miranda and Ghidini's proposed models (for artworks and exhibitions) have to work on a protocological level as well. *Moses the Lonely Londoner* is made up of three Web interfaces: (1) the project's landing page that is self-hosted by Agorama[39]; (2) Facebook, where the user can actively speak to Moses through either a direct weblink or his Facebook page[40]; (3) a moving image artwork website that acts as the culmination of all the user participation that is taking place with Moses[41]. This artwork is spread over two different Agorama Internet servers, not including the Moses chatbot linked to Facebook services. At its core, the work's aesthetic resembles that of Miranda's *unsitely*, while also exhibiting *distributed exhibition* qualities as described by Ghidini.

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[37] This comes in the form of self-operated Internet servers. Agorama at the time of writing has two cloud base services subscriptions, several Raspberry Pi servers, and one appropriated MacBook that houses many of Agorama's webpages, online exhibitions and artworks. Additionally, since PILproject's hibernation the pilproject.net web site is also hosted within this fleet of servers for archival and preservation purposes.

[38] Moses the Lonely Londoner was commissioned by RCA and was exhibited as part of the Raven Row Open Studio day (2019) and the exhibition 'For the Time Being' at the Photographers' Gallery (London) (2019).

[39] https://moses-aloetta.agorama.org.uk/ [Last accessed: 08/11/19].

[40] Direct link to Moses: https://m.me/mosesthechatbot [Last accessed: 08/11/19]. Link to Moses through Facebook page: https://www.facebook.com/mosesthechatbot/ [Last accessed: 08/11/19].

[41] http://moses-stream.agorama.org.uk/ [Last accessed: 08/11/19].

The key fact about the *Moses the Lonely Londoner* project is that in the development of the project it became apparent that through my technical practice and the ability to connect an artwork to Facebook Messenger, that the *Complex or Closed-Looped System* has a very significant effect for a project that works with mediated space. The effect is the inclusion (or penetration) of a user's *telecocoon.* It is then understood by this thesis that through a system maker's paradigm that the *distributive exhibition model* can be extended to encompass the telecocoon space through direct technical linkage to a user's personal smart devices. When a project encroaches on this personal digital space that a new space is created called a *creative telecocoon*, which is defined as a personal digital space where an art-goer can experience art outside the gallery.

Finally, while *Moses the Lonely Londoner* can be viewed artistically, its development also significs for the organisation of an online *artist-led curatorial initiative*. For example, the developed API system has doubled as an extraction tool for artists Tamara Kamentani and her collaborative residency with Agorama. Likewise, the underpinning servers used to support the work were first created as a *context building project* (Blank 1996) to help support Agorama's own curated p2p webspace. The point to take away from this is that, in terms of my own practice, this that this project represents how a system maker can build systems of an *unsitely* kind (artistic) or *distributived* kind (curatorial) that are beyond a curators practice.

Chapter 5 - Conclusion

5 Conclusion

This chapter is a summary of conclusions from the process that has taken place over four years of research. My research took the form of a practice-led investigation focusing on two artist-led curatorial initiatives, PILproject (3.2; Appx.3.1) and Agorama (3.3; Appx.3.2), using an experimental method that allowed for the realisation of a diverse set of projects taking different forms. Additionally, during this period, I dedicated large portions of my research schedule to advancing my digital literacy skills to push myself well beyond the average level of a computer user and Web programmer (Appx.3.3). The rest of my research period was dedicated to the production of exhibitions and artworks that implemented these newly acquired skills.

This research has shed light on how artistic and curatorial practice benefits from flexible approaches to collaboration, roles, and authorship. This leads to Cook and Graham's (2010) work on the "curator as…" – which pointed to the wide variety of thoughts on curators, their roles within the exhibition process and the collaborative commission process of an artwork. This was also built upon by Ghidini (2015) in the conclusions of her thesis, in which she reflected:

> The changing role of the curator was located not only as a consequence of adopting the Web medium but also of integrating formats of production—the curatorial choices of commission, display, and distribution—and the combination of sites of presentation and engagement. (pp.154-155)

My own reflections concur; in fact, one of my research aims was to push this point further by introducing into curatorial discourse practice-led knowledge about *artist-led curatorial initiatives*.

Admittedly, my own practice falls somewhere between artist, curator, researcher, and technologist, thus the approach in my research practice was to investigate the ambiguous nature of curating online or curating Internet art. Moreover, as noted by Ghidini, "The more the curator is familiar with Web technology and the artwork, the more complementary are the online and offline formats in the exhibition" (Ghidini 2015: p.163). On starting this PhD project I was already skilled in several 'new media' - e.g. sonic art and video art - in addition to having professional experience as an electrical technician, network administrator, and automotive mechanic. However, in the realm of computer and Web programming my knowledge was limited, although a large portion of my practice is the assimilation of technical knowledge as evidenced in my professional experience. The undertaking of digital literacy tasks was a crucial part of my practice, together with the need to acquire the necessary abilities to find the answers to my research questions.

5.1 Research Questions

The following section outlines each of my three research questions and discusses the findings that came out of from my practice-led research in relation to these questions. An important aspect to note is that, at the outset of my research, I only had a single primary question with two sub-questions. However, as I progressed, it became apparent to me how important my two sub-questions were for the overall theme of my thesis. Thus, I made the decision to give them equal value to my original primary question. In this way, each sub-question helps to establish a narrower query of analysis based on my broader primary question, as explained in Chapter 1.

5.1.1 Question 1: How have artist-led curatorial initiatives affected contemporary Internet practices?

- Research finding / contribution to research: Artist-led curatorial initiative projects that work online rely on Internet protocol. If the collective included a practitioner that can code (system maker) the practice of making *distributive exhibitions* becomes a practice of creating protocological objects. This would imply for curating that there is a new form of facilitation to overcome on the digital space, *protocol*, and that the easiest way to administer over this is to expand curatorial practice to understand protocol on a coding level.
- Research finding / contribution to research: For the field of critical coding studies, the significant find was that the sematic web does exist in the form of a more proprietary standardisation like REST API, and further this shift to a proprietary standardisation over a formal protocol (semantic web) is a way for companies to retain control in a decentralised system.

As my original primary question, this represents the starting point of my research. One of the key aspects of interrogation that I took into account was to understand how to situate my own practice at the heart of this question. By using the PILproject and Agorama, I was able to establish a body of work to actively study. In addition, the aspect of the question that states 'contemporary Internet practice', essentially takes into account the notion of Internet practice, with or without art. This is inclusive of Web platform development and how this type of technical work has changed from Web 1.0 into Web 2.0, in addition to content dissemination strategies, and the centralisation of power (specifically in the case of social media and other popular Internet platforms).

Through this association, I found that my practice as a system maker within the artist-led curatorial initiatives (PILproject and Agorama) highlighted the distinctions between Internet practice through Web 1.0, 2.0 to Web n.0 (Lunefeld 2011). As the Web advanced, 'dynamic' websites became diverse *media ecologies,* as Goriunova stated, and behind the sleek interfaces, there were *complex distributive systems* giving the illusion of a single platform. I have associated this with the idea of *protocological objects* (Galloway 2003), in other words, the harnessing of the Internet's communication protocols, and the way in which my practice dictated the development of protocological objects that are specifically built for the purpose of art.

5.1.2 Question 2: How has artist-led initiatives and perceived advancements in space affected the distributive exhibition model?

- Research finding / contribution to research: An artist-led curatorial initiative that works online and has a system maker practitioner as part of the group, and that engages with multi-platform exhibition making practice can enter a new form of social space, that of the *Telecocoon*. This forms a new type of space that this thesis defines as a *creative telecocoon* where a user experiences art inside their personal digital space. For the field of curating this would imply an expansion of the *distributive exhibition model* and a new form of creative space to develop exhibition or artistic projects in.

My research expanded on Ghidini's observation about the skill level of the online/offline curator in relation to the *distributive exhibition model*. My practice as a system maker and the emphasis on my technical knowledge highlight the flexibility of the *distributive exhibition model,* such as the lessening of tension between the online and offline. This is caused by the development of *protocological objects* which form my own *stack* (Bratton, 2015). To explain further, in the most

recent Agorama projects, *The Server Co-op* and *Moses the Lonely Londoner* (with more of a focus on the latter), much of the platform and system building took shape as elements that could easily cross over between the on and offline, while simultaneously following the historical precedence set by 90s net arts on accessible art outside of an institution or gallery. In the case of *Moses the Lonely Londoner*, the piece is entirely distributed (Ghidini 2015), yet, at the same time, this distribution takes into account offline modes of display in the instance of a moving image element that is accessible via any desktop Web browser and which also doubles as the physical moving image piece that was used during the artwork's exhibition periods.

If we take into account Ghidini's statement on levels of technical practice and how this enhances artistic and curatorial knowledge to truly enable a distributive exhibition, and Miranda's notion of *unsitely*, which only takes into account the art object and its immaterial ambiguity, I can assert that the distributive exhibition model is expanded through a system maker's practice by the development of protocological objects. The tension described by Ghidini and Quaranta (2013: p.212-213) regarding the relationship between the on and offline components can be bypassed through the development of a system, similar to an *unsitely* artwork, where the protocological tension between the platforms of display (on and offline) situates different user experiences. For example, one might consider Diogo da Cruz's commissioned *The Bank for Argumentation* and the wider project *WORDCOIN* as a whole. In those projects, Diogo created a conceptual system of a bank with each of the presented elements representing a different aspect of engagement (Appx.2.2; 2.3). With the commission, *The Bank for Argumentation*, the distribution of the project as a whole operated in a new and more personal way by essentially encapsulating (or trying to) a personal digital space for one on one encounters. To explain further, through the development of a *modular Web application*, *WORDCOIN* became a complex protocological artwork that communicated with users on multiple levels. Additionally, the collaborative commission also created a space of personal interaction for the user. By following the rules I laid out for myself, *The Bank for Argumentation* took several precautions to ensure that audiences could reach this piece from the comfort of a mobile device. Special care was used to create mobile-friendly displays that still retained the visual aesthetic of the desktop version. Similarly, Tavasiev's *It's Complicated* also exhibited traits similar to da Cruz's commission through the non-technical act of using human agents to control and manipulate Facebook account profiles, thus connecting in the most 'intimate' of ways that the Facebook platform allows.

As noted in the context review chapter (2.2), there have been several pieces of research that have advanced the idea of space and spatial perception, both in the context of art and within western culture (2.2). However, when combining such advancements, e.g. notions of a *mediated space* (Miranda, 2013) and that of the *telecocoon* (Habuchi, 2005; Varnelis, 2008) with my own system making practice, an online distributive exhibition can reduce the tensions between online and offline elements through the inclusion of mobile-ready technology that can strategically infiltrate an individual's personal digital space, thereby producing a *creative telecocoon* for an individual user. The *creative telecocoon* takes the original idea of a personal digital intimate space developed by Habuchi, which is essentially a network of personal connections normally including a person's partner, friends, family revolving around a person's smart mobile device. This implements art into it through the creation of mobile-ready webpages, content, or applications (software) that interface with a user's already existing *telecocoon*.

5.1.3 Question 3: How embedded is artist-led curatorial practice in contemporary Internet art practice?

- Research finding / contribution to research: While undertaking this research my role revolved around elements of an artist, curator and technician/coder. This led me to develop my own practice definition: *system maker*, that could situate the changing nature of my role. The finding here is that technology and the ability to work with technology changes the nature of contemporary internet art practice and forms new roles that better explains practical deviation. This would imply for the field of curating and artistic practice, that there are several practitioners that are better described under a new title role, rather than through trying to expand on already existing and cemented roles definitions.

After my practice-led research experience, I found that my own practice in regard to roles (artist v. curator) was significantly affected by working on the Web in a high technical capacity. This would indicate that my practice was linked to technological frameworks such as software and that these frameworks informed my practice regardless of whether it was as an artist or curator. My inclination to engage and assimilate technical skills and new technologies upset the balance of traditional roles within exhibition-making. If we put aside the conventional characters of the artist and curator for a second and focus on the type of practitioner that I represent, my mode of approach was essentially the manipulation of the Internet (or networked) platform on a protocological level.

This association speaks of earlier academic work such as Krysa's on 'distributed' curating and its links to systems (2006; 2008) and Paul's research into autonomous curating through software (2006). However, while my own research highlighted their notable findings, my practical experience indicated that critics such as Arns and Lillimose's evaluation that 'distributed' curating was something other than curating (2005) is also correct. In many cases, as I've shown in previous research (Ball 2017(a); Ball 2017(b)), artists are making interesting distributive configurations for their projects that resemble *distributive exhibitions*. Yet, while such examples have been assimilated into curatorial practice, artistic examples such as *the Pirate Cinema* are still situated apart from 'curated' content or curated *distributive exhibitions* despite the underlying technologies used to create the platform would-be-artwork and content dissemination strategy (how the system works) being the same a curated *distributive exhibition* would use. The central point of this finding is the increased engagement with technology as skill or craft, as opposed to conceptional material, and this pushes the character of roles such as artist and curator into uncharted territory.

Thus, the produced frameworks and the practice-based project *Moses the Lonely Londoner* not only represented the disruption of contemporary Internet practice, the expansion of the *distributive exhibition model*, but they also became ambiguous objects that were both artistic, curatorial and something beyond both roles. They represented the tools of a curator, but also the medium of an online artistic system maker.

5.1.4 Significance of Research Findings

In terms of Internet art and also art that uses new media technologies, this research offers an insight into system making within artist-led initiatives. On an artistic level, it provides a practice-led-based outcome that is replicable for artists seeking to involve themselves in an artist-led curatorial paradigm. Similarly, for curators it provides insights into the flexibility of their role and encourages them to embrace the ambiguous nature of cross-collaborative work. This is potentially one of the most significant findings of my research, especially for future practitioners seeking to engage with the online space because of the technical knowledge needed in the current Web ecology.

As for other important aspects, the expansion of the *distributive exhibition model* into a more complex system of exhibition display, or art, provides a basis for practice-oriented methods. Similar to Steve Dietz (1998) and Marc Garrett (Appx.2.1) stating that they are serial platform builders, the idea of an *abstract art platform* expands the complexity of creative practice on the Web. Complex systems of dissemination have been observed in both curatorial and artistic practice, and so they can be considered a mode of engagement for respective practitioners.

Lastly, the significance consists in the effect of artist-led curatorial initiatives and the creation of protocological objects. Today, the Internet seems to be parcelled out among a few stakeholders who primarily operate within a capitalist paradigm, providing their own *stacks* of *protocological objects* which form their *abstract platforms*. For both artists and curators seeking to maintain autonomy over their work (including ownership) and its preservation, there is a need to push practice (both artistic and curatorial) into the technical (potentially synonymous with *craft*). An increase in technical engagement and programming suggests that a *system maker* is a valid mode for practice.

5.2 Reflection on Methodology

My choice of using a *critical technical practice* outside of its field of origin (Artificial Intelligence) did pose several challenges. Firstly, the way in which I framed my practice-led research was technically based and explained how a critical rubric over it would be applied. One of my observations through this fusion of methodology was that critical theory quickly fell apart in the face of the practice. I attempted to revolve my critical practice around a theory that had come through other researchers' practice-led outputs. However, some of my research participants, for instance Elliott Burns from offsiteproject.org, stated in his interview that the theory of a distributed exhibition focused on actual visitor numbers and the distribution (thus, all its parts) of an exhibition could also be judged on this aggregator (Appx.2.3.1). In practice, this is a fair point; however, in terms of critical theory and academic perspective to contribute new knowledge, this skewed results.

Therefore, to successfully fuse my chosen methodology with art and curation, I did have to return to critical theory and pull from its thinking and perspectives that which could hold up to practice-led research. In this case, Miranda (2013) and Galloway (2003) served as the foundation of my critical theory. Miranda's research was grounded in a practice-led methodology. She successfully argued the point of *mediate space* as a significant spatial theory. Galloway, on the other hand, in his study on protocol pulled enough from the technical realm to string together a comprehensive explanation for communication and politic theory for the Internet and more importantly for the platform. With this critical foundation in place, I was able to push forward with my methodology and observed the unique nature of my technical practice and my abilities to shape the Web according to my artistic vision, or in the vision of the artist I was working with.

5.3 Further Research

To conclude, I would like to provide some insight into the potential fields of further study. The first revolves around the term I coin the *creative telecocoon*. Within Habuchi's (2005) and Varnelis' (2008) work, the concept of the *telecocoon* is a term for a person's personal digital space of intimacy. In many instances, this *telecocoon* has been violated by companies pursuing advertising revenue (Bratton 2015; Kitchin and Dodge 2014). However, in a creative capacity, a *creative telecocoon* speaks of further disruption to cultural gatekeeping and new frontiers for

cultural institutions and grassroots organisations. Thus, I feel the field of art would significantly benefit from further investigation of this digital space. I believe this subject would also benefit from a socio-economic study into how Internet-based economies attempt to isolate these forms of digital space for consumerist purposes.

An additional topic for further research comes in relation to artistic or curatorial computer programming and relating this area of practices to *craft*-oriented media, and thereby partially moving this new media paradigm away from a complete conceptualist (Graham 2004; Daniels 2009; Cook and Graham 2010) and post-medium (Kruass 1999) paradigm.

Bibliography

Agre, P.E. (1997) Computation and Human Experience. Cambridge: Cambridge University Press.

Altshuler, B. (1994) *The Avant-Garde in Exhibition: New Art in the 20th Century*. New York: Harry N. Abrams.

Ascott, R. (2003) *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*. Shanken, E. A. (ed.). London: University of California Press.

Augé, M. (1995) *Non-places: Introduction to an anthropology of supermodernity*. Trans. By Howe, J. London: Verso.

Ball, A. (2016) "PILproject– The Meme, the Roskomnadzor and Memetics". *curatingthecontemporary.org*. [Online] available: https://curatingthecontemporary.org/2016/11/17/pilproject-the-meme-the-roskomnadzor-and-memetics/ [Last accessed: 20/12/19].

Ball, A. (2017)(a) "Truly Performative within a Distributed Network." Conference Paper. MOCO'17.

Ball, A. (2017)(b) "A Distributed Cinematic Experience." Conference Paper. AVANCA | CINEMA.

Benjamin, W. (2008[1936]) "The Work of Art in the Age of its Technological Reproducibility." *Monoskop.org* [Online] available from: https://monoskop.org/images/6/6d/Benjamin_Walter_1936_2008_The_Work_of_Art_in_the_Age_of_Its_Technological_Reproducibility_Second_Version.pdf [last accessed: 14/09/16].

Berners-Lee, T. (1989) "Information Management: A Proposal". [Online] w3.org: https://www.w3.org/History/1989/proposal.html [Last accessed: 12/12/2018]

Berry, J. (2000) "Do as they do, not as they do," *Metamute.org* [Online] available from: http://www.metamute.org/editorial/articles/do-they-do-not-they-do [Accessed: 26/05/16].

Berry, J. (2001) The Thematics of Site-Specific Art on the Net. PhD. University of Manchester.

Berry, D., van Dartel, M., Dieter, M., Kasprzak, M., Muller, N., O'Rielly, R., de Vicente, J. L. (2012) *New Aesthetic, New Anxiety*. Amsterdam: V2_.

Blank, J. (1996) "'What is netart ;-)' contribution to an exhibition and congress called" (History of) Mailart in Eastern Europe." *Irational.org* [Online] available from: http://www.irational.org/cern/netart.txt [last accessed: 06/04/16].

Bosma, J. (2004) "Constructing Media Spaces." *medienkunstnetz.de* [Online] available from: http://www.medienkunstnetz.de/themes/public_sphere_s/media_spaces/scroll/#ref21 [accessed: 25/05/16]

Bread, T. (2008) "Interview with Guthrie Lonergan." *Rhizome.org* [Online] available from: rhizome.org/editorial/2008/mar/26/interview-with-guthrie-lonergan/ [last accessed: 01/06/16].

Bratton, B. (2015) *The Stack*. London: MIT Press.

Bridle, J. (2013) The New Aesthetic and its Politics. Booktwo.org [Online] available from: http://booktwo.org/notebook/new-aesthetic-politics/ [last access: 05/10/16].

Burnham, J (1968) "System Esthetics". *ArtForum*, Sept. [Online] available from: http://www.arts.ucsb.edu/faculty/jevbratt/classes_previous/fall_03/arts_22/Burnham_Systems_Esthetics.html [Last Accessed: 10/01/19].

Burnham, J (1969) "Real Time Systems". *ArtForum*, Sept. [Online] available from: https://ia801407.us.archive.org/28/items/JackBurnhamRealTimeSystemsArtforumSept1969Pulsa/JackBurnhamRealTimeSystemsArtforumSept1969Pulsa_text.pdf [Last Accessed: 10/01/19].

Chaffee, S.H. (1991) *Communication Concepts 1: Explication*. New York: Sage Publications.

Chandler, A. and Neumark, N. (ed.)(2005) *At a Distance: Precursors to Art and Activism on the Internet*, ed. (Cambridge, MA: MIT Press, 2005).

Chun, W. H. K and Keenan, T. eds. (2006) *New Media, Old Media: A history and theory Reader.* London: Routledge.

Conner, M. (2013) 'What's Postinternet Got to do with Net Art?' *rhizome.org* [Online] available from: http://rhizome.org/editorial/2013/nov/1/postinternet/ [last accessed: 01/06/16].

Connor, M. (2015) "After VVork: How (and why) we archived a contemporary art blog". *rhizome.org*. [Online] available from: https://rhizome.org/editorial/2015/feb/09/archiving-vvork/ [Last accessed: 20/12/19].

Cook, S. (2004) *The Search for a Third Way of Curating New Media Art: Balancing Content and Context in and out of the Institution*. PhD. Thesis. University of Sunderland.

Cook, S., Graham, B., Martin, S. (2002) *Curating New Media*. Gateshead: BALTIC.

Cook, S (2008) 'Immateriality and its Discontents: An Overview of Main Models and Issues for Curating New Media.' In Paul. C (ed.) *New Media in the White Cube and Beyond: Curatorial Models for Digital Art*. London: University of California Press.

Cook, S. and Graham, B. (2010) *Rethinking Curating.* London: MIT Press.

Daniels, D. (2009) 'Reverse Engineering Modernism with the Last Avant-Garde.' In Daniels, D. and Reisinger, G. (ed.) *Net Pioneers 1.0*. New York: Sternberg Press.

Dekker, A. (2014) Assembling traces, or the conservation of net art. *Necsus-ejms.org* [Online] available from: http://www.necsus-ejms.org/assembling-traces-conservation-net-art/ [Last viewed 07/03/16].

De Certeau, M. (1988) *The Practice of Everyday Life*. Trans by Steven Rendall. London: University of California Press.

Dena, C. (2004) 'New Media Methodologies, applied' presented at *Contexts*, School of Creative Arts Postgraduate Seminar Day, University of Melbourne, Australia [Online] Available at: https://www.academia.edu/27745664/New_Media_Methodologies_applied?auto=view&campaign=weekly_digest [last accessed: 17/09/19].

Dietz, S., 1998. *Curating (on) the Web*. [website] Available at: http://www.museumsandtheweb.com/mw98/papers/dietz/dietz_curatingtheweb.html [last accessed 18/09/16].

Elephant Journal (2015) 'What is Post-Internet.' Issue No. 23.

Fielding, T. (2000) *Architectural Styles and the Design of Network-based Software Architectures*. PhD. Thesis. University of Califoria, Irvine. [Online] available: https://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm [Last accessed: 20/12/19].

Frost, C. (2009) *Internet Art History 2.0*. PhD. Thesis, Birkbeck College, University of London.

Fuller, M. (1998) "Notes on I/O/D 4: 'The Web Stalker'". *bak.space.org* [Online] available: http://bak.spc.org/iod/mutation.html [Last accessed: 08/11/2019].

Fuller, M. (2005) *Media Ecologies: Materialist Energies in Art and Technoculture*. London: MIT Press.

Galloway, A. R. (2004) *Protocol*. London: MIT.

Galloway, A. R. (2012) *The Interface Effect*. Cambridge: Polity Press.

Ghidini. M (2012) "Appropriating Web Interfaces: From Artist as DJ to the Artist as Externalizer." [Online] *Media-N.* Available from: http://median.s151960.gridserver.com/?page_id=95 [Accessed: 07/01/16].

Ghidini, M. (2015) *Curating Web-based Art Exhibitions: Mapping Their Migration and Integration with Offline Formats of Production*. PhD. University of Sunderland.

Goriunova, O. and Shulgin, A. (2006) From Art on Networks to Art on Platforms. *Academia.edu* [Online] available from: https://www.academia.edu/2125723/FROM_ART_ON_NETWORKS_TO_ART_ON_PLATFORM S_CASE_STUDIES_RUNME._ORG_MICROMUSIC_.NET_AND_UDAFF._COM_ [accessed last: 13/04/16].

Graham, B. (2003) "Subject: Curatorial Models: March Theme." *New-Media-Curating Discussion List* [Online] available from: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A2=ind03&L=NEW-MEDIA-CURATING&O=D&X=0F7014E94715CD5695&Y=azball%40dundee.ac.uk&P=32956 [last accessed: 30/09/16].

Graham, P. (2005) "Web 2.0". [Online]: http://www.paulgraham.com/web20.html#f1n [Last accessed: 19/12/2018].

Greene, R. (2003) *Internet Art*. London: Hudson & Thames.

Grundmann, H. (ed.)(1984) *Art + Telecommunication*. Vancouver: BLIX.

Habuchi, I (2005) "Accelerating Reflexivity". in: *Personal, Portable, Pedestrian: Mobile Phones in Japanese Life*. ed. Ito, M., Okabe, D., and Matsuda M. Cambridge: MIT Press. pp.165-182.

Introna, L. and Nissenbaum, H. (2000) "Sustaining the public good vision of the internet: the politics of search." *Center for the Arts and Cultural Policy Studies*, Working Paper #9, 1999, Princeton University.

Jones C. (2014) "The Function of a Studio (when the studio is a laptop)" https://faa218.files.wordpress.com/2014/08/jones_caitlin.pdf [last view 04/05/17].

Kackur, L. (2003) Displaying the Marvelous: Marcel Duchamp, Salvador Dali, and the Surrealist Exhibition Installations. London: MIT Press.

Kholeif, O. (ed.) (2014) *You Are Here: Art After the Internet*. London: Cornerhouse.

Kittler, F. A. (1990) *Discourse Networks 1800/1900*. California: Stanford University Press.

Kittler, F. A. (1999) *Gramophone, Film, Typewriter*. Stanford: Stanford University Press.

Klüver, B. (2000) "E.A.T. – Archive of published documents." *Fondation-langlois.org* [Online] available from: http://www.fondation-langlois.org/html/e/page.php?NumPage=306 [last accessed: 04/10/16].

Krauss. R (1999) *A Voyage on the North Sea: Art in the Age of the Post-Medium Condition*. Thames & Hudson: London

Krintz, C., & Wolski, R. (2013). "Unified API governance in the New API economy." *Cutter IT Journal*, 26(9), 12-16. [Online] available: https://escholarship.org/uc/item/5xk793g1 [Last accessed: 20/12/19].

Krysa, J. (2006)(a) "Curating Immateriality: The Work of the Curator in the Age of Network Systems." *V2.ni* [Online] available from: https://trac.v2.nl/export/7535/rui/.../Curating%20immateriality.pdf [Last accessed: 01/02/16].

Krysa, J. (ed.)(2006)(b) *Curating Immateriality: The Work of the Curator in the Age of Network Systems*. Brooklyn: Autonomedia. (2 readings, 2 case examples)

Krysa, J. (2008)(a) "Distributed Curating and Immateriality." In, Paul, C. (ed.) *New Media in the White Cube and Beyond: Curatorial Models for Digital Art*. London: University of California Press. Pp.87-105

Krysa, J. (2008)(b) *Software curating : the politics of curating in/as (an) Open System(s)*. PhD. Thesis. University of Plymouth.

Krysa, J. (2011a) "Curatorial Alternatives to What? From Alternative forms to everyday technology." *Documenta* [Online] available from: http://d13.documenta.de/uploads/tx_calevents2/krysa_en_01.pdf [last accessed: 03/02/16].

Krysa, J. (2011b) Some Questions on Curating as (Public) Interface to the Art Market. NYHEDSAVISEN: Public-Interfaces [Online] available from: http://darc.imv.au.dk/publicinterfaces/wp-content/uploads/2011/01/Krysa.pdf [Last Accessed: 04/02/16].

Krysa, J. and Shingleton, D. (2007) *Kurator version beta 1.0*. [Online] available: https://www.academia.edu/30943782/KURATOR_software_version_beta_1.0_2007 [Last accessed: 20/12/19].

Kwan, M. (1997) "One Place After Another: Notes on Site Specificity." *October*. Vol. 80, spring. pp.85-110.

Laplante, P. (2007) What Every Engineer Should Know About Software. London: CRC Press.

Lialina, O. (2007). "Net Art Generations". *teleportacia.org.* [Online] available: http://art.teleportacia.org/observation/net_art_generations/ [Last accessed: 01/10/19].

Lovink, G., Niederer, S. (ed.)(2008) Video Vortex reader: responses to YouTube. Amsterdam: Institution of Network Culture.

Lovink, G. (2012) 'What Is the Social in Social Media?' *e-flux.com* [Online] available from: http://www.e-flux.com/journal/what-is-the-social-in-social-media/ [last accessed: 18/09/16].

Lovink, G. (2013) 'After the Social Media Hype: Dealing with Information Overload.' *e-flux.com* [Online] available from: http://www.e-flux.com/journal/after-the-social-media-hype-dealing-with-information-overload/ [last accessed: 17/09/16].

Lunenfeld, P. (2011) *The Secret War Between Downloading and Uploading: Tales of the Computer as Culture Machine.* London: MIT Press.

Manovich, L. (2001) *Post-Media Aesthetics*. London: MIT Press.

Manovich, L. (2002) *The Language of New Media*. London: MIT Press.

McGrath, J. E. (2004) *Loving Big Brother: Performance, privacy and surveillance space*. London: Routledge.

McHugh, G. (2011) *Post Internet.* Brescia: LINK Edition.

McNeil, J. (2012) "New Aesthetic at SXSW." *Joannemcneil.com* [online] available from: http://www.joannemcneil.com/new-aesthetic-at-sxsw/ [last accessed: 05/10/16].

McQuire, S. (2008) The media city: media, architecture and urban space.

Mejias, U.A. (2013), *Off the Network: Disrupting the Digital World*. University of Minnesota Press: Minneapolis.

Melvin J. (.ed)(2015) *Five Issues of Studio International*. London: Raven Row.

Meyer, J. (2000) "Functional Site." in Suberburg, E. (ed.) *Space, Site, Intervention: Situating Installation Art*. London: University of Minnesota.

Miranda, M. (2013) *Unsitely Aesthetics*. Berlin: Errant Bodies Press.

Neddam, M. (2010) "Zen and the Art of Database Maintenance." *Archive2020*. Amsterdam: Virtueel Platform.

O'Doherty, B. (1999) *Inside the White Cube: The Ideology of the Gallery Space*. London: University of California Press.

Olson, M. (2011) 'POSTINTERNET: art after the internet.' *Marisaolson.com* [Online] Available from: http://www.marisaolson.com/texts/POSTINTERNET_FOAM.pdf [Last accessed: 31/05/16].

Paul. C. (2009) *New Media in the White Cube and Beyond: Curatorial Models for Digital Art*. London: University of California Press.

Pold, S. (2005) "Interface Realisms". *Postmodern Culture*. Volume 15, Number 2, January 2005.

Quaranta, D. (2011) *In Your Computer.* Ebook. Brescia: Link Edition.

Quaranta, D. (2013) *Beyond New Media*. Ebook. Brescia: Link Edition.

Quaranta, D. (2014) "#post-internet." *Flash Art,* Issue 305, March-April 2014.

Scholder, A. and Crandall, J. (eds.)(2001) *Interaction: Artistic Practice in the Network*. New York: Distributed Art Publishers.

Shanken, E. A. (2001) *Art in the Information Age: Cybernetics, Software, Telematics and the Conceptual Contribution of Art and Technology to Art History and Aesthetic Theory.* PhD. Doctoral Thesis. Duke University.

Shanken E. A. (2007) "Historicizing Art and Technology: Forging a Method and Firing a Canon." *MediaArtHistories*. Oliver Grau ed. London: MIT Press.

Sollfrank, C. (2010) Female Extension. [Online] available from: http://www.artwarez.org/femext/content/FemExtCS.pdf [last accessed: 04/04/16].

Sollfrank, C. (1997) *Female Extension* [Online] available from: http://www.artwarez.org/femext/index.html [last accessed: 30/09/16].

Stallabrass, J. (2003) "The Aesthetics of Net.Art." *qui parle.* Vol 14, No.1. pp. 49-72.

Stallabrass, J. (2003) *Internet Art: The Online Clash of Culture and Commerce*. London: Tate Publishing.

Steyerl, H. (2013) 'Too Much World: Is the Internet Dead?' *e-flux* [Online] available from: http://www.e-flux.com/journal/too-much-world-is-the-internet-dead/ [Last accessed: 31/05/16].

Varnelis, K. ed. (2008) *Networked Publics*. London: MIT Press.

Vierkant, A. (2010) 'The Image Object Post-Internet.' *Jstchillin.org* [Online] available from: http://jstchillin.org/artie/pdf/The_Image_Object_Post-Internet_us.pdf [Last accessed: 01/06/16].

Yamakami, T. (2018) "Proceedings of the IEEE International Conference on Software Engineering and Service Sciences." *ICSESS*, Vol.2017-2018, pp.95-98.

Youngblood, G. (1998) "Metadesign: Towards a Portmodernism of Reconstruction" [Online] available: http://90.146.8.18/en/archives/festival_archive/festival_catalogs/festival_artikel.asp?iProjectID=9210 [last accessed: 05/10/16].

(2007) *The Hartware Guide to Irational*. Publishers: Revolver

AA.VV., (2003) Topic net.art [Online] available: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A1=ind03&L=NEW-MEDIA-CURATING&F=&S=&X=32782C14F2AF3F51A5&Y=azball%40dundee.ac.uk&O=D&H=0&D=0&T=1 [last accessed: 16/06/16].

AA.VV., (2003) Curatorial Models. *New-Media-Curating Discussion list*. [Online] available: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A1=ind03&L=new-media-curating&X=D8A5DCD0D0B6E58C69&Y=azball%40dundee.ac.uk#52 [Last accessed: 18/10/2019].

AA.VV., (2010) *The Jury.* [Online] available: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A1=ind1010&L=new-media-curating&X=E6925E20C6975FA88A&Y=azball%40dundee.ac.uk [last accessed: 15/04/16].

AA.VV., (2010) *back to October's theme...* [Online] available: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A1=ind1010&L=new-media-curating&X=E6925E20C6975FA88A&Y=azball%40dundee.ac.uk [last accessed: 15/04/16].

AA.VV., (2018) In conversation with Benjamin Grosser. [Online] available: https://www.facebook.com/ArtGeneLtd/posts/1499298986864389 [Last accessed: 07/11/2019].

Websites

AdaptivePath. (2005). API Economy. [Online] available: https://adaptivepath.org/ideas/ajax-new-approach-web-applications/ [Last accessed: 20/12/18].

Documenta. (1997). Documenta X retrospective. [Online] available: https://www.documenta.de/en/retrospective/documenta_x# [Last accessed: 01/10/19].

Facebook Developers. (2018) Instagram Graph API Launches and Instagram API Platform Deprecation. [Online] available: https://developers.facebook.com/blog/post/2018/01/30/instagram-graph-api-updates/ [Last accessed: 16/03/2019]

IBM. (2018). What is an API? and What is the API Economy?. [Online] available: https://developer.ibm.com/apiconnect/2018/01/04/api-api-economy/ [Last accessed: 20/12/18].

ManuSporny. (2014). JSON-LD and Why I Hate the Semantic Web. [Online] available: http://manu.sporny.org/2014/json-ld-origins-2/ [Last accessed: 20/12/18].

North East of North (NEoN) Website. (2018) Screening Programme. [Online] available: https://northeastofnorth.com/event/screening-programme/ [Last accessed:20/12/19].

Ted Talks. (2009) The Next Web. [Online] available: https://www.ted.com/talks/tim_berners_lee_on_the_next_web/transcript?language=en [Last accessed: 20/12/19].

Thomson and Craighead's Website. Artwork Beacon. [Online] available: http://thomson-craighead.net/beacon.html [Last accessed: 08/11/2019].

Vuk Cosic's Website. (1997). Documenta Done. [Online] available: http://www.ljudmila.org/~vuk/dx/ (Documenta Done) [Last accessed: 01/10/19].

W3C. (2004). Web Services Architecture. [Online] available: https://www.w3.org/TR/ws-arch/#relwwwrest [Last accessed: 16/03/2019].

W3C. (2014). RDF 1.1 Concepts and Abstract Syntax. [Online] available: https://www.w3.org/TR/2014/REC-rdf11-concepts-20140225/Overview.html#section-Introduction [Last accessed: 20/12/19].

Appendix 1

Appx.1.1 Visual Research Timeline

The visual graph below represents several different periods that were key for my research period. The coloured pie chart focuses on my main practice-led and practice-based research activities, such as my pre-transfer and digital literacy learning period, the main portion of my web development period where I developed the platforms for the various exhibitions presented in my case-studies (Ch.3), my research reflection periods, and finally the development period for my practice-based output. In the outer part of the visual graph, I show the timelines for the development periods for each case-study, for easy understanding of when a project was underway in tandem with my research activities, which also include the timeline for the exhibition *Moses the Lonely Londoner*, commissioned for For the Time Being (Photographer's Gallery, London).
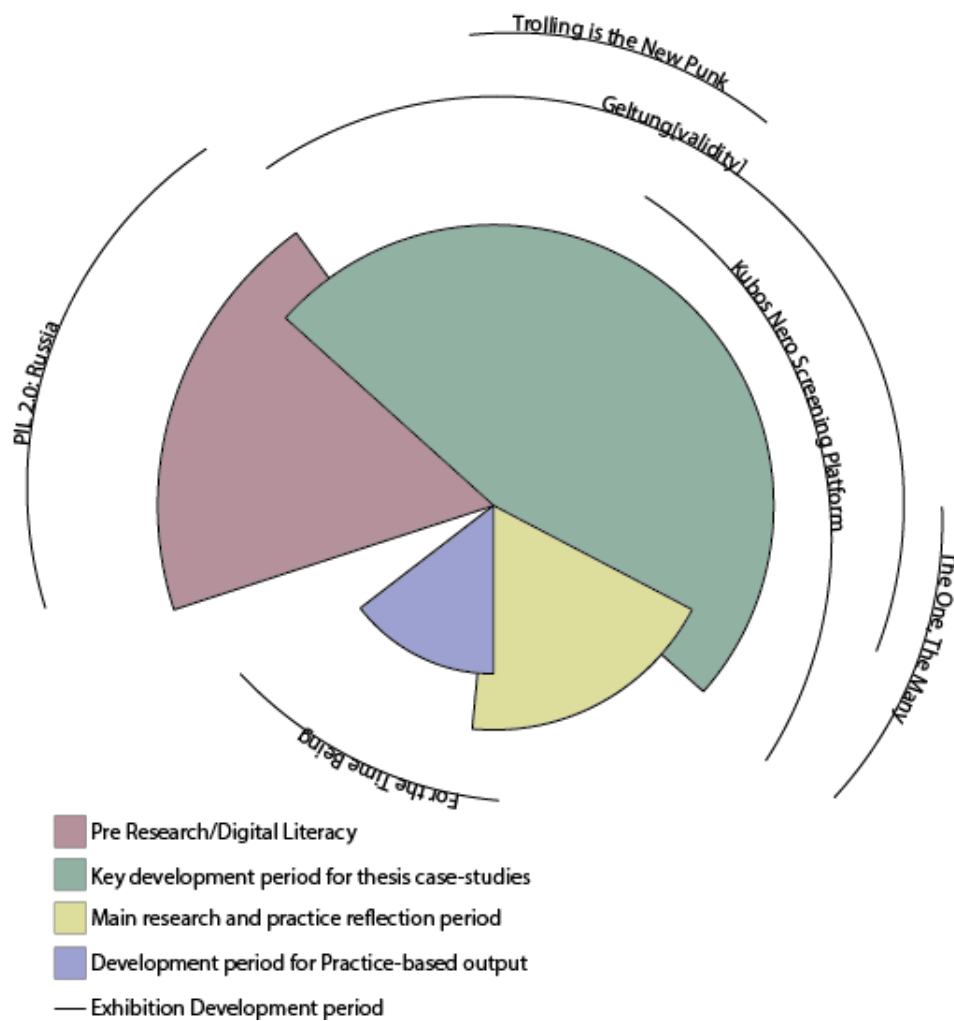
Fig.16.Research and project timeline and flow chart.

Appendix 2

Appx.2.1 CRUMB Discussion

During the first half of 2017, I began to organise an online discussion that was to take place on the Curatorial Resource for Upstart Media Bliss (CRUMB) Mailing List. The discussion was centred around the element of platform building within the curator's practice. Having just finished the artist-led project "PIL2.0: Russia. Blinded by an Inner Light", I was personally interested to understand the wider view from other practitioners (artist and curators alike) that work in and around the field of new media.

An important element in my thought process at the time was how the space of the distributed exhibition model (2.1.1) had changed to encompass several platforms, thereby complicating previous ideas of the art platform. Thus, a major focus in the discussion's introduction sought to question the idea of multi-platform. During the previous exhibition with PILproject, one artwork in particular, *It's Complicated* by Rostan Tavasiev, had stood out in my mind as having ticked many boxes for the operation of a multi-sited artwork. There was a physical sculpture and an online Facebook account that represented the artwork's 'character'. And between these two elements the artist indicated that there should be both a conceptual and physical connection. During the exhibition, the audience reacted very positively to *Hidden* (the artwork's character name), with several visitors being drawn into the physical exhibition having experienced the online characterisation; while the same was true for those visiting the physical exhibition, who in turn had sought out *Hidden*'s Facebook characterisation in their own time. The success of the artwork *It's Complicated* had made me question the idea of what it means to stage an Online/Internet exhibition today, and think about the dynamic of real-time interaction, meaning the creation of an 'In Real Life' Affect for online users.

As part of the discussion format provided by the CRUMB mailing list, external discussants were invited to join. In particular, I was keen to invite the majority of the Agorama team and participating artists in the developing exhibition "Geltung [validity]: perception of a natural right". This was because I was very curious to hear the preliminary thoughts from these participants before the actual start of the project, seeing that they would be interviewed later at the end of the project. In addition to this, I also took the time to invite gallery owners and curators from Furtherfield (London) and Arebyte (London), both of which are respected organisations in the field of new media. The thought process behind this was to bring a bit of the old guard (Furtherfield) and the new (Arebyte) and understand the similarities and differences between generations of practitioners. Finally, I also invited both academics and artists, whose work I had been following closely in my research up to that point.

The discussion outcome yielded a wide array of information, experiences and opinions. However, I was slightly shocked to discover that there was little divergence of opinions around the notion of the platform. In many cases, the platform, in the minds of the participants, was predominantly conceptual. The Internet platform was thereby an extension of that. Additionally, when engaging with the idea of the multi-platform, discussants took a more practical approach to the topic, with some dismissing the possibility of a 'true' multi-platform structure. Other comments focused on the possibilities of establishing artworks as APIs, with one of the participants even sharing an active example they had produced for their practice.

My concluding thought on this practice-led research activity was that it had brought a wide variety of opinions, experiences and theories to the table. This served my research very well because it opened up a wider variety of options and avenues for me to explore when investigating contemporary platform building by curators and artist-led groups. Additionally, this discussion served as the basis of my research on the current discourse around the Internet platform as a site for art.

CRUMB Online Discussion Transcript:

Subject:	CRUMB discussion – April - on Internet art and platform building
From:	"Alejandro Ball (PG Research)" <[log in to unmask]>
Reply-To:	Alejandro Ball (PG Research)
Date:	Wed, 5 Apr 2017 15:23:47 +0000
Content-Type:	text/plain
Parts/Attachments:	📎 text/plain (182 lines)

Dear List,

This month's CRUMB discussion will explore the topic of 'curating as platform building' for the display of Internet art, reminiscent of how curator Steve Dietz has always described himself as a 'serial platform builder'.

In the past, both gallery exhibitions, such as Electronic Superhighway (Whitechapel 2016), and distributed or non-localised online projects, such as Tate's net art commissions, have exhibited the friction that exists between the spatial dimensions of online and offline presence. Writers such as Geert Lovink and Jonathan Crary point to how this friction is also felt in the consumption of social media.

Through my work with PIL Project<http://pilproject.net/> platform and other online curatorial projects, I am now actively engaging with the creation of a new web platform for the display of Internet art, and co-curating exhibitions to gather data on how to exhibit artists whose practice encompasses an "unsitely aesthetic", termed by Maria Miranda:

"Instead of focusing on remix as the key to network culture […] I have suggested another aesthetics, unsitely, which though by no means a dominant aesthetics, is nonetheless fostered by the conditions of network culture. […] one of the conditions that [Kazya] Varnelis describes as significant for network culture is the lack of a dominant physical site, that is, the lack of a fixed desktop computer with its graphical user interface (monitor) – and its specific and fixed relation between screen and user – to the currently popular wireless smart devices. It is this lack of a single, fixed physical site that contrasts the two distinct eras for artists – digital and networked – and that highlights the idea of unsitely."(Miranda, 2013: 60)

I am also researching current spatial perceptions in exhibition making through the engagement of a multi-sited exhibition, or a distributive exhibition model (Cook, 2008; Ghidini, 2015).

Through this discussion, we hope to explore the changing nature of both the exhibition and spatial perception more generally under the theory of the 'semantic web' (Berners-Lee, Hendler, Lassila, 2001; Berners-Lee, 2009). How can curators engage in the production of new web-platforms for the exhibition of Internet art that are more versatile to artists working with an "unsitely aesthetic"?

Other key questions this discussion aims to address

What are the essential qualities an Internet platform needs to successfully display a multi-sited artistic practice?

When engaging with social media platforms, or any other platforms (both on and off nline), how do we maximise these components integration into the wider exhibition project?

How can we make a non-localised event 'feel' more intimate for audiences, as if it were 'In Real Life' (IRL)?

How can online/internet-based projects contribute to the change in spatial perception?

Following the format of other successful discussions on CRUMB we hope to collaboratively explore these questions and invite you to join us in this discussion by posting your thoughts, personal experiences or references. Your participation is greatly appreciated.

invited respondents:

I am proud to introduce you to our invited respondents and I would like to thank them, as they already help to ensure that this discussion represents a rich range of voices from the field.

Inês Costa is the Exhibitions Assistant at the Whitechapel Gallery, and an independent curator and photographer. Recent projects include PROTECHT (2015) and IT IS PROBABLY BETTER TO START FROM ZERO (2016). She is currently collaborating with Alejandro Ball as part of the Agorama.org.uk<https://Agorama.org.uk/> project.

Diogo Cruz is an artist based in Munich and Lisbon. His work materializes analogies that interrelate disciplines, with a quite rigorous and elaborated process, creating symmetric and ironic objects.

diogocruz.net<http://www.diogocruz.net/>

Joseph Delappe is the Professor of Games and Tactical Media at Abertay University in Dundee, Scotland. A native San Franciscan, he has been working with electronic and new media since 1983, his work in online gaming performance, sculpture and electromechanical installation have been shown throughout the United States and abroad.

delappe.net<http://www.delappe.net/>

Steve Dietz is a serial platform creator. He is the Founder and Artistic Director of Northern Lights.mn, and the former Curator of New Media at the Walker Art Center in Minneapolis (Minnesota).

northern.lights.mn<http://northern.lights.mn/>

Max Dovey, Live artist working in technology, politics and governance. Writer & researcher at Institute of Network Cultures.

maxdovey.com<http://www.maxdovey.com/>

Rebecca Edwards is Curator of arebyte Gallery (London) and arebyteLASER (London), a project space located in arebyte's studio complex in

Clerkenwell. She is currently running the Hotel Generation programme at arebyteLASER, a series of fast-paced exhibitions by young artists from different cities.

arebyte.com<http://www.arebyte.com/home/4578362226>

Steve Fletcher is the director and co-founder of Carroll/Fletcher Gallery (London), his work includes Carroll/Fletcher's online platform Onscreen, which focuses on an online cinema showing a dynamic curated programme of artists' and experimental film.

carrollfletcheronscreen.com<http://carrollfletcheronscreen.com/>

Marc Garrett is Co-Founder & Co-Director of Furtherfield. As well he is an artist, curator, writer, activist, educator and musician. Marc is currently studying his PhD at Birkbeck University on the theme of Art, Technology and Social Change.

Furtherfield.org<http://furtherfield.org/>

Marialaura Ghidini is a contemporary art curator and researcher. She was founder director of the web-based curatorial platform or-bits.com<http://or-bits.com/> (2009-2015). Currently she is faculty and course leader for the Bachelor in Creative Arts in Experimental Media Arts at the Srishti Institute of Art, Design and Technology in Bangalore (India).

exstrange.com<http://exstrange.com/>

Georgia Spickett-Jones is a London-based interdisciplinary artist and researcher with a preference for politics and Poland. A current collaborator of Alejandro Ball's project Agorama.org.uk<http://Agorama.org.uk/>.

georgiaspickettjones.eu<http://georgiaspickettjones.eu/>

Nimrod Vardi is Director and Curator of arebyte Gallery (London), a New Media and Performance Art space in Hackney Wick. He has been working locally and internationally on a range of projects and events. He is a Sundance New Frontier Alumni and a BecomeBecome Fellow.

arebyte.com<http://www.arebyte.com/home/4578362226>

Stanza is an artist whose mediums include netart, paintings, videos, installations, software systems and public artworks. Stanza's has an expansive body of work that includes the platform soundtoys.net<http://soundtoys.net/> and the Net Art Museum.

stanza.co.uk<http://www.stanza.co.uk/index.php>

References:

Berners-Lee, T., Hendler, J., and Lassila, O. (2001) "The Semantic Web." Inria.fr [Online] available from: https://www-sop.inria.fr/acacia/cours/essi2006/Scientific%20American_%20Feature%20Article_%20The%20Semantic%20Web_%20May%202001.pdf [last accessed: 05/10/16].

Berners-Lee, T. (2009) Tim Berners-Lee: The next web. [Online video]. February 2009. Available from: https://www.ted.com/talks/tim_berners_lee_on_the_next_web?language=en#t-960021 [last accessed: 05/10/16].

Cook, S. and Graham, B. (2010) Rethinking Curating: Art after New Media. London: MIT Press.

Ghidini, M. (2015) Curating Web-based Art Exhibitions: Mapping Their Migration and Integration with Offline Formats of Production. PhD. University of Sunderland.

Miranda, M. (2013) Unsitely Aesthetics. Berlin: Errant Bodies Press.

Best regards,

Alejandro D. Ball

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Tel: 07522849666
Email: [log in to unmask]

The University of Dundee is a registered Scottish Charity, No: SC015096

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	"Alejandro Ball (PG Research)" <[log in to unmask]>
Reply-To:	Alejandro Ball (PG Research)
Date:	Mon, 10 Apr 2017 21:32:27 +0000
Content-Type:	text/plain
Parts/Attachments:	📎 text/plain (232 lines)

Dear List,

So, to kick things off on this discussion – I wanted to post a few of my own thoughts on the topic…

Thinking back to my last experience with curating online projects, an exhibition with the web platform PIL Project - entitled "2.0: Russia. Be Blinded by an Inner Light", I found that the greatest difficulty in the

run up to the realisation of that project was how to connect all the
fragmented pieces of the project into a cohesive whole for an audience.

To describe the scene in a bit more depth, this second project with the
platform and artists began with the idea of engaging with Russian artists
and creating a project that investigated memetic culture after the news
hype of Putin and the Russian government's Internet content laws. As part
of the exhibition program it was devised to stage some type of social
media performance, which was to be a re-interpretation of the artist
Rostan Tavasiev's "it's complicated…" project.

As part of this component, Rostan would have a Facebook profile, which
would act as the artwork's personal profile, making the artwork an active
character that audiences could communicate with. For the physical side of
this piece inside the exhibition space, there was a sculptural
representation of this character artwork with a computer nearby what
would display the active Facebook profile. As well we set up a keyboard
and mouse so people could scroll through the profile, and even post on
the wall of this profile if they'd liked. Finally, I programmed a short
Apple-script on the computer that would refresh this Facebook page ever
couple of mins, so people could potentially see in the physical space the
online participation. While on the online segment Rostan was actively
commenting on the physical exhibition and the locality of Dundee (where
the physical exhibition took place).

You can find a link to our webrecorder.io documentation of the online
segment here:

https://webrecorder.io/PIL-Project/rostan-tavasiev-its-complicated-
hidden-hikkimori-2016

While on paper, and even in setup, everything seemed to instigate this
fluid transition between the two platforms (the physical exhibition space
& Facebook), myself and the artists behind PIL Project still experienced
a great degree of difficulty in communicating to viewers and audiences
this ecology we'd created for the artwork. This, in the aftermath of
things, has led my reflection on curating this type of distributed
content (or Unsitely content) to think more prominently on the online
platform as potentially a unit, or interface, which could somehow capture
all of these interactions from the various sites of the artwork. If you
could imagine maybe like a centralised hub that could distribute
audiences outward to the various exhibition components.

Predominantly I have been looking into API usage, and even creating one's
own API for this type of platform (or even an artwork for that matter)
which might help facilitate this connection…

Well it's a bit late and haven't eaten yet so I'll leave it at that for
now

Best regards,
Alejandro

Subject: Re: CRUMB discussion – April - on Internet art and platform
building

From: Max Dovey <[log in to unmask]>

Hi all, Alejandro kindly asked me to note down some initial responses
before I spend the weekend egg rolling so here goes -

*What are the essential qualities an Internet platform needs to
successfully display a multi-sited artistic practice*?

I personally dont think an online platform such as this is attainable, as
artists & curators will always be experimenting and pushing how mediums
reflect 'un-sitely work' but Futherfield is a good example ;-)

often, however, artists/users upload a lot documentation to platforms
that host their content which are always fragile within platform
capitalism. just yesterday I was receiving emails from tumblr about
ongoing dormant accounts that I no longer use, but also dont want to
delete. They come with the pushy email subject 'Account notice: Your
username needs attention' and I have to click a button as a sign of
activity that I still exist and my domain space is still required (for
the time being). Of course there are no shortages of examples of online
platforms distributing digital art works, Sedition comes to mind and I am
sure there are many others. More lately there have been a handful of
attempts to encourage artists to use blockchain to authenticate their
digital files and loan, share and sell editions of their work via
Distributed Ledgers like blockchain (see Ascribe, Monegraph). Using
market scarcity to create digital editions and using blockchain to
enforce property law seems like a good way to sell digital or multi-sited
artistic practices but it doesnt appeal to my personal practice. My work
is often a combination of performance / installation and a website, when
I tried to test one of these platforms I uploaded the code of one of my
works, it didnt accept it and only accepted digital art in the form of
jpegs or pngs ;-(So code is normally saved via git or GitHub, digital
images on website and physical objects in the studio.

not that we should follow the steps of musicians, but I think of adapting
the record label approach could be more useful in thinking about how
artists work can be represented / hosted and distributed. listing
artists/artworks in a formatted way so that not their profile metadata
and content could be accessed via an Application programming interface
would be an interesting experiment. Could a structured data format like
JSON be used to archive works digitally/online that could be
pulled/parsed and perhaps a contract (if necessary) could be included in
that data structure too? In the hybrid publishing field there is a lot of
experimenting with design workflows that turn a lot of collaborative
editable documents into published formats such as wiki sites or epub /
markdown HTML.

My final remark is on artists as platform builders rather than content
creators. It seems young artists are increasingly aware and interested in
the free user private platform model. This is not just becoming subjects
of exploration but also that power relation is also becoming transferred
as a model of production. I don't know if this is historically the case
but it feels more and more individual practitioners become their own
institutions or studios or run their own schools and reflect platforms in

their hybrid/expanded practices. This integration of web platform ecology into personal practices perhaps presents some challenges for curators and for artists. In a sparsely funded sector artists seem to be imitating platform economics in the hope of eventually flipping their followers into financial capital. Just as a platform such as Google will provide services for free because the value created by amassing users to train algorithms is far greater than the net costs of providing the service for free, in what way are artists imitating the same economic models? For the past few years I have been performing using a particular image recognition company and during that process my works have contributed to the development and improvement of their service. By using their API they have become partners of the work and benefit from the data that I not only generate through my performance works but also train. It is from this position I see as problematic with my own role as a creative with technological applications and wondering how not only does my work contribute to their advancement (often critical artworks are seen as bugs that can be fixed in the next verison) but whether the data generated and stored has more value to the platform then to the audience or the artwork.

Speak soon
Mx

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	Nimrod Vardi <[log in to unmask]>
Reply-To:	Nimrod Vardi <[log in to unmask]>
Date:	Sun, 16 Apr 2017 09:17:28 +0100
Content-Type:	text/plain
Parts/Attachments:	📎 text/plain (567 lines)

Hello and happy holidays to all

First, i'd like to say that i've been lurking here for a few years now and thank Alejandro for the invite and push to be a bit more active.

My take on curating of online content, is by using, manipulating and highlighting what already exists. I like to explore ways to link the IRL and URL worlds and see whether this can apply on other curatorial practises.

As an example, I would use 2 of our projects from 2015 which were part of The Wrong. <http://thewrong.org/>

The first Dystrophies.com was a website where we screened on a 24 hours loop different video works, which disintegrated as the 24hours reel was coming to an end. I guess we were trying to connect physical properties of time and decay and digital formats.

The second, which is still going is websiteseeing.net, an online tour curated each time by a different artist/curator.

Both are also on our online platform storage-un.it

I feel that both examples are attempts to use existing materials and use

the web and its aesthetics for a curatorial search - a platform which
gathers a verity of content and displays them in a different way.
Continuing Max, I enjoy seeing artists creating platforms as I feel that
the participatory aspect can lead to more interesting and challenging
works. But it does expose a lot of the difficulties that artists face
when creating this kind of works, mainly when it comes to programming.

One example of such platform is by the Canadian duo, Desearch Repartment
(which will come to arebyte in May - June). "The State of Exceptional
Webnation is the future of social media and citizenship, and you are
invited to be part of this revolutionary online nation-state."
Link <http://stateofexceptional.com/>

I have the same issue, I am not a programmer or a developer and when I
have an idea (mostly as a curatorial platform) I struggle to execute it,
I then go to other platforms, such as Freelancer to find someone who
might assist me with this, which then brings a whole new set of issues
(language, other platforms, time, etc).

It feels like we're almost going from one platform to another, where all
is organised and suitable for a specific use, which is good but makes it
very hard for cross-platformisation.

Just before Alejandro's invitation came through I purchased the domain '
themotherofallplatforms.com' - again I don't know what and how but I like
the reference to Douglas Engelbart's 'The Mother of All Demos
<https://www.youtube.com/watch?v=yJDv-zdhzMY>' (1968).

Enjoy the long weekend!
Nimrod

Subject: Re: CRUMB discussion – April - on Internet art and platform
building
From: marc garrett <[log in to unmask]>
Reply-To: marc garrett <[log in to unmask]>
Date: Fri, 21 Apr 2017 14:27:43 +0100
Content-Type: text/plain
Parts/Attachments: 📎 text/plain (408 lines)

*Hi all,

Thank you Alejandro for inviting me to take part in the
discussion on this list. On the subject of 'curating as platform
building', like Steve Dietz I identify myself as a 'serial
platform builder'. The 2013 paper 'PLATFORM POLITICS', on Culture
Machine, edited by Joss Hands, Greg Elmer and Ganaele Langlois -
http://bit.ly/2oUYoff <http://bit.ly/2oUYoff> still chimes best
with my own understanding of what platforming is. They say
"Platforms can be characterized as resting on already existing
networked communication systems, but also as developing discrete
spaces and affordances..." They also say, "the nature and
distinctive aspects" of the platform, "is more than just a
neutral space of communication" and is a "complex technology with
distinct affordances that have powerful political, economic and
social interests at stake. In this respect the platform is
regarded as a zone of contestation between different

configurations of capital, social movements, new kinds of
activist networks, and open-source and proprietary software
design. Platforms also constitute spaces of
struggle between mass movements and governments, users and the
extractors of value, visibility and invisibility." And, "The
platform, then, does not just represent a question of software
and control. It also connects to wider social struggles: a
'political platform' can frame political discourse more
generally." Whatever political orientation, platforming is a
political action, and it is not a neutral thing. So this needs to
be taken into consideration when thinking about curating as
platforming. Some may disagree here, but most common current
approaches to curation as platforming is to repeatedly present
historical art canons to the world in ways that support and
reinforce those ideas and artists that have already been
valorised by the establishment. This unfortunately by default
becomes more about building on top of established hierarchies.
Actually, I think one of the best platformed exhibitions by an
institution in recent times, was at the V&A, which was the
brilliantly conceived exhibition 'Disobedient Objects', it was
about art and design produced by grassroots social movements,
much of the work was "loaned from activist groups from all over
the world, bringing together for the first time many objects
rarely before seen in a museum." http://bit.ly/2oTN6Wt
<http://bit.ly/2oTN6Wt>

The ingenuity of the framing for the exhibition and catalogue was
audacious, especially if we consider how backward and
conservative the UK is at the moment and has been since the 2007-
8 crash. The curation took into account the histories of both
individual activists and the groups, communities and contexts in
which they worked. Different histories, and voices were
respectfully built into the framework of the project. In this way
it avoided a colonisation effect but instead retained its
revolutionary spirit. The content and context was allowed to
breathe on its own terms. To pull it off in a big institution
such as the V&A, I think was visionary. Also, I think Occupy as a
movement was brilliantly platformed and well curated. Activists
collectively built contexts that included modes of:production,
curation, activism, generosity, and grounded, grassroot values,
in-tune with collaboration, technical tools, with sharp
institutional critique, all as a contemporary form of innovative
and political, avantgarde. They possess the necessary ingredients
in which to build platforms of cultural value, based on
emancipation, and on infrastructural and context hacking. Occupy
has demonstrated how people collectively, and directly challenge
the conditions and structures affecting their social contexts.
What connects the Occupy movement with the intentions and spirit
of Furtherfield, is their shared interest with scholars in the
humanities and social sciences, entwined with values that include
an unswerving dedication towards DIY, and grassroots culture,
alongside a critique against establishments dominating our
cultural narratives. Like Furtherfield, Occupy explores its
critical values, ideas and actions, with others independently of
their institutional status. This breaks down class divide and
other separatist functions. Like Occupy, Furtherfield also
generates and constructs "experimental spaces through the
combination of material practices and symbolic forms with
egalitarian rules of communication and the barter of commodities

as well as the production of representations." (Abend and Annika 2015) http://bit.ly/2pGXgMT <http://bit.ly/2pGXgMT>

A project worth highlighting which has been growing the last few years, which asks similar questions, is Cornelia Sollfrank's 'Giving What you Don't Have' (GWYDH). The research project is a series of video interviews that has invited: artists, techies, hacktivists, curators and academics, to talk about their own experiences, inspirations and intentions; on the subject of new forms of collaborative production, where it involves a "shift from artefacts to the provision of open tools and infrastructures, the development of formats for self-organisation in education and knowledge transfer, (the potential and the limits of) open content licensing as well as the creation of independent ways of distributing cultural goods. An implicit part of Giving What You Don't Have is a suggested reconceptualization of art under networked conditions."
Giving What You Don't Have. Cornelia Sollfrank, Joss Hands & Rachel Baker.

Furtherfield Oct 2013. - http://bit.ly/2os4Eat
<http://bit.ly/2os4Eat>
Having a say on the concepts, motives, making and production of the tools we use is a way of having control over our own societal relations, and the knowledge obtained through this helps us to build and reflect on real life conditions, and circumstances. With this in mind, through the years we haves co-built with our ever-changing community, different tools and online platforms. All of them feature their own specific, and artistically led and community orientated needs. Discourse about art, technology, and society, has always been facilitated in the midst of an active, local and international, neighbourhood of artists and thinkers, through accessible, Internet based networking systems and platforms. In return, this has helped to build and support a well connected, network of creative types, who wish to extend their ideas further than within officially condoned established zones. This does not mean that all the individuals and groups involved are all separate from more established institutions. But, it does mean there is room for those who are not part of an institution, or particular field of practice. Thus, this feeds a practical, spirited need, for a socially grounded place, a mixed community and or group, to work with, for sharing production and exploration where engaging ideas can emerge through the experience of: critique, collaboration, code, software, networks, activism, ARTware, curating, art production and art making. Whether it's web platforms, exhibition spaces, or any other environment, we all bring along our own (and or collective) ambitions and identities into the mix. Our ongoing dedication to building independent and DIY art platforms, shows how the spirit and ideas of punk has played a key role in influencing and shaping Furtherfield's identity; through its earlier phases and up till now. This can be seen going back to early days of pirate radio broadcasting from numerous lofts in Bristol, co-running BBS systems, making street art, net art, other projects in the streets, running a warehouse space as a lab and art gallery, various online platforms, to its current incarnations of two spaces in the park, of Finsbury park, London. These all were and are, grassroot and DIY based platforms, and currently we are directly engaged in platforming the park, and we are becoming

more inclusive than ever before, whilst asking necessary and
important questions about the world we all live in.*

Wishing you well.
Marc

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	stanza <[log in to unmask]>
Reply-To:	stanza <[log in to unmask]>
Date:	Fri, 21 Apr 2017 17:16:27 +0100
Content-Type:	text/plain
Parts/Attachments:	text/plain (13 lines)

Thanks for the invite to take part. I note with interest your
endeavour to bring a new perspective on ways to disseminate online
artworks as well as to re/frame it generally.

One reason to create any platform is to help others share their
work to new and different audiences (online and networked) and
possibly different ways of audience engagement (generative or
interactive) using new technologies (many and varied from to HTML/
Javascript/ VR/ AR etc) to draw attention to new and relevant
work. For me it is about helping bring attention to the what I
perceive to be something alternative.

Running independent DIY channels in the 80's allowed me to help
other artists disseminate their work, publish it, sell it, and
raise awareness of this sub-culture while also making my own
artwork. The internet (mid nineties) allowed two things:- the
possibility to use this new technology to make new and different
kinds of art/work, and the opportunity to create platforms for
dissemination. The ones I made – net art museum, art surfer,
soundtoys, and soundcities - all allowed this same multi
functionality. Soundtoys was the most popular for a while and
utilised the best of the technologies available in its last
rebuild circa 2006. In a sense it facilitated a remix culture of
other artworks while also presenting the multi curatorial
perspective. (tags folksonomy etc via an API).

Any platform today could harvest a myriad different technologies
providing its purpose is relatively clear, allowing artworks to
get reframed and contextualised inside the 'platform'. In
soundtoys the works became treated as units of data (albeit
artworks) inside the bigger system of the internet. The problem
for me became that of 'control' and 'ownership', (something I felt
uncomfortable with). In the end the interfaces created via the API
to re-represent and re-frame the works became of more interest, to
me anyway. The endeavour eventually became a sort out reshaping of
works affected by the current technologies, which became the
bespoke platform.

A platform for tomorrow's audience could be made in a similar way,
whose aim would be to operate on a variety of levels. However it

will always be contained inside other systems. The system of
gallery or controlling force has always indirectly tried to direct
this and recent forays by the mainstream to art historicize these
early years feel both relevant and insubstantial in equal measure.
In so much as this discussion is working inside a similar
institutional parameter.

Just a bunch of links....text of 2004. (Essay for n-{Digest}-
(ion) published as part of Digest For Watershed 2004 - Stanza
http://stanza.co.uk/erroneous404/index.htm) I referred back to
this as just a bunch of links. My conclusion that not only is this
the best interpretation, it's also the most honest as it stops the
hierarchy of cultural institutional control. (now infiltrating the
area)...

At the time I also rallied for a data centre that would house all
the arts projects that the now defunct net art museum housed; many
of which were Arts Council funded projects. This ended up as the
erroneous 404 net art project (also now defunct). This website
presented the idea that for the sake of a central server these
projects that the Arts Council invested in would still be online.
.... maybe its best to let it flow as the endless stream of
chance and change.

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	Diogo da Cruz <[log in to unmask]>
Reply-To:	Diogo da Cruz <[log in to unmask]>
Date:	Fri, 21 Apr 2017 18:49:46 +0100
Content-Type:	text/plain
Parts/Attachments:	text/plain (155 lines)

*Dear all,

I really appreciated the input from Alejandro, Max and Nimrod! I
decided to share with you some fragmented and personal thoughts
around these questions.

Best,
Diogo da Cruz*

******

The socket:
A friend of mine was editing the pictures of a show we did together.
She was showing me the original file and the edited file. The light
balance was much better, however I couldn't stop noticing that she
removed an electrical socket from the wall. I was quite surprised by
the simplicity of her argument: that wasn't part of our work, was not
being used and disturbs the composition, so it doesn't need to be
part of the documentation.

Even if I felt that was dishonest, she convinced me to accept it. I
knew she had long experience in photoshop, trying to give back the
natural colours to her paintings.

This alternative exhibition view we created with the edition of a
picture, made me distrust the accuracy of online pictures from any
art exhibition. They are as much manipulated as the art work itself.

Criminal affairs:
If I would consider myself a criminal and the art work the crime
itself, the exhibition space (or the in real life experience) is the
crime scene and the project's online presence is the crime novel.

The crime is planned in some library or in my desk during research,
and is committed in the assembling of the show. There are few
witnesses, and the judges will come during the exhibition's opening
hours. I will perform for them in my defence, trying to convince them
the crime was pertinent and well though, perhaps even necessary.

The online representation makes it a perpetual crime, that is
committed just before someone opens the url, just like it happens
when you open a crime book.

Paper:
Maybe the internet-art freedom and omnipresence can be compared with
public manifestations of art during the 50's-70's.

The book/catalog as the website (maybe the Fluxus' boxes as a
traveling information content)
The booklet/brochure as the GIF (Guy de Cointet's ACRCIT magazine)
The Mail Art as the email (Bern Porter)
The happening as the performance in social-network platforms (Allan
Kaprow)
The paper as the bit

The complexity of the medium increased our days, and the human
sensitivity decreased.

Facebook cheap art news:
"This Agoraphobic Photographer Uses Google Street View to Travel the
World" Beautiful shots from Jacqui Kenny, in this typical viral art
news article. (https://www.artsy.net/article/artsy-editorial-
agoraphobic-photographer-google-street-view-travel)

Hypes:
During a class meeting some years ago a colleague of mine, doing a
critic on the old fashioned look of another student's work, said:
"It's easy, you just scroll down a few good websites and you get the
looks of contemporary art."
The idea was if one only goes to the library, or strictly respects
the professor's references, would end up doing art that seems to come
from the 60's.

We are not all online:
The proposal of the internet as platform for a free and public speech
is surely pertinent and useful for any creative practice.

Nevertheless I like to keep in mind that even if I share my work
online I'm excluding a big part of world population that has no
access to internet. What I mean is that the idea of making something
online as making it to the whole world is an illusion.

When I'm creating work to be seen online, I try to comment on the
internet structure itself as well as to instigate an action in actual
real life.

Free speech?:
Do we give enough value to the unlimited freedom of speech brought by
the online medium? Or is the online medium undermining the possible
impact of our ideas, exposing them to the unpredictability of the
internet, mixing our precious statements with an enormous amount of
unnecessary material. (Timothy Garton Ash's book "Free Speech: Ten
Principles for a Connected
World")

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	"Alejandro Ball (PG Research)" <[log in to unmask]>
Reply-To:	Alejandro Ball (PG Research)
Date:	Sun, 23 Apr 2017 12:39:33 +0000
Content-Type:	text/plain
Parts/Attachments:	text/plain (464 lines)

Hi Everyone,

First off like to thank everyone that has contributed so far – you
guys have put a lot on the plate to think about.

At the moment, I'm picking out two different (though very
interconnected at the same time) trains of thought: the politics of
the platform, and the politics of building a platform. I can
understand if people think this is potentially the same thing, but
personally I feel that when thinking about building, this is (and
maybe this is my naivety) something innocent maybe free of politics
with a capital "P" as Marc and Diogo referenced in their posts. Yet
still haves its politics within it, as seen from Max, Nimrod and
Stanza's posts where we hear about the facilitation and mitigation in
the making process. On the politics of the platform, I feel this is
potentially once a platform is established and has gained a
recognition from audiences, regardless if the creator doesn't feel the
platform is. Because in a way I believe the audience gives a platform
is political currency, but at the same time through this social
investment, the organisers or creator(s) of the platform lose the
totalising control they might have had in the building of the
platform.

If we look at it like this, during building we do have to take into
account who to have a cross connection with, what limitation might be
incurred for using this tech over another, etc., however the degree of
control is greater than let say creating an exhibitions programme and

presenting it to an audience. You can be that person that makes brilliant content – but you still don't get an audience – thus a greater level of compromises is incurred as the platform must abide by its own self-made ethos, which is what the audience invested in (and have their own interpretational take on it as well).

I like to now bring up a few key points that I thought were particularly interesting. The first is from Max:

My final remark is on artists as platform builders rather than content creators. It seems young artists are increasingly aware and interested in the free user private platform model. This is not just becoming subjects of exploration but also that power relation is also becoming a transferred as a model of production. I don't know if this is historically the case but it feels more and more individual practitioners become their own institutions or studios or run their own schools and reflect platforms in their hybrid/expanded practices. This integration of web platform ecology into personal practices perhaps presents some challenges for curators and for artists. In a sparsely funded sector artists seem to be imitating platform economics in the hope of eventually flipping their followers into financial capital. Just as a platform such as Google will provide services for free because the value created by amassing users to train algorithms is far greater than the net costs of providing the service for free, in what way are artists imitating the same economic models?

And the other Stanza:

A platform for tomorrow's audience could be made in a similar way, whose aim would be to operate on a variety of levels. However it will always be contained inside other systems. The system of gallery or controlling force has always indirectly tried to direct this and recent forays by the mainstream to art historicize these early years feel both relevant and insubstantial in equal measure. In so much as this discussion is working inside a similar institutional parameter.

I feel they both touch up on this idea, reflecting Max's words, of Artist and platform builder then content creator. I think this is a really interesting point, because when talking about curating – there is a level of emulation from the curator in this process, yet in terms of content, the artist is the provider or maybe a collaborator. It be interesting to think of this in conjunction with a curator that identifies as a platform builder as well, because then the two points I picked up on would maybe become intertwined to happen simultaneously, i.e. artist doing a project on a establish curatorial platform, or vice versa.

I'll leave it at that for now

Hope to hear more from everyone soon

Best
Alejandro

Hello everyone.

In my curatorial work with or-bits.com (2009-2015), http://or-bits.com, I mainly focused on two of the elements that Alejandro mentions in his questions. I was interested in exploring the spatiality of the webpage — and a website as a curatorial space — and the transition of artists' ideas and artworks to the space of a webpage, to then 'move' them back again to an offline site.

If or-bits.com began with the idea of commissioning artists to create a web-based work in response to a word and brief, it soon expanded to include projects that, taking the website as departing point, adopted the format of an event, a gallery exhibition, a performative intervention or a radio show, for example. Such projects explored the idea and act of transitioning by showcasing versions of the work that had been previously presented online. I used the adjective Offsite to define them because I wanted to keep with the fact that what was the central node for these activities was a website. It was the point of departure. Most of the offsite activities are documented on the website blog, http://www.or-bits.com/blog/category/offsite-projects/. Similarly, the publishing series On the Upgrade, http://www.or-bits.com/editions.php, also explored the process of transitioning and the idea of distributed site-specificity, but it did so in relation to the print page. It aimed to 'compare' the web space with the print space—the book, the pamphlet, the editions in a box.

The idea behind generating this movement to and from the website was to explore how online and offline exhibitions, modes of production and engagement could work with each other, 'complement' one another. I wrote at length about this in my PhD (2015). When online, two of my most recurring questions when discussing with the artists were, "How would you translate this idea to a web page? How do you see the audience engaging with your work, using a click or a mouse?", and to Sara Nunes Fernandes — the web programmer — was, "How do you think we can practically do this?". When offline, the main recurring questions were, "How do we refer back to the web-based work meaningfully?", "How can we create a relationship between different sites?" We often used text—as in captions and descriptions—as well as visuals that would refer back to specific points in the website, to create a link to what I considered the 'original' source of the work.

In a nutshell, over the course of its 'life', or-bits.com became a space for exploring such transitions and the changes they may bring about, practically and conceptually. This space, I feel, was not

only for me — as its curator — but also for the participating artists, the contributing writers, the programmer, the other various collaborators, from designers, to guest-curators and hosting organisations. I feel that rather than collaborating with artists working with an "unsitely aesthetic" — as Alejandro says — , or-bits.com encouraged the participants to work "unsitely".

I have to say that the question of audience engagement remained somewhat unresolved with orbits.com. The website had many visitors and received much interest, the Offline events brought us in touch, IRL, to some of our audience and also created new audience. However, after 5 years of activity, I felt that or-bits.com was not proposing a new way of engaging with art in a way that was more 'meaningful" and satisfying to me. Perhaps, it is interesting to note that although some of the shows of or-bits.com were reviewed in magazines and online edited blogs, much of the writing failed to address and the artworks and artist's practices, and only focused on the act of browsing an exhibition online, and the differences between doing that and viewing a show in a gallery space.

A more recent project, #exstrange (2017), http://exstrange.com, which I co-curated with designer and researcher Rebekah Modrak and ended two weeks ago, offered me a new opportunity to "engage with the creation of a new web platform" (Alejandro). #exstrange gave me the chance to think differently about curating and building platforms—in actual fact, Rebekah and I did not build a platform, but we appropriated an existing one—, as well as to explore audience engagement by exploiting the 'trust' that users put into a platform—or, as Alejandro says, in "the self-ethos a platform has in its own right."

#exstrange was an online curatorial project in which artworks were created, displayed and sold, auction-style, on eBay. From January 15th to April 7th , we presented one artwork-as-auction per day to interrogate the functioning of this e-commerce platform and the role of digital culture in everyday life. The show was live, and it included over 80 participants and guest-curators based in different parts of the world—from America to Europe, to Middle East, Asia and Australia. Our main interest was to work with the site-specificity dictated by the interface of the service we worked with, eBay, and to explore the types of encounters that could happen on an online market place between different communities of interest.

The main display site was eBay, where the artworks were scattered around the different categories of the e-commerce site; thus catering for various audiences, such as people looking for something to buy in the category Collectibles or Business & Industry, as well as people who followed us from within the art world. Our website functioned as an aggregator of the artworks-as-auctions, showcasing the live auctions on the main page—you can find all of them in the Auction Archive of the website, http://exstrange.com/auction-archive/—and it will be soon followed by a map showing all of the exchanges geographically. Social media became crucial to communicate with our audience and redirect them to the auctions on eBay. They also became an interesting linguistic curatorial tool, in that we started to incorporate the jargon of e-commerce in all our communication, as an indirect response, I assume, to the fact that we were adopting eBay as an exhibition site.

The story of #exstrange is a long one, and this email is already too long! I will add more another time. What I would like to conclude with is that #exstrange allowed us to: (1) curate while being curated by the eBay interface; (2) adopt a system of circulation that because of its inherent caracteristics (the categories, the question and answer section, etc) and function, facilitated different, and often more personal, relationships between the artists and the audience; (3) set up a model of intervention into an existing online site and service, which has its own 'narrative' and rhetoric, that anyone—artists, curators, etc.—could take up as they wish. As Greg Allen, http://greg.org/archive/2017/03/19/exstrange curated ebay-as-art-platform.HTML, said in an online review of the project, "this is an #exstrange if I say so."

Looking forward to reading the other responses,
Marialaura.

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	Paul Brown <[log in to unmask]>
Reply-To:	Paul Brown <[log in to unmask]>
Date:	Tue, 25 Apr 2017 06:23:14 +1000
Content-Type:	text/plain
Parts/Attachments:	🔗 text/plain (25 lines)

I wonder if I can contribute to this discussion to remind everyone that the archive of fineArtforum is online:

fineArt forum - fAf - was a network newsletter dedicated to art, science and technology that ran from 1987 to 2004 under the auspices of the Art, Science and Technology Network - ASTN - and in close collaboration with the International Society for Art, Science and Technology – ISAST <http://www.leonardo.info/isast/isastinfo.HTML> - and their publication Leonardo <http://www.leonardo.info/leoinfo.HTML>. An incomplete archive of fAf is held at the National Library of Australia in their Pandora Archive linked from here:

http://www.fineartforum.org

From 1987-92 we were a BBS and email newsletter and from 92-94 a gopher (remember that) then in 1994 moved onto the web. It was then we began a gallery section and our first artist was (I think) Stelarc followed by Joe Delappe (who I think had just left college!).

Another good historical reference would be the late Carl Loeffler's artcomtv at The Well which dates back to 1986 or possibly earlier.

Judy Malloy (if she is following the discussion?) knows a lot more
about these early online initiatives.

====
Paul Brown
http://www.paul-brown.com == http://www.brown-and-son.com
====
Honorary Visiting Professor - Sussex University
http://www.cogs.susx.ac.uk/ccnr/research/creativity.HTML
====

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	"Marialaura Ghidini @ Srishti Institute" <[log in to unmask]>
Reply-To:	Marialaura Ghidini @ Srishti Institute
Date:	Thu, 27 Apr 2017 16:03:37 +0530
Content-Type:	text/plain
Parts/Attachments:	🔗 text/plain (510 lines)

Following up on my previous post, Curating the Contemporary
online magazine has just published an interview of Rebekah and me
with Miriam La Rosa.

This might give a better insight into the #exstrange project for
Alejandro's discussion,
https://curatingthecontemporary.org/2017/04/24/6109/
<https://curatingthecontemporary.org/2017/04/24/6109/>

Bests,
Marialaura

Subject:	Re: CRUMB discussion – April - on Internet art and platform building
From:	stanza <[log in to unmask]>
Reply-To:	stanza <[log in to unmask]>
Date:	Thu, 4 May 2017 12:04:33 +0100
Content-Type:	text/plain
Parts/Attachments:	🔗 text/plain (41 lines)

More thoughts: ref …on Internet art and platform building.
Contribution request for Alejandro

Hi Alejandro here are some for notes for you best stanza

PART 2...

The data is the platform. The artwork is the data; artwork ⇔
platform. The curator is the algorithm. {Refresh} algorithm ⇔
curator.

Data is the medium of the age. Platforms become connected
spaces, events, and things.

I see my systems based artworks (real time data and generative)
as operating as "platforms" . These works act to hold and
contain (they begin as 'spaces' and then once populated become
platforms <=>each acting to create variables and the borders of
these systems are which hold 'value' and in effect agency.

Including in this are my artworks using / remediating real time
networked images (over twenty projects) IE; live webcams
across networks re-thinking, re-mediteing, re-contextualising
the now, the ever present (from 2001) . The platform remains
or is now the open system that the data (the real time
perspective of live images) passes through .... creating a
world (that I call) "parallel realities". An alternate multi-
point perspective.

The networked images are remade inside these platforms creating
new forms often pulling images (content/data/information) from
hundreds of sources. Examples of this are seen in my software
artwork like Subfusion 2002 or online works like Urban
Generation 2004. Etc

The platform to stand on; the shoulders of giants. The
container becomes something to reform the data within, shaped
by controlling functions that create variability. Taking this
approach Genomixer 2004 houses my DNA data. Sensity 2006 is
platform for city wide sensory data (now known as IOT).

Platforms of observed and manipulated data are shaped to
comment on the panoptic world. Who knew we would bow down to
the system subordinated by algorithms. (Well plenty have
speculated and it seems we have sown these seeds through our
own endeavour). The fruits of these labours create an output of
omnipresent control.

Artworks is like Synchronicity (2013) (real time London tube
and bus's feeds) exist on top of other APIs. Sensity (2006) has
its own feeds, Genomixer (2004) uses my DNA data, Urban
Generation (2004) uses 400 simultaneous live feeds, The Nemesis
Machine (2015) uses a complete environmental wireless sensor
network ,The Reader (2015) use millions of data points ,
Soundtoys has its own API remixing other artists content,
SoundCities.com has its own feeds.

These artworks are all platforms of softwares realised as performative experiences working until they no longer work ...then what. They exists in world of evidenced based Curatorial practice realigned once more.

And you can play with all this moving data from the real world to the virtual and back to the real. Reshaping making malleable because after all the platform exists to houses the data whether that data is another artworks a live stream a point on a map or number or string of DNA .... it's the data and data is the medium of the age.

Maybe there's a space for a platforms of surveillance. Making observations about how curatorial systems of control create galleries // read prisons to contain the artwork. Locked onto the platform (the gallery wall) the idle cultural flaneur is inadvertently subsumed into servitude. The curator holds the keys like the prison warden...... platforms from which walkways lead us down further from the centre of agency only towards the center of attention:

So what next from the intelligent machine AI scoping out our future based of some predictive algorithm...welcome to the present world. I have already deleted my Facebook accounts and twitter feeds. The world of the controlled collective is there for the taking.

Ok what's next

If algorithm is social manipulation ⇔ The platform is social control.

Stanza
www.stanza.co.uk

Subject: Re: CRUMB discussion – April - on Internet art and platform building
From: "Alejandro Ball (PG Research)" <[log in to unmask]>
Reply-To: Alejandro Ball (PG Research)
Date: Thu, 4 May 2017 10:32:46 +0000
Content-Type: text/plain
Parts/Attachments: text/plain (88 lines)

Dear everyone,

it has been a really interesting conversation - with many insightful thoughts on the topic. But at last we have to wrap things up after a month on this topic..

I would like to thank all the contributors for their thoughts
posted – it's given a lot of food for thought

Thank you again - and hope everyone enjoyed the discussion

All the best

Alejandro

Appx.2.2 Participants Interviews

The following Interviews were conducted on a one-to-one basis either in person or via Skype. While these interviews do have a structure question list order, there are slight deviations in questioning from participant to participant based on their personal experience.

Due to this strategy the information given by my participants amounts to a lot more information than the questionnaire counterparts. However, at the same time, because of the flow of a live interview, sometime participants answered several questions in one response. Because of this the structure of each interview varies slightly.

Appx.2.2.1 Juan Crespo

Alejandro Ball: Can you please describe your artistic practice, areas of interest, and any influences on your practice you might have?

Juan Crespo: Ok no problem. So, I'm going to be a little general with the answer of this question. I would say the basis of my practice revolves around a research concept rather than a formal approach. I normally have an idea, then it's only afterwards that I might lay out a formal mode of practice to realise it.

In general, this starting idea, in a broad sense, always in response to tackling strategies for causing disruption to major historical narratives. I used to have a nice definition for this type of work, counter historical narratives, which aims to transform history into stories.

AB: Can you please describe your knowledge and experience with new media art, in particular Online art, Internet art, and network distributed art?

JC: Well... not to come across too sarcastic, but I would say Internet art... doesn't exist. However, at the same time, the Internet floods everything we do in contemporary art in different ways. This means it's not just about the media, it's also about distribution, the way people research, the way people understand things and about how we market ourselves.

And despite that I don't consider about Internet art, or that my practice isn't concerned on this idea of the media used to realise it... the Internet floods my work. I believe my perspective and experience isn't very different to other artists.

In less abstract terms, I co direct PILproject, which is a collaborative online and offline platform to study meme, or memetic culture from a historiographic perspective.

AB: What would you consider your level of digital proficiency to be?

JC: If we were to speak about my programming skills, I would say it's low. However, I would be also interested to formulate this question in terms of generational gaps. So, the skill difference between what society calls Millennials and other generations, young and older and understanding the differences in understanding etc.

In terms of our collaboration with PILproject and when I am working with you and having a proper technical person, who is capable of translating certain ideas and making them physically tangible, it's an incredible experience. However, at the same time I do not consider these type of skills... whether programming or some other informational, or new technology skillset necessary to develop a 'new media' project or artwork.

It's funny, you can read loads of theory and concept heavy literature around media, new media and let's say cyberfeminism – there are tons of books! But, at the same time you'll be reading this, you don't even know how to actually search out the original piece.

AB: From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

JC: Taking this question from a personal perspective, in other words my experience with PILproject... I see two.

The first one is the problem of visibility. If you take into account the number of viewers and people actually seeing PILproject, the distribution and success of this online exhibition are in my view quite low. So, for one of our projects with the Digital Artist Residency platform, I don't know how many views that project had in the end, however I feel the viewership wasn't too high probably... and for the time and effort afforded to this project, well there can be a feeling of a mismatch of labour. I think a factor that plays on this comes from the fact that there is so much content on the Internet, and this conditions us, and people in general in the way information and content on the Internet is approach and digested.

The second one, is the precarious nature of certain online projects and how they go on. Because I feel there is this misconception with how the practice is carried out, and I feel there is this image of the digital artist working in a dark room with only a computer, and the project are super free (potentially anarchist) ... However, as I stated before I think this is a limitation to the practice, because from experience this type of art, whether you call it new media or Internet art, isn't necessarily happening or being created in a digital space through highly technical means.

AB: In general, could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

JC: If you think about the beginning and end of the screen, as a human extension... Wow that thing is weird and there is a whole world of through around this object... But now the screen can be moved, and it can be displaced. This idea of a borderline that separates the physical from the digital, in my opinion is now even weaker in the face of this mobile screen technology. This situation also tweaks the in my mind the ideas behind carnality and corporeality and the political bodies attached to these two words. If we think about how people generate political discourse, it's not only related to the individual's body, but more importantly its generated through relationships and interactions. And the Internet with this mobile screen has made this generative discourse constant!

AB: In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

JC: Yes, I feel they do to a certain extent. From the beginning of PILproject, we were very concerned with this play between the online and offline, which is part of PILproject's project development. Though, I think these days we are a bit more flexible.

Yeah, we were quite keen on that... And I feel, even if it was unconscious to our audiences, we have succeeded in disrupting space. That being said, we did think a lot about how to achieve this.

When I am thinking as an artist, I feel the digital gives the perfect opportunity to achieve this disruption of space. Because it allows for you to work simultaneous situations or spaces, i.e. the online and offline and contributing different media or medium to the project, not to mention different temporalities. It's inevitable that this configuration with cause disruptions in space.

AB: Would you consider what you produced for PILproject a multi-platform artwork, two separate artworks, or something else?

JC: Yeah, I would definitely stick with the idea of... something else [shared laughter]. But to touch upon multi-platform, I would say yes, it is multi-platform project, because we used platforms as a site for art, which are aside from the pilproject.net webpage.

I think personally for myself; I have approached our work with PILproject as an investigation to explore using new spaces for the site of art, developing new forms of collaboration with other individuals, of information distribution, and this plays into the previous question on space and the spatial. We've used social media platforms, exhibition spaces, publications, magazines all in the attempt to disrupt the site... and I feel this all feeds into PILproject being a multi-platform project.

AB: In regard to your own practice, could you reflect on and describe how network technologies might play a role in your practice? This doesn't necessarily have to be specifically about an artwork, and can include other artistic activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

JC: There is no way to avoid the use of network technology these days, and the artist is definitely within those confines. But I think I can best articulate myself on this question through an example...

This was a previous experience before we started PILproject. So, the project was an archive, and I was studying an online colonial photo database from the Imperial War Museum. During this period, I was accumulating resource, research, collecting film snippets, and was essentially investigating any content from the 1960s' to as far back as the IWM database contain within it.

A way of managing all that matter came in the form of me creating a blog. And of course, this was public, and I was regularly publishing updates. I think I was using Tumblr, and it was viewable to everyone. But at the same time, it was my research tool, like a mind map. Then it became a reflection tool for understand why I was collecting in the first place. The strange thing about this was that the blog was my tool, but at the same time it wasn't a tool, because it was a public blog. There was a viewership, and I found it interesting to think that people were looking at my tool and placing their interpretation onto my work as if it was the artwork, though it was my tool...

AB: Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your artist persona?

JC: Hmmmm... well I personal don't feel I have a very large online presence, but even in that case... I have my personal website, which works like an online portfolio. I have my personal Facebook account, my personal Instagram account... I have a second Facebook account... There are a few blogs that I started and used for a while floating around out there, but they are kind of forgotten about now... There are also a few blogs that I am actively running.

Also, obviously I use the Internet as a distribution channel for my work, and a self-promotion tool. I also use the Internet as an active tool for scheduling my calendar and agenda, in relation to art and events that are happening.

I think also when you think about my personal footprint in comparison to PILproject and what we have established for that project, it's very different. I mean from the profiles... Also, within PILproject we've engaged a good number of people... Yeah, I would make a separate here between the professionality of PILproject to that of my own personal network footprint.

There are people who have merged the two successfully, I am thinking the director of Arcadia Missa (London), who has their personal Instagram profile connected with the gallery... Of course, there is a scripted presentation behind it... However, I think it's an excellent example of fusing the personal with the professional, showing when you are drunk, showing when you are having fun, when you are having those hungover trash mornings... It becomes after some time a display of the personal that starts making sense in a professional capacity. The merging of these two worlds is all a bit eclectic.

Appx.2.2.2 Max Dovey

Alejandro Ball: Can you please describe your artistic practice, areas of interest, and any influences on your practice you might have?

Max Dovey: The areas of interested in my work are always slightly shifting, and the things that remain the same are an interest in technology, power & politics, and space or installations where audience members can encounter a condition or scenario based around some sort of technological function, App, API, a product or algorithm. Within those installation I try and flash out the problems or the very bodily effects of the technologies that we use quite regularly in the west.

Actually, thinking about it, that more about my method... My areas of interest are always in around the bleeding edge of technology, where things are claiming to have impact of change over our world.

What I always say to people when I meet them is that I am a live artist working with data and algorithms. And liveness is very important to me, even if I am not always performing in my piece... There is always some type of real-time interaction between people and the technological process.

I am really interested in real-time and the flow of real-time, and I guess how that plays out in interactive art installations.

AB: Can you please describe your knowledge and experience with new media art, in particular Online art, Internet art, and network distributed art?

MD: In 2011 I started making real-time pieces using data from Twitter and performing with that. That was while I was in art school. Since I have continued to use data as a material for my work, while also turning it into a performative, or live event-based encounter. So rather than just printing out Wikipedia or random data, which some notable artists have done, I also try to embody that data somehow by passing it through an exchange where we are talking about or confronting it in a dialogue. Because unless it's actually informed, and data only becomes informed when its embodied, it's just useless data. Once you swap it up and inform it, I think then it becomes embodied.

That just the way we human memorise things, or how we process things... by repetition and doing things regularly. So, to actually read out Tweets for example, you can do quite absurd things that embody the systematic language of how data is passed online, then you begin to have a feel of these systems.

AB: What Internet artists, if you can name any, stand out to you, and why?

MD: There are a lot... For example, the free art technology lab, F.A.T. Lab, doing all kinds of pranks and hoaxes, really gimmicky stuff...

So, I like the people that are doing stunt-based work... I also like Ed Fornelis's work too, especially when he uses role play or live action methods. I like that kind of re-enactment... For example, I really enjoy when Constant Dullaard when out and made DullTech, so when his fictional company had to become realised, he had to start performing that business model. So, I like it when these Web-based projects, or these network projects suddenly have to become, or integrate into a physical reality over a long period of time. Going back to Constant, I don't know and am assuming, but I expect that he didn't expect for DullTech to be such a hit and suddenly have to mass-produce this product, which was then the artwork.

Also, Heath Bunting, I think he contributed a huge amount to net art and what a network practice can be, and how a network practice can be super political... I very much enjoyed his project Borders... His work in 2018 still seems super relevant.

Then I only like live artist and groups like Blast Theory... they tell stories using technology or using space and working often with members of the community... and I like their ability to use a little bit of tech to go quite far in what people can imagine.

I take a bit from all those people, in particular those artists that stand out for me are the ones that take it that little bit further than just a web-based realisation.

AB: What would you consider your level of digital proficiency to be?

MD: I wrote in my notes occasionally good, moderately poor... It's something I am comfortable with [level of digital proficiency]... but I talk about this in a sense with friends like: (a) I don't want to do this type of digital work for other people, or for business reasons, i.e. web development; (b) which is the problematic bit, is this constant need for a bit of extra cash... I am always thinking should I do this for others, because it is a decent income freelance digital work. But at the same time, I also don't want to because it sucks the fun out of it. So, I take this approach of doing it as my medium, my practices tinkering and exploring technologies and software, finding the holes in them and working out how-to do-little stunts.

I am quite comfortable, I would say about 60 to 70 percent comfortable with my proficiency, but I think what's most important is knowing the skill required for each component or element in a project. For example, with my current project I have these mining cards made... I've scraped the images of the web, but with graphic design I am no good with that... so I'll get someone else to do that at least in some aspects. So, in code if I had to go very deep into a language I don't like, for instance PHP and MySQL stuff, as long as I have instructions, I'll be fine. But it's all there online, so if I don't try to go too extreme from what's already been explained to me online, I should be fine.

I always try to look for something or someone that has tried to do something similar, just the process not the concept, and then it's about mapping your concept onto that workflow.

Well, my skill set is getting better... Though saying that things always seem to just work, there never stable enough to sell. But um... that's an interesting question because I feel I am doing the same things; it's just things are becoming harder as far as accessing a platform's code for example...

AB: From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

MD: I think what's really key is the workflow and role or importance of digital literacy. For example, last night I had an idea while I was lying in bed... got the idea, and then after the idea the next step is to check if the domain already exists... so that is step two. Step three, which somehow happens before step 2 and the projects realisation is figuring out what I'll need for the project that will bring me to a point where I'll be like 'ok I can do this', and then I'll go check domains. At that point you are ready to start making it [the artwork] and build your little space.

I think the restriction of digital literacy and what I have learned about programming, code, networks, hardware is the scale of what's required, so that I am able to think through. What I often will see is not in a lot of young designers and young creatives knowledge base when I am teaching with them is, they go 'we are going to make an AI do this', and I'll be 'ok how are you going to programme the AI?', and they are like 'oh I don't know...'. And that's a really complicated messy thing.

So, knowing the difficultly of achieving certain projects, knowing how hard certain aspects are is possibly of more value than of know how to do it.

AB: Can you please state your relationship with Agorama, i.e. what project you participated in, what artwork was produced for this project or redisplayed for this project?

MD: The Geltung exhibition was the first time I got to publicly show Breath (BRH). This outcome was different then our first initial conversation we had... It's always funny, there's the research and the initial heading for an investigation and then there's the outcome which, can often be dictated by an exhibition or public showing... So, you can be sitting on a piece of research for a bit and then a show comes around with a relatable theme or concept, though potentially not quite how you originally envisioned for the artwork.

So, my relationship with Agorama was through yourself [Alejandro] and Inês [Co-curator], and that was our beginning point of contact. And I remember looking up Agorama after the initial contact and reading about a mission to start an Artist label or potential hosting space... at least that's what I could understand at the time.

To be honest it wasn't till the show and your personal help [Alejandro], which was the best type of curator/technician collaborative install I've ever experienced. Because you either have curators that come in and ask you 'when are you going to be done?', or there's technicians that are helping you, but this experience was really different as you were one of the curators and the technician at the same time. So, it wasn't till I was there, and I spoke with Diogo [other exhibiting artist], who said that you had been instrumental in his online artwork's web development. And it was through my own experience and hearing about the other artists' thoughts that I was like, 'Oh so that's what Agorama sets out to do a bit more.'

On the piece that got shown at Agorama's exhibition, Geltung, is called Breath and it's a respiratory miner piece. It used lung velocity, like a spirometer which was used in the past for testing if people had lung disease. Anyway, Breath used this type of measurement and conversed it to a hash value that is used in the process of mining Mineiro cryptocurrency. So it gave the impression that your breath was powering the computer, when in fact it was really using your breath velocity to mine crypto and earn money. It was turning your breath into a form of economic currency, which is quite sinister in some respects.

The installation had this glass chemistry stand and glass vile, giving off the aesthetic of an old respirator or chemistry set with all the tubes leading out to two oxygen masks, each positioned on a chair that were situated to the right and left of the central sculpture.

AB: Please take us through your perspective on developing your artwork for the Geltung [validity] exhibition?

MD: Well the project started while I was on a residency in Berlin and experienced a course on live action role-play with algorithms. While on that we created this game and fictional world in which people were trading breath as a form of currency, and I wanted to perform that interaction out on people. I decided to use cryptocurrency to apply the concept, because in the residency we were just passing out balloons, which felt a little childish.

As too why blockchain, I was already looking into the technology as a site of inquiry or investigation. Thinking back, I was very interested in the governance of blockchain as a contrast to actual governance by institutions and governments. I was really interested in that aspect in comparison to the socialist's cybernetics movement.

So that was my research at the time, but the work itself... well I was struggling to materialise that into a work of art... Anyway, in Berlin while we were during this form of role-play, I was also really interested in alternative way of mining for crypto that could be inclusive of the body. I had seen some other pieces, one by the institute of obsolescence that I was really inspired by, which used

electrical bodily energy to mine crypto. There was another piece by artist Martín Nedal, who creates these really bad mining objects, and created Bittercoin and then Bitcoin of things, and these are objects that try and mine crypto... but really, really slowly.

AB: What made you choose the readymade platform from Wordpress over others, and could you provide your experience with each other readymade platform you have used for the development of previous artworks and projects?

MD: Well in reflection of this project, I should have definitely not used WordPress! But this takes me back to earlier questions about being aware of the tools out there, and your help through the exhibition process. I remember coming in and chatting with you, and you told me you'd just used Bootstrap... I was like 'oh of course', but didn't know the words to search before that moment.

And through a setup like that you suddenly have a light weight, responsive website, which also already has a lot of nice templates available to beginning with the hard coding. With WordPress on the other hand, it's a community-oriented framework even though it doesn't need to be, but for my purposes there was all this overhead which I didn't need... I only really wanted a one-page website... It was totally over kill, but that was also because I was totally unaware of the lightweight options that also didn't involve writing all the base HTML code. Now that I know of Bootstrap and other light or small frameworks, I'll be definitely using them in the future.

There is a case of seeing what's already been done in the creative process and the development process, and if you are doing a speed project to just be able to grab existing code and then rip off the head and replaces it with your concept's head on that body of code, I have no qualms with that. If you think of it there are people out there that share this type of information for free, there are technical wizards sharing their code and helping people solve problems in, for example, StackOverflow and other similar forums, which artist like me total gleam off. I mean we [the artists] go in there and just take the cream of the milk and make something much more interesting with their code... at least conceptually.

AB: In reflection of the final artwork and distributed exhibition, what do you believe were the successful elements and what elements did you find problematic?

MD: The things that work about the piece is that its aesthetically persuasive or engaging and I also think it talks about its technology at the moment, which a lot of people are eager to flush out. In that sense, it's benefitted from, potentially, undeserved press attention. I think the project contributes to that ecology of speculative frenzy around crypto, and I think that's a success and a negative simultaneously.

The negative aspects could be the artworks operations, such as reaction times... I feal it could be much more responsive to users' participation. If I show it again in let's say a long show, meaning several months rather than several weeks, I do like to make the whole sculpture a lot cleaner in the case of the face masks, so people can just use it and not have to go and clean the face mask after every use or even have to put their month on anything. Also make it more responsive on the visual graph, so the participation is recorded in a bit more real-time and people aren't just puffing away and not getting anything back... I mean they don't get anything back anyway, but at least have that feeling of effect over the piece and the mining process. You need some sort of response, don't you? And right now, the graph spikes about 20 seconds after the audience member has puffed into the respirator, so that feel just little bit delayed and I believe there is a risk of this leaving people feeling undervalued.

AB: In general, could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

MD: So, rather than spatial perception, I would be more inclined to speak about a temporal time-based perception. I think a person's temporal perception has been totally disrupted, and your attention and the time you are willing to give something, whether that is in a gallery, or it's our

partner. Hito Steyerl just calls this 'junk time', where people are just like absolutely tuned off, scrolling through and getting from this experience really saturated endorphins from gazing into other people's lives. This has now just become a common, or default setting for many social interactions or at least for people that are not around each other a lot of the time.

I think that's been really challenging for broadcasting and that type of dissemination, because you can spend a lot of time making a beautiful piece or some other form of media to capture others' attention. And competing in this attention economy is so tough. I feel really shut out, well maybe not shut out, but I just don't want to try and compete for a condensed micro-second. It feels like everything I want to say has to be reduced down to a meme leave of impact - an instant transmission.

I was going to make a piece that was going to take the form of a five-minute lecture online, but I was put off it for a number of reasons. The main one being the concern of getting views and whether someone would stay on the website for five minutes.

AB: What are your thoughts on developing a multi-platformed artwork, and does this form of art have an impact on spatial perception?

MD: Its obviously super challenging, but it also feels like it's a necessity for practitioners to take this catch all approach. For example, you'll have a website, then there is also going to be an app, as well as a gallery installation, while at the same time there will be some type of social media activity through let's say Twitter – and as you can see, we are already going into 6 manifestations of one concept, and I think that great. But it also means that you are stretching quite thin... and it's all in an attempt to find the best way of engaging your viewer, because that feels like it's become a lot harder since the introduction of video art, and even going into a gallery or white cube and seeing a video on the wall... people at the time must have been like 'wow!'

I still feel like the way net art transitioned into the gallery with browser-based works... a lot of the time they just showed them on beamers [projectors] like video art. There are only a few artists that can take their online content and create an immersive installation out of it. But a lot of the time people [galleries] want to put your website on a beamer and they don't take into consideration the environment changes of the original intimate viewing space like your couch, or in your bed.

One good example is Olia Lialina's piece My Boyfriend Came Back from the War, it's an incredibly intimate piece, which is also what is so amazing about this artwork, but when its suddenly projected onto a wall this connection with the audience member changes.

AB: Would you consider what you produced for Geltung[Validity] a multiplatform artwork, two separate artworks, or something else?

MD: Unfortunately, I don't think that Breath is a multi-platform artwork... for me. Because I see it as the installation with an accompanying website. However, data is being pushed to servers in the US and coming back and having tangible affects in the gallery space. Because that is all happening in the backend and I am not examining that multi-platform, or multi-sited aspect of the artwork I would never want to call it a multi-platform artwork, or ever want someone to consider showing just the website, or piece just the piece... it kind of needs all of it. It's a composition. So, I would say, unless you are doing a real network analytic perspective with it, then I guess you could make an argument about Breath being multi-platform...

I mean I do use multiple platforms in my work normally, for example the Hipster Bar, there is a bar, there is a twitter bot account, there is a whole website element, sponsorship from beer companies, there is different partners involved... and these can be considered separate platforms, for instance the twitter bot is entertaining by itself... For me the multi-platform thing would have aspects of the work that could be standalone objects, pieces.

AB: In regard to your own practice, could you reflect on and describe how network technologies might play a role in your practice? This doesn't necessarily have to be specifically about an artwork, and can include other artistic activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

MD: I think relations of some of this stuff creates, meaning using others' hosting services, software packages, even contacting someone about updates, or trying to get a bug fixed... those events can sometimes lead to interesting dialogues and relationships with people... We were talk before the interview about moving to a self-hosting space, which would lessen the need for all these relationships, not to mention all the login credentials for each of my projects.

I've been recently finding it increasingly difficult with API restrictions... For example, scaping data from Twitter... Many APIs are simply turning their attention from an open system to a business-to-business focus.

Then there is HTTPS (Hyper Text Transfer Protocol Secure) and SSL (Secure Socket Layer) certificates... Yeah feeling the web is becoming more restrictive and a lot less playful. I feel since the 'web 2.0' shift, a lot of those companies and platforms now a days don't want you to see the data they have and only give a glimpse... And as an artist that works with data, having to base your ideas on this fragment... it's really restricting. Then back to the SSL certs... yeah now everyone has to have one registered name, one identity, one address to begin sending data somewhere.

In a nutshell I would say the web monopolies and companies are hindering my practice, whilst also being a source of inspiration, because you want to make relevant work about the biggest tech platforms and the role that they are having in the social political changes we are experiencing through a collective use of these companies' platforms. The difficulty is that any well-articulated software critique is assimilated and ushered out in updates... So, it's probably best to keep these types of critique a secret. Because as soon as your release a software artwork, these companies break it through their own 'fixes'.

AB: Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your artist persona?

MD: I think that's what the postinternet artists successfully identified was the socio/technical/capitalist systems in our platforms that we are having to use on a daily basis to promote our practice.

For example, Amalia Ulman made the promotion of her practice her artwork, she made having that identity also her artwork... and that was probably the most interesting part about postinternet art; this mass recognition of the software algorithms, platforms and the data collected as a self-promotional tool by just being perceived as creative individuals, and how that fit into the gallery. I feel many artists of that time began using that as the medium, i.e. self-promotion as artwork.

AB: As well, could you reflect on this personal network and how you use it to disseminate your artistic content?

MD: Yeah, I have tons.... I have several websites pertaining to different projects... I have load of logins, though I think everyone has that these days...

I do wonder how long I will be able to do this, but I also create a lot of account with fake emails, for instance Twitter accounts... and I wonder how long before this is all stopped, because you have to have a burner phone... For my Twitter bots, you know you've got to have a phone to set one of those up, a spare phone. It really makes me think, how long will Twitter allow me to have 6 to 7 different accounts.

Domain names are getting quite expensive not wanting to give them up, but I would rather have floating domains than physical piece that are shipped back to me after an exhibition, because I lack the physical storage space to keep them... So, I don't mind the monthly payments.

On top of that, because my programming isn't super pro, I do end up paying for people who provide services to connect up some of my network projects. For example, Breath there is a WordPress, then there is a Graph API that shows the data from the Raspberry Pi... and while I did code that myself, I'm still using third-party software that is provides an Internet of Thing access point for people of all skill types. But then again that becomes really complex when you are trying to close of the work and make a commodity. All of this cost money to run and it adds up.

When you group these circumstances with the commodified art market, you quickly are restricted as all the software packages that an artwork might depend on are either going to become obsolete, or they are depending on a subscription model. For example, if you want to start paying for the image classifier that is used by the Hipster Bar, or the graph visualiser used by Breath, both of which are currently coming out of my pocket... all of this would have to be priced into artwork's value.

I've also gotten into interesting discussion in the past with software developers on the subscription model, whereby I was asking if I could have some type of lifetime access. Now something weird is happening where I am beginning to exchange my intellectual labour for free software... This involves writing articles for the company about interesting creative projects that use software. So, I am currently writing articles every month for this company to maintain access to their system for my artwork.

Appx.2.2.3 Donna Holdford-Lovell

Alejandro Ball: Donna thank you for your time. To start can you please describe your curatorial (and or artistic) practice, areas of interest, and any influences on your practice you might have?

Donna Holdford-Lovell: Well primarily my curatorial interest is looking at how artists interact with space in general. But starting with my background, its actually in theatre, and I was always working behind the scenes in that field. An interesting part of theatre is space, which is very controlled, because there is a limited move of it which has to me movable for the performance to be realised. After that I fell into contemporary art, while also started working with museums. This was more of a traditional 'curators' role, or potentially a custodian of art role. After some time, and while working at the Duncan of Jordonson (DJCAD), I was introduced to the gallery space and working with artists closely, both from within the university and the wider field.

In terms of new media and returning to my practice, I feel I have also been interested in technology. For example I am an avid gamer, and I always was curious to experience new tech, was always deeply interested in sound (I have a very eclectic interpretation of sound and music), and I feel as a curator that I have the ability to pull all these interests and elements together in space.

My degree is in fine art, and I was always better managing other people's art rather than my own art. As a practicing artist, I could never find a resolution in the work I made. I was never satisfied, and my work didn't really spoke my ideas the way I envisioned. I've always found it easier to collaborate with artists and work things out together. I guess that's how became focused on the notion of 'how can I primarily make environments for artists?'.

So, I guess if that is a traditional gallery space, or now, how can I make NEoN a space where artists can come together. For example, when I was a curator at DJCAD we started our own record label. See all the artists we were working with at the time were focused on sound or the spoken word. The outcome was a really nice piece that included six artists from Scotland and six

artists from Canada, and we were able to release this work to the public as a sound piece, a zine, and we also did an exhibition.

AB: Can you please describe your knowledge, and curatorial experience with new media art, in particular Online art, Internet art, and network distributed art?

DHL: Well... as stated before that interest in technology, especially the digital, has always been there. I think early on when I think about my practice, I didn't identify it as 'I curate new media art', it was always 'I curate contemporary art', plus I always included different types of technologies, for example painting, dance and sound.

I don't believe there was a specific time, where I suddenly said, 'ok this is what I do', because I still think it's all contemporary art. For example, we were doing embroidery for one of the NEoN events, and that's very traditional as a medium, but at the same time it was still digital to a certain capacity.

It's funny because I use to say when people use to ask what I did for work, I would explain that I was a contemporary arts curator with a special interest in technology and the digital. I think in general I try to steer away from the term new media, because there are still loads of debate on what does digital mean, what does new media mean, what does Internet art mean... I think at the moment I am comfortable with contemporary art to include everything, but I wouldn't dismiss the value those terms have.

AB: What Internet artists, if you can name any, stand out to you, and why?

DHL: Hmmmm, well I suppose my knowledge isn't the best on this subject, however I do find fascinating. For example, working with Furtherfield and their project on blockchain. So, I can't say I know much about this topic, but I am watching it with a lot of interest.

I quite like how artists see a platform or see a new system, and they see it as something to infiltrate, how could they change it, or use it.

AB: Do you feel that an individual needs a certain level of digital literacy or proficiency to understand this form of art?

DHL: To a certain extent maybe... But I would hope not. Because to a respect... that's like saying if you can't sculpt you can't understand sculpture. I would hope that within those artist investigations there will be different levels of access.

Take for example the online commission by us and Furtherfield, Click Mine by Sarah Friend. A user can just play the game and begin click with a mouse and understand the absurdity of it. Or you could go to the other extreme and head to GitHub and look at the code. So, I would hope for this type of levelled accessibility in any Internet piece.

AB: What would you consider your level of digital proficiency to be?

DHL: Well some days I feel I know loads about this stuff, and then other days happen, for example with this blockchain stuff, it blows my mind, I haven't got a clue. Also, Alejandro sometimes when you speak about certain things, I haven't a clue.

But I suppose this feeling is across the board with many things. There are some many different facets to what could be describe as digital. I think I am comfortable with the basics, and I feel I have the capacity to expand my knowledge from those basics, if I need too. To be honest I try not to expand my knowledge to deeply into a specific specialism of technology, because I enjoy the interpretation that is attached to the work by artists. I don't want to know all those stuffs, and feel that because its housed within an artwork, the art itself can help me decipher it somehow. I guess when it comes down to it, it's a bit 'you don't want to know all the magician's tricks.'

AB: From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

DHL: I think it's the reliability of technology. Whenever we are installing, or doing other type of public event, you have to expect it's not going to work. I think there are so many variables when you are working electricity, networks, programming, not having the correct infrastructure... If you are in a space that has no general WIFI access, for example NEoN next year will be working in the Wellgate Centre and they have no WIFI in there, so we have to setup that infrastructure ourselves, and that before you even start thinking 'what are the artist's needs going to be?'.

I think alongside, in another example, programming... programmers code very differently to each other, not to mention could be using completely different languages.

Thus, it becomes a task of how to you manage all this different information together to produce one comprehensible narrative, and how do you manage people's expectations.

AB: Can you please state NEoN's relationship with Agorama, and what was contributed to the overall programme of the NEoN 2017 Digital Festival?

DHL: Well you, Alejandro, as an individual brought a lot of knowledge technology, the Internet, networking capabilities, and a very interesting perspective particularly in new emerging practices in younger artists. Additional you brought your technical skills, which allowed NEoN to achieve several ambitions audio visual components for this year's festival. For example, the show you help us achieve in the VRC Centrespace venue.

Also let's not forget the online platform you developed for streaming our Artists' Shorts Screen event online. I am very interested in that type of online extension and developing it further for NEoN in the years to come and using it as a tool to each audience, so I was very happy for your contribution of the Kubos Nero Screening Platform.

Agorama, on the other hand, of course curated the exhibition Geltung [validity] with GENERATORprojects.

AB: How did Agorama's contributions differ from other online exhibitions or events included in the NEoN programme (past or present), and were any of NEoN's boundaries challenged as a result of this collaboration?

DHL: Yes, certainly on a practical level. One important thing highlighted was we have to engage with the Internet to add that additional level of accessibility. Because in NEoN's case, and even my own I have not really used the Internet as a space for art... as a communication tool yes.

For instance, if someone is non-local to the NEoN festival, in the case of Kubos Nero, audiences still have a place to engage. And I feel this is an avenue we (NEoN) have not exploited enough. I personally don't have enough of an understand, on a technical level, to fully engage with the Internet, which is also true for NEoN as well.

After observing and working with organisations like Furtherfield, its very apparent to me that I have not used the Internet as an art platform. This tells me that as an organisation, NEoN has to explore this area further.

AB: In general, could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

DHL: I think this type of technology does alter perception, for example to give us a wider picture. I also think it gives us thoughts on 'endless possibilities.'

I also feel it give us a sense of distance, but at the same time this type of technology can be world encompassing. Simultaneous it can be something that attributed loneliness, because there is just too much of it.

One problem I see, currently, is that it's being portrayed as a 'bad' space with all the data mining and corporate controversies happening. And I feel this gives that space this sense of an underlying hidden agenda.

It's a reflection of the world isn't? It's an abstracted space.

AB: In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

DHL: Yes, I think it's inevitable, as art and artists use a space, where its real space or perceived space, they are bound to change its shape for the rest of us.

It's a new form of communication. You can say it's similar to the invention of paper. It's an advancement in communication, a tool that is reduces costs, and is mobile. It almost has infinite possibilities (the Internet), which is a good but also something that I view as a potential bad thing, particularly what the Internet allows us to have access to.

AB: In regard to NEoN, could you reflect on and describe how network technologies might have played a role for the organisation? This doesn't necessarily have to be about an exhibition only, and can include other curatorial activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

DHL: On a basic practical level it's about communication for NEoN. It's the ability to connect to each other, no matter where everyone is, and that the internal use for NEoN. For example, we all use Google Drive, and whatever your political views are on Google, their cloud drive storage is a massive practical tool that we use. Because everyone person working for NEoN is doing a multitude of jobs (for NEoN or other work), Google drive allows for everyone to dip in and out, and in theory keep up with everything.

In terms of audiences, well it's a simple and cheap way to communicate with an audience. I think in this case our network online has to be larger than our real-world network. It is so important to attend exhibition, go to events like conferences, to read the relevant books, and I feel this 'presence' is important in both spaces (physical world and virtual world); NEoN tries its best to have this presence online.

For examples, in the past we've posed questions on certain art forums or have posed questions to artists in other online spaces. And this is all important to have that 'presence' and strength that online network.

Of course, this is very practical case examples. In terms of a curatorial space... It needs to be for NEoN and we are aiming for it, but it's not there yet.

Appx.2.2.4 Miriam La Rosa

Alejandro Ball: Hell Miriam, thank you for taking time out of your busy day to answer a few questions. To begin, can you please describe your curatorial (and or artistic) practice, areas of interest, and any influences on your practice you might have?

Miriam La Rosa: I am very strongly focused on collaboration. As for my curatorial practice I would say its artist driven, meaning I engage heavily with the artist's practice. Because of this approach I don't really like to have this established curatorial framework that you can use to insert artists into. I much rather have conversations with the artist in question, and shape my curatorial practice around their work, through these discussions.

Of course, I do have a beginning point, like curatorial idea behind what I am doing during a project, but my practice is primarily dictated, or even moulded around the artist's needs.

This is something I am bring to my own research, as I am currently conducting my own PhD. research on the notion of artist residencies, particularly curated artist residencies.

AB: Can you please describe your knowledge, and curatorial experience with new media art, in particular Online art, Internet art, and network distributed art?

MLR: My experience and knowledge in relation to new media art is a bit diverse, not necessarily homogeneous, meaning that I didn't follow a specific path for working with new media art. It's a bit weird, but many times in my career projects of this nature simply ended up on my lap.

For example, I have taken part in the production and curatorial side of a few projects, like 6PMYLT, as well as our projects together with Agorama. More recently, I've organised thank tank events for expanding media practices in Mexico, which had a large focus on new media art, but also on how new technology are shaping contemporary institutions of the 21st Century.

In terms of media and new media theory, I actually have several close colleagues that work in this field. For instances, Domenico Quaranta and Fabio Paris from the Link Art Center.

AB: What Internet artists, if you can name any, stand out to you, and why?

MLR: The first artist that comes to mind who I am very interested in their work is Evan Roth. I've been in conversation with Evan for a bit now, and also visited his studio in Paris once. It's interesting in our discussions we've been conversing one the topic of surveillance, his work has to do with that. Aesthetically I think his work is really beautiful, and also conceptual which is another attractive quality of I enjoy about his art.

Another duo I would mention is Eva and Franco Mattes (0100101110101101.org), especially for their historical impact on new media and the arts at large.

As well, Constant Dullaart, which is an obvious – he has been winning loads of prizes as of late. That being said I do enjoy is work as well.

I feel the common trait between these artists I have mentioned, is that all of them, to a certain extent, have challenged the medium itself. Because of this, I feel, they have really created interconnections between the virtual and the physical. This is something I personal find very interesting.

AB: What would you consider your level of digital proficiency to be?

MLR: I would my level of proficiency is average, though I guess that depends on how one measure this. For instance, I don't use Photoshop because I never found myself in a situation where I had to use it. But that isn't to say I am against learning this software, because if the situation arose, I would attempt to learn the program. I think this type of 'need to know' situation, makes me think about WordPress, which I had to learn for the purposes of running the online blog curatingthecontemporary.org. Late when I was working for an art consultancy agency, I transferred this skill of WordPress to that position, and was basically running their website even though it was definitely not my specialism! So that's how I approach thing.

Of course, I am using other things like the Microsoft Office package daily, and reference management systems like Endnotes for my PhD. So, going back to the beginning I would say my experience, compared to the majority of computer users is in that average to above average level. Though I would never say I am an expert or have a specialism in digital technologies.

AB: From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

MLR: Hmmm well I think the language of the digital medium is very different to what the arts is used to, and this often demands a different type of engagement compared to traditional forms of art. For people that aren't using these types of technologies on a daily basis (technically), some of the content from new media can come across boring, or too dry... potentially because that's not the way they live their lives, so they are still more linked to a tradition type of fruition, where one would go to a museum.

Of course, new media artworks are all over the place, even in institutions and part of collections... But focusing on online art, or Internet art, that might not be displayed in a museum setting, not to mention many practicing Internet artists wouldn't even want that or have an interest in that. If we are talking about that then I would say it becomes a bit more difficult, because generational gaps, or people who've never experienced this use of technology on that artistic level. For this group, I feel Internet art can come across somewhat puzzling.

However, if we move the focus to our generation, we are in an in between position. So, we understand it, however there are still those among our generation that still can't grasp this form of art.

If then shift the focus to generations after us, many of these generations are Internet natives, thus, they've grown up immersed and engaging with these types of technology. For example, my nephews, they are pretty young now, however, I can imagine when they are in their 20s' having Internet art and thinking of the Internet as a site of art will be very normal, because this is the world they are growing up within.

Another thing that can affect the fruition of an Internet artwork is aging technologies or change in the current (or past) standards. And many of the uses of technology is because they were contemporary in their period's context, but then after a while their aura changes, like all art over time, but because its use of technology this change in meaning overtime is even more present.

AB: Can you please state your relationship with Agorama, i.e. what project you participated in, and your curatorial role for this project?

MLR: In terms of Agorama, we initially conceived it together when me and you were working with amaCollective. In that context, I guess for amaCollective Agorama was a space online that was a meeting point for exploring a diversity of practices online. That was our original idea.

The project that we were able to development full is PILproject, which is also the project I took part in with Agorama as a curator, though I remember that project was mainly led by you (Alejandro), and you were the main reference or contact point for Juan and Enrique.

I think what was great about that project is that despite being an online project, it ended up being quite physical, in the sense that we were meeting up a lot. Alejandro you had that giant mind map in your room where we were playing around with the arrangement of all the memes and their categorisation. We even printed all the memes out for that process. Yeah it was very much that to produce the work online we first had to do it physically, which I thought was a very nice process in itself because it's not something you necessarily imagine when you think of an online project.

We had that moment of sharing, and physically moving these clusters of ideas and seeing how they would develop into the website. So that was a great aspect of it.

If we wanted to think and push the border a little bit the notion of an artwork, this project was pretty much a horizontal type of collaboration. So, the idea of artist and curator was very much blurred in that respect.

Then for the same project we had a physical exhibition. I think for the exhibition that was the area I was a bit unsure about... Because I totally understood the online aspect and the recontextualization of memes and gifs as art. But in the physical aspect, it didn't quite convince me the same way as the manifestation of the website.

I think in reflection the brilliance of the project was that it was an experimental exercise for all of us.

AB: Please take us through your perspective on curating works that are situated in a distributed exhibition?

MLR: So first I think my experience with 6PMYLT is a good place to focus for this question... The experience overall in terms of the idea behind the project's proposition. Curatorial, I think it becomes interesting to ask, 'what was the role of the curator?' in this particular context, because if we think of the curator in a traditional way, the curator has a concept, and they provide a little motif to the artists to execute or develop for an exhibition. In the case of 6PMYLT there was nothing like that. It was very much, 'we are having this event, would you like to participate'.

So, there were a series of events happening simultaneously with very different scopes. I think this idea of 6PMYLT, if we think of it curatorially, it can be thought through a bit more and explored... For example, properly curating what was happening, and even in the selection... not only working with digital artists. As well, even trying to organise several things with the participants, because many times you just didn't know what the participants were going to do till the last minute. But at the same time, that was the whole point of the 6PMYLT project, the relinquishing of curatorial power and just letting things happen, and this is was the original curators of 6PMYLT wanted.

In terms of the challenges were exactly that we (the curatorial team) were managing several different events and people in different locations remotely. So, you had no idea what was going to happen on the night. Thus, anyone of the participants could post whatever they wanted, and the curators had no control over it. I mean it's also great I feel, especially if you look at this through the lens of Internet freedom.

I think it all comes down to objective for a project. If this type of freedom is your goal, then 6PMYLT was very successful. However, if you goal is to say something, or give a clear message or curatorial position, that is very difficult in such a vast project.

Another interesting aspect I see in this type of event is as a curator are you actually curating or are you actually producing? also to clarify, I don't want to say you can't curate an event like 6PMYLT, but you do have to be very strong in your curatorial strategy from the beginning in the selection process for these types of events. This is if you want to have a curatorial strategy. However, if you want people to have complete freedom, that's already a curatorial decision being made.

AB: How has the process of working with online art effected your curatorial perspective and practice?

MLR: I think working on all these projects with Agorama and the Link Art Center was a very rewarding experience, because it did make me think quite a lot about the possibilities of these technological tools to pursue different exhibition formats.

Curatorially, I feel I don't have enough experience curating new media outside of the projects we spoke about here. In that case... I don't know yet.

AB: In general, could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

MLR: I think they definitely are... a lot. The whole idea of space and time has changed dramatically since they've been introduced into the arts. The concept of accelerationism, a word Douglas Copland uses a lot when he about how society is feeling in the 21st Century... and it's true. Everything feels like its accelerating, and it's difficult to keep up with what's happening. There is this constant pressure to keep on posting on to social media site everything about yourself.

I think this translates into space, because we are constantly walking around with these mediation devices, and everything we access is through these smart devices; space in this case is clearly not just physical. So, you can say space isn't three dimensional, but potentially multi or infinite dimensional. In that respect, I feel network technology is the direct cause for this scenario.

For example, I don't want to say virtual space is ephemeral, that doesn't feel like the correct word anymore, it's almost like space has been completely nullified in certain circumstances. However, at the same time it's also very much present. In this instance, I am thinking country borders or crossing borders. 6PMYTL crossed border, but if we think of the reality, we are living in country borders are very much present for many people like the whole refugee crisis.

AB: In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception and how?

MLR: I would, and I would go back to Leotard and the way he challenged spatial perception in 1985. He pushed the definition of the exhibition borders and what the exhibition meant, and basically said the exhibition was a work of art. And while he was pursuing this challenge to space, new technologies were there, so he was discussing new ways of attending to materiality, and what materiality is.

Lately I have been thinking a lot about lucidly part of the materialisation of the art object, and how much of that was a flop theory. I mean it was a great theory for art history and criticism, but at the same time we never got rid of the material object. We still have the material object, even when it comes to new media and online technologies. I guess we can be happy about this, because art is an object it just doesn't take the conventional shape as we expect it.

AB: In regard to your own practice, could you reflect on and describe how network technologies might have played a role in your practice, and your network footprint? This doesn't necessarily have to be about an exhibition only, and can include other curatorial activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

MLR: I use a lot the blogging aspect, and I am thinking of this in terms of curating; the documentation aspect is very important for me, thus blog I view as crucial. For instance, when I left my last position and was still waiting on hearing if I was accepted for my own PhD. research project, I put together a simple little blog, and it because a way of making me present, almost like a CV for people reaching out to me. In this case, I use WordPress, it's a very accessible and free platform making tool. So, this is one aspect that I will carry on with in my future projects and PhD research.

In terms of social media, I am using Instagram a lot and I'm trying to use it more professionally. And while I do post some pictures from my private life, I'm trying to post things that are relevant to my practice, for instance different artworks or people I am interested in curatorial, or meetings and events in the arts that I am attending. This is how I basically perceive how this platform should be used professionally, as a scripted space.

Twitter... I don't really use this platform. Though people tell me it's more interesting than other social platforms, but currently I'm mainly focused on Instagram.

In terms of network footprint.... I do use my personal accounts professionally. I mean there is Facebook... but I rarely use that these days, both for personal and professional. These days I seem to use Facebook Messenger a lot for communicating privately. Instagram is definitely where my network footprint focus is, when it comes to social media. I suppose it's like a little toy for me, I like to display images there and show people what I am getting up to.

I mean I am aware that these days you have to be present in multiple social media sites, for example in the case of institutions. If I were working for an institution, I would probably engage with various different social sites even more.

Appx.2.2.5 Andy Slater

Alejandro Ball: Hello Andy, Thank you for your time. To start off could you please describe your curatorial and or, artistic practice, areas of interest, and any influences on your practice you might have?

Andy Slater: Ok! So I do have my own independent artistic practices as a painter, but if we are speaking about my role in GENERATORprojects, as it's a small team it can be a little of everything. But for the given project, i.e. Geltung[Validity], I do have a working relationship with the NEoN Festival curatorial committee. So as I am also a GENERATORprojects committee member it made sense that I would be the show lead on behave of GENERATORprojects. And this is a normal format for other GENERATOR projects, wherein one of the committee members takes the lead on a given project.

However, won't say I have a curatorial practice, or even the ambition to develop one… So for my approach for the Geltung[Validity] exhibition was basically to ask artist Kelly Richardson on her recommendations for potential young artists to exhibition, and the reason for this was because she would be showing at the time in the DCA (Dundee Contemporary Art) as part of NEoN. Thus, that's where Petra Szemán's inclusion come from. At the same time, I also felt this would create a 'link' across the city between DCA and GENERATORprojects, as Petra was a former student of Kelly, and I believed this relationship while showing at the same time for the same festival but in two different venues would be really nice.

At the same time, there was the collaboration with Agorama. However, those initial conversations I believed happened between yourself and Jenni, who is a former committee member, and it wasn't till after she left Dundee to complete her master's that we [Agorama and GENERATORprojects] started working towards producing the exhibition.

But in general, apart from Petra, I saw my role for the Geltung[Validity] project, not as a curator, but more of a facilitator. Someone that was trying to make sure things ran as smoothly as possible.

AB: And what would you say is the general role of a committee member when they take the lead, or is this something that is varied and depending on the individual?

AS: I think it's very much up to the individual and what they feel they're comfortable with, or what to get out the project. And in that case a committee member might feel that they are the curator of that show and will take up that role, or potentially they might feel their strength lies in other areas and thus, start delegating tasks to other committee, thereby allowing them to focus on the elements they feel comfortable with.

AB: Can you please describe your knowledge, and curatorial experience with new media art, in particular Online art, Internet art, and network distributed art?

AS: It is something that I do have a great deal of exposure to, so to an extent I feel like I have a bit of a working knowledge of. For example, I am familiar with the bigger players in the field of

new media. But to be honest, the type of art isn't my primary interest; I'm more interested in current painting practices.

Returning back to the question, I am aware that it's such a huge field that is ever increasing.

AB: What would you consider your level of digital proficiency to be, and from your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

AS: My main mode of income comes from my work as an exhibition technician. From my experience, having worked on different installation projects for various institutions, artists that are working with the cutting edge of technology are either extremely proficient in the tech and medium they are using; they don't need technicians. They've reached a stage where they either don't need a technician or have a very close relationship if a specialised technician that they always bring with them. So, in my work I am not always hugely involved in the setting up the deeper technical aspects, because, as said before, the artist themselves knows or they have a collaborating technician that they bring. And these people aren't there to teach others. So, the support I provide tends to come in the form of fabrication of the space, or other tasks that they can delegate.
This situation can sometimes feel like a closed shop. For example, in my experience, a lot of AV (audio-visual) technicians can be extremely secretive about the inner knowledge of that practice, which is maybe about self-preservation. But of course, there is the opposite spectrum. I worked with Susan Hillers technicians – and I mean there was no fear about sharing knowledge and they were extremely generous with it. Though, I do think that experience is quite rare.

Fortunately, when I have to do AV work, its normally someone looking for a single channel video, projection, and that's really plug and play these days.

AB: Can you please state GENERTATORprojects' relationship with Agorama, and what was contributed to the collaborative exhibition Geltung[Validity]?

AS: As mentioned before, I was more than happy to step back from taking up a curatorial position. So was really pleased with Agorama coming with well-formed ideas and concepts, in addition Agorama handled basically all the channels of communication with the artists involved. For GENERATORprojects it meant that as a gallery, we could focus our conversation to Agorama about the practicalities of making the exhibition, e.g. exhibition dates, marketing, etc. And I personally was very comfortable with the processes being able to be compartmentalised in that way and know that it was well in hand.

AB: How did agorama's contributions differ from other exhibitions or events included in the GENERATORprojects' programme (past or present), and were any of GENERATORproject's boundaries challenged as a result of this collaboration?

AS: Having guest curating is not something we've [GENERATORprojects] really done. For example, we don't take touring exhibitions, or other 'curatorial' projects as such. We mostly focus on, and are approached by, early career artists.
In this case, working with Agorama and NEoN, first just having a partner like NEoN [North East of North] is different to every other show we've done. It brought extra financial support and allowed for the exhibition to be more ambitions; it meant sharing marketing tasks, sharing audiences, etc… I personally found it very instructive, in the way that through such a collaboration you are able to observe another organisation's practice. For example, NEoN paid someone to blog about their activities through the leadup and duration of the festival, and you think to yourself well that really works, why can't GENERATORprojects try to implement something like that?
In the case of Agorama and working with guest curators – as mentioned before it allowed us to step back and facilitate things. This had an interesting affect, some of the committee members were fine, others thought well hold on is this more like a 'takeover', which is something we do but

its extended to our members. Essentially, they have to apply for the opportunity, and if they get it, we hand over the space and facilitate things minimally, and they have curatorial control over the project. However, for these takeovers – we don't financially support them. So, some of the committee found the collaboration with Agorama odd, in the sense of sharing programming with another group. In my view, and also my reaction to this type of doubt was 'if you have a better idea, bring it to the table' – because I think at that stage the exhibition process was quite far in its development and plans. I also personally thought this was a good collaboration because it did relieve an already stretched committee from having to produce another exhibition project.

Another interesting aspect that I found challenging was all the pots of money dotting around, there was GENERATORprojects fund, NEoN contribution and additionally Agorama. So, it was hard at times to check track of what was being spent and from which pot of money. If I was to do that aspect again – definitely would try from the beginning to assign specific people and pots of money for specific needs, e.g. person A is booking the accommodation and this money is coming from pot of money B, person B is booking transport which is coming from pot of money C, etc. That was a real learning curve.

Additionally, communication, I mean keeping people copied into emails – and it make you think if GENERATOR does do something like this again should there be a collaborative email, that way it's easier to keep track of other people activities. The number of different platforms there are out there to communicate with, there are so many! And it drives me a bit mad, in the sense where it's hard to pin down a concrete channel, for example, many of GENERATOR's committee communicate on Facebook, whereas I don't…

AB: In reflection of the exhibition as a whole (final product) what do you believe were the successful elements and what elements did you find problematic?

AS: I found some of the marketing stuff problematic, for example print deadlines. The poster was printed a bit late… and the banner for the exhibition itself was late and didn't arrive till the day after the opening. Which is more of a GENERATOR thing, because there was already another committee member that had arrange this material before for other projects, thus, they had an account, so I was dependent on them, plus their InDesign and Photoshop skills… But in general, I was really happy with the overall production of the exhibition. For example, Felicity's work – I feel we basically help produce exactly what she'd planned and envisioned. Yeah, I think a lot of the physical aspects went pretty well, i.e. plinths, the bench for Diogo, Petra's rear projected screens. But in many ways, I felt this was always going to go right, because personally I do this type of fabrication work professionally. In addition, I also feel it just happened that this time around GENERATOR's committee happen to be a group of very practical individuals with fabrication skills, but at the same time lacked a lot of advanced digital skills. So, from the GENERATOR perceptive we were very strong physically setting up the exhibition, less so on the digital side of things.

For the online aspect of the exhibition, well realistically GENERATOR didn't have a hand in this, and it was basically you Alejandro that were single handily responsible for producing that side of the exhibition and pulling it together.

I think overall, it was a strong exhibition that stood on its own, and it wasn't just a 'festival' venue for the NEoN festival, but at the same time integrated itself really well into the festival programme. It also had a very clear curatorial message. Yeah, I was really happy with those overall aspects.

AB: In general, could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

AS: I think in a lot of ways this type of technology creates new types of relationships, which don't really transfer over into 'actual' life. For example, recently I joined Instagram, and I feel that space is the home of a particular kind of interaction for amusing photographs or artistic content,

it's a nice quick picture exact, if you know what I mean? Anyway, I joined under a made-up name and recently I was at an exhibition opening and happen to past a person that I follow on Instagram and thought to myself why not say hello, but stop myself and thought, wait we've never actually met but we follow each other on this platform, and it made me think about this type of 'other' relationship. This person, she posts under her real name which allowed me to know it was her, while I post under a factious name because I'm just posting silly things… And that moment of though made me take a step back and think wait what is this relationship, this type of interaction; we don't actually know each other and have never spoken.
I can bet people have this experience all the time with social media, I guess I'm a bit of a latecomer to all of this. But it was a new kind of experience, a very odd one, and it made me feel a little bit occurred… I made me feel like I knew someone and something about their life, but they don't know me… Yeah it felt like an uncomfortable symmetric relationship, if it is a relationship.

Other examples I can think is one time this friend that was coming up to Dundee for a visit, they expressed this concern to me because they had a Facebook friend in Dundee, though they had never met, and this friend was concerned about putting on Facebook that they would be in Dundee, in fear of this friend they'd never met would want to meet. So, it was really odd, because this friend seemed really comfortable with this non-local relationship, and the prospect of suddenly meeting someone in real life was really unsettling. And this was despite them having good regular banter online with this person that lived in Dundee! So, I feel like these are kind of new and separate relationships.

Of course, there is also the family WhatsApp, where I have a constant stream of videos of nephews, and family pics, and children playing in sandboxes. Whereas I don't have any kids, so I'm the one always messaging inappropriate jokes. But yeah, in this case, that type of communication can sometimes stand-in and almost replace actually seeing each other, you sort of feel like you're in contact a fair amount, and you know what each other are doing through holiday photos and other type of note sharing. Though, if you suddenly think about it you are actually only seeing, in this case my family, only once a year for Christmas – and it's like how did this happen? Maybe part of it is because we are comfortable with those sorts of daily or weekly electronic exchanges, they allow us to lose perspective on the reality of our actual relationships.

AB: In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

AS: This makes me think of Erica Scourti's work. There is also the publicising aspect to all this, for instance the video diary and putting things like that out there and exposing yourself to potentially anyone that cares to look at that. I think people who are following others online, like a famous person on YouTube it can facilitate an idea that there is a relationship forming. But of course, that's not really the case. You might send a tweet to them and they might tweet back, but that doesn't constitute an actual relationship.

There is also a project by Steve Lambert which was really great. He basically had this plugin that worked with ad blocker software and invited artists to show their work; I also contributed artworks to the project. The project basically blocked out Internet ads, but instead of just blocking them out with nothing, the ads were replaced with artworks that were made to specific banner sizes. And artworks would be up for a number of weeks, and every two weeks the exhibition would change, that one was really fantastic.

AB: In regard to GENERATORprojects, could you reflect on and describe how network technologies might have played a role for the organisation? This doesn't necessarily have to be about an exhibition only, and can include other curatorial activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

AS: I think that is an area with some new committee member that I would like to see improved and grow. We've made a start with the current committee through the commissioning of a new website.

We would really like to continue improving on this aspect, specific streamlining the marketing schedule so that information has time to circulate and get to people and journalists. I mean this aspect can be real donkey work, and it's so easy for these tasks to fall to the waste side.

We do have a Facebook page, and use it to make event listing to invite people to exhibition opening performance nights. We are on Instagram, but it's basically used for teaser pictures, and we'll put up exhibition shots during exhibition time. Predominantly we really don't want to bombard people.

We don't use twitter…

I think it would be really helpful to one day talk to marketing professionals and begin to understand how to best use these tools and platforms. Because these things have to be used in a certain way and well to get the maximum use out of them. At a minimum we do have our mailing list that's effective.

The funny thing is we still print posters, and when you speak to other that are let's say in London, they comment on: "you guys still do poster?!". But again, this is very specific to Dundee, and people here still expect to see posters around the city for culture events like exhibitions and gigs. This is something that was actually addressed in the committee for the Geltung exhibition, and we actually questioned having them this time... Because realistically they need to be posted around the city.

Appx.2.3 Participants Questionnaire

The following questionnaires are variants of the interviews presented in the previous section (Appx.2.2). Due to several of my case-study participants not being in the country (UK) or being extremely busy and unable to schedule a time to be interviewed, I opted to use my base interview questions as a questionnaire that I could send out and allow my participants to complete the questions in their own time.

Due to this strategy the information given by my participants can be a little limited compared to their interview counterparts. However, regardless of the limited answers they still represent an interesting collection of responses that shed light on my research questions.

Appx.2.3.1 Elliott Burns

1. Can you please describe your curatorial (and or artistic) practice, areas of interest, and any influences on your practice?

I am the co-founder of Off Site Project (www.offsiteproject.org) and an occasional artist. In terms of areas of interest, I would say that with Off Site Project we have attempted to keep the scope broad and not limit the 'gallery' to particular thematics. For example, to date we've exhibited shows on digital readymades, politics, museology, gender representation, artist projects and most recently lighthearted humour. That said, my personal area of interest has recently circulated around video games, social media and post-work futures.

2. Can you please describe your knowledge, and curatorial experience with new media art, in particular Online art, Internet art, and network distributed art?

Mixed. In 2012 I began working on a EU funded project pairing artists with technologists, serving as a project mentor, making assessments and feeding into the sector report. Through this experience, I expanded a network of friends and colleagues to whom digital and online practices were of central importance. In this regard, these areas have always been [at least] on the periphery of my interest. In 2012 I co-founded an arts research group, The Data & Ethics Working Group, which carried out three experiments esq project/exhibitions, new media in parts these projects were more centred on societal effects. As such, Off Site Project has been my primary experience of working with online/internet art directly.

3. What Internet artists, if you can name any, stand out to you, and why?

This is quite a difficult question to answer, for a few reasons 1) it's hard to differentiate between who is a good internet artist, a good artist on the internet and an artist who is good at promoting themselves on the internet, 2) nowadays we consume such a quantity of artists via Instagram, and 3) I have a bad mind for recalling names.

Quickly off the top of my head I'd say someone like Bob Bicknell-Knight is recognisable for his curatorial work, publishing and networking, and Brad Troemel for how he has created alternate models of finance. However, at the moment it's hard to say who stands out.

4. What would you consider your level of digital proficiency to be?

Sporadically limited. Typically, I operate on a learn it if you need to, otherwise bodge-it principle. Coding tends to be a Google Search trial and error process. Digital photo / video editing relies on being resourceful with limited resources.

5. From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

Communication. Typically, the translation of an in-situ conversation about the curation of an exhibition poorly translates into a chain of emails which can lead to miscommunication. Often relationships with artists are formed through text-based communication services, Instagram primarily, which leads to a continued assumption that communication should only happen over text-based systems, email / Facebook etc. Quite often the artist and the curator/producer don't even know which time zone the other is in until it becomes a noticeable factor in a delayed reply. Skype tends to solve some of these problems.

6. Can you please state your relationship with PILproject, i.e. what project you participated in, and your curatorial role for this project?

PILproject participated in Off Site Project's second online exhibition Politics of the Absurd, contributing a piece of code that triggered a series of pop-up windows featuring Donald Trump tweets. Pita Arreola and I were the co-curators of this exhibition.

7. How did PILproject's proposal differ from other online artworks curated by yourself, on or off offsiteproject.org, and did the artwork challenge any of offsiteproject.org's boundaries?

PILproject's contribution was the first piece we showed that was code reliant and went beyond the literal boundaries of the browser the exhibition was on. Looking back, I think it is fair to say this was the first step in a slow evolutionary process which has prompted us to think and operate beyond the bounds of the site's template. Subsequently, we have developed a secondary line of exhibitions, micro-ZIP-file-exhibitions, which exist as downloads hosted on Google Drive, developed a show through an online quiz service and an 'email-in' contest.

8. Prior to working with PILproject, was the curatorial process with other artists, or groups different, and what challenges did you face in these previous online exhibitions?

No expressly, Politics of the Absurd was only the second exhibition organised by Off Site Project, so there is only one exhibition to compare to at that moment. Both were curated by a combination of open call and reaching out to individuals / collectives we thought would fit with the thematic. The principle challenge with organising these shows has been to secure participants. Off Site Project (like many others I expect) is non-profit/pro-bono, we therefore rely on the goodwill and shared commitment of exhibitors, which given the complex multifaceted careers many cultural workers and artists have can often be compromised (by no fault of the individual) by time constraints.

9. What challenges did you foresee when curating PILproject's artwork?

Simply that we had to ensure the coding of the artwork would be accepted and function on the Cargo Collective system and within the template we were using. Fortunately, we were able to share access to a dummy site with PILproject and they managed to ensure the functionality without complication. I believe we also had to put up some notices asking visitors to turn off pop-up blockers.

10. In reflection of the artwork and distributed exhibition what do you believe were the successful elements?

Being the second show on Off Site Project I think it's hard to say that the distribution was massively successful, simply because we were at such an early stage in developing an audience. I'd also site the difficulty of transforming visibility on social media in actual site visits. At that stage we were receiving up to 150 visits to each artwork/page on Off Site Project exhibitions, now that number is closer to 300.

11. What elements did you find problematic, or potentially limiting for the realisation of the artwork and distributed exhibition?

The main limitation is reach. Whilst we were able to generate a degree of promotion through social media channels and shares, the reality is only a small proportion will follow links and, of those, a smaller portion will take them time to explore the exhibition before closing the tab. Strategically we need to do more work contacting press and creating email bulletins to ensure wider exposure.

12. How has the process of working with online art affected your curatorial perspective and practice?

Online has a benefit in that it bypasses the problem of knowing an artist. For example, when Off Site Project launched their first open call for micro-ZIP-file-exhibition proposals we received several from artists we had been following online and were interested in collaborating with. We have also been approached by artists out of the blue who want to work with us. Effectively the cost level of online projects diminishes either sides reticence to participate on financial grounds, and the ease of initiating a conversation with individuals you'd have no means of meeting IRL promotes more network connections.

This shift online, and I don't think this solely concerns what we'd accurately brand 'online art', also helps facilitate broader curator / artist networks. The stereotype of the curator working with a set of 6 or 7 artist friends in a symbiotic 'get me a show' = 'get me a job' relationship seems to have gone out the window a little. Obviously it has been replaced by a different model of co-dependence and I think we're teasing that out at the moment.

Curatorially I believe online practice reflects strongly how galleries or art collectives work and find spaces, despite the obvious differences. For example, it makes sense to consider the website as a gallery space, with a main space and potentially side projects akin to secondary exhibitions, reading rooms and residencies. Then you have public art projects, where the gallery exhibits in social media spaces. Instagram seems to be the core example of this with multiple projects operating residencies, or in our case YouTube and Interact (the quiz service). These are akin to billboard projects, public art commissions and so on. Whilst the spaces are different the approach seems to be informed by a heritage of arts/gallery/curatorial experimentation. This is how we intend to develop Off Site Project.

13. In general could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

Does the Internet and network culture inform my spatial perception outside of the screen? Yes and no. Before maps existed I assume it was unusual or impossible to think topographically, to understand the world from a bird's eye view. Google Maps has simply continued that development. If I now think about navigating city streets is my perception of it mildly informed by the graphic choices of a Google employee? I should think so. But I refer that experience back to the origins of mapping because I don't think it is uniquely something to do with the Internet, rather it is to do with how maps have moved forward in reference to the internet.

Do the social systems that permeate out lives inform the way I see members of my social circles? Yes, I think these personal networks are strongly tinted with the lenses of LinkedIn and Facebook and Instagram and so on. Certain friends exist within one and not the other, so there is a spatial component online, saying I meet this person on WhatsApp like I meet some friends in certain pubs. That goes back and forth. IRL and URL colouring each other.

Does it change how I see the world in front of me? Unknown but I lean towards not yet. The plant pots in front of me appear to be shaped and formed pretty identically to how they would have pre-internet, when I was much younger. But my thinking has changed, is orientated more to the forms of organisation present online. And I think noticeably there is a tug at the back of your head pulling you in line with a 4th axis of your virtual self.

14. In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception and how?

I refer back to q.12, new distribution forms seem to follow in the footsteps, or rather go a little further along the trail from forms that were created in the 60s, 70s, 80s, 90s etc. An exhibition on YouTube is a screening by any other name.

What maybe exists is a closing of distances, the inevitable folding of space (maybe time) that is resultant from me being able to work with a Brazilian artist and not even realise where in the world he is until we both thought: "Hang on!" So we forget a little about these cultural concerns and conditions; the distances don't cease to exist, but more accurately we forget to talk about them.

More precisely, in regards to distribution, there is an increased acceptance of a verticality of things. Most online art and online exhibitions follow a top to bottom approach, which I might relate to going to a photography exhibition, moving close to the artwork, to take in the details, and moving around the walls in an orderly line. Never bothering to step back and see the whole thing. A lot of work, even shows that try to be more of an installation, fall into that trap. We've just changed the way we're moving.

15. What are your thoughts on developing a multi-platformed exhibition, and does this form of art have an impact on spatial perception?

We did something like this with 'Inside the Artist's Studio with Aaron Scheer' - there was a Spotify playlist, videos on YouTube, and a few other things that made it multi-platform-ish. At the moment, I think it's hard to accept an exhibition that exists in a distributed manner. We had a gallery home for those offshoots, but I think it is a development that will come. In time people will more easily be able to accept an exhibition spread across digital locations, like a sculpture trail, only at the moment we like things in one place a little bit. Our brains will get better at that.

16. When curating a multi-platformed exhibition, what responses do you come up with to challenges to preserving a unified exhibition narrative, where the spatial arrangements of all the components are separate?

See above, we had a central main gallery chamber. Though thinking forward I wonder why we would put such a pressure on having a place or thing to unify it? Say for example we had artist happenings spread across the web, we'd probably think let's make Off Site Project a hub, a link archive of those happenings. But that comes from the internet's pervasive categorised impulse. Or a human impulse to do that. I suppose plenty of art programs ended up being catalogued in books. Though really we should be happy doing something more guerrilla, in the knowledge that we won't be able track or understand or own what happens. Wouldn't it be great to do a graffiti tagging project online, collectively agree on an image and just run off in different directions and post it? See what happens.

17. In regard to your own practice, could you reflect on and describe how network technologies might have played a role in it? This doesn't necessarily have to be about an exhibition only, and can include other curatorial activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

Literally, I've moved my practice online, formatting it to web-based content that can be distributed via social media and draws a lot upon digital research methodologies. Studio work has become Google. The latest 'work' I've completed congregated forum posts re. a desire to kill children in video games into a web page where a text-to-voice program read the posts in artificial children's voices. I've replaced a lot of analogue skills with digital ones.

18. Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your curatorial persona?

Personal accounts on: Facebook, Instagram, LinkedIn, Twitter (which I don't use), other various sites. A personal site: www.elliottburns.com. The Off Site Project page www.offsiteproject.org and various social media accounts associated with this to facilitate exhibitions, promotion (Facebook and Instagram) projects and residencies (upcoming Google Maps).

19. As well, could you reflect on this personal network and how you use it to disseminate your curatorial content?

A relatively managed series of Instagram and Facebook posts. For Off Site Project we tend to program Instagram posts in sets of 3 or 6 and make related content for Facebook. All is pre-scripted with a series of generic and specific hashtags. Each exhibition or project will also have some content posted via my personal Instagram and I share the majority of Facebook posts on my personal account. We really should be creating email notices but haven't started doing this yet.

Appx.2.3.2 Diogo da Cruz

1. Can you please describe your artistic practice, areas of interest, and any influences on your practice?

In my practice, I work within an interdisciplinary field of speculation, calling into question some certainties and prejudices of our society, through a rigorous and impertinent research about concepts familiar to the general public. Very often I create symmetric and ironic objects, positioned in a stage-like installation, which end up being part of a performance piece.
In "The gravity of time" I created a book that gathers distinct perspectives about time perception, time measurement, and time in social behaviour, proposing a general slow-down of the rhythm of society. In "Necessary Art" the ideas of the book were presented as little adds in a paper bread bag, which should be shared freely and inevitably with the visitor. "Running out of time" presents a recreation of an ancient measuring method to control the speech time in political discussions in the Agora of Athens. WORDCOIN proposes the implementation of a new currency, that will give a literal value to each one's speech. "Wisdom Warriors" is the project I'm working at the moment, focused on a social revolution initiated by a group of artists, who wanted to change the way we relate to technology, that has never happened.
My influences are normally quite eclectic. I will get my inspiration from talk shows, pop music, theory books or daily life. The aesthetics of my work are influenced by marketing structures and music videos, and some artistic references as well.
To name a few influences: Paul Virilio, Jean Baudrillard, Adam Curtis, Allan Kaprow, Guy de Cointet, M.I.A. and Kahlil Joseph.

2. Can you please describe your knowledge and experience with new media art, in particular Online art, Internet art, and network distributed art?

Since a very young age I've been interested in editing video and creating websites. My studies in Fine Arts were very directed to a sculptural work. The online/digital quality of my work grew almost out of necessity, once I was working between different European countries. By developing and distributing my work online I was trying to allow my conceptual work to circulate freely and achieve a broader public, while making its physical presence very light and easy to transport.

3. What Internet artists, if you can name any, stand out to you, and why?

I'm not really familiar with the world of internet artists but remember looking at some work developed by the gallery Arcadia Missa.

4. What would you consider your level of digital proficiency to be?

I'm still really amateur in terms of digital language, but I certainly can move easily in many software for design, video editing and 3D modulation.

5. From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

I unfortunately have to think about the commercialisation of their work. But taking in consideration that this might not be the goal of such artists, maybe the lack of control they have in terms of the device and the context where their work is experienced.

6. Can you please state your relationship with Agorama, i.e. what project you participated in, what artwork was produced for this project or redisplayed for this project?

I developed further the project WORDCOIN in my collaboration with Agorama, specifically the development of an online bank for my project. With the precious help of Alejandro D. Ball, we developed a simple but yet thoughtful platform that can host the new currency I propose.
The project was presented in its entirety as part of the group exhibition "Geltung [validity]: perception of a natural right" at GENERATOR projects, curated by Ball and Inês Costa. The online bank was presented within the program of NEoN Media Art Festival.

7. Reflecting on your process of development, can you describe this process for the Agorama exhibition you took part in?

The development of the project was drawn by a series of online meetings with the curators, and an in-depth work with Ball, with whom I exchanged a series of emails, building a fruitful discussion about the concepts at stake. Some technical questions around the programming of this platform were surprisingly crucial in defining my goal with WORDCOIN.

8. Please take us through your perspective on developing a work(s) that is situated in a distributed exhibition?

My work in general, and specially WORDCOIN, is only valid and functional once it is shared and thought upon. Developing work in such frame is necessary for the very existence of my project.

9. For the exhibition Geltung[Validity], you chose to work in collaboration with Agorama to produce your artwork's online platform. Can you reflect on why you chose this mode of development over a readymade platform? In addition, can you comment on your experience with this developmental collaboration?

The online platform created in the context of this exhibition was something I had in mind for some months, but for which I lacked technical skills and context. The chance to collaborate with Agorama was both an opportunity to finally pursue such an idea and to give it a specific site for its distribution. The fellow artists who participated in the exhibition, and the conceptual proposal from the curators, were clearly in line with my thought process while producing WORDCOIN.

10. Could you provide your experience with each other readymade platform you have used for the development of previous artworks and projects?

A month after this collaboration I did a one-week online residency, together with a programmer. The website we created and modified during those days hosted different field experiences of the matching concerns, which helped me in beginning a new work that I'm still developing at the moment. Once again, a readymade platform generated the right atmosphere to work within a close dialogue with another person.

11. In reflection of the final artwork and distributed exhibition, what do you believe were the successful elements?

Besides the production of the online platform itself, the chance to present WORDCOIN in such a pertinent context made me reflect and explore its possibilities to the utmost level. The reaction and discussion from the public showed me the importance and complexity of the work I created, clarifying my goals.

12. What elements did you find problematic, or potentially limiting for the realisation of the artwork and distributed exhibition?

As the project started as a clear facade with a highly ironical touch, the development of WORDCOIN in a collaboration with Agorama gave it a certain degree of seriousness and polishing that was simultaneously exciting and alarming. The fictional "Bank for Argumentation" was finally functioning, satisfying a certain desire from the public, once the project is presented. In some way that represented a clear limit to where I wanted to go with the project and made me move away from it for a while.

13. In general could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

I believe that more than a change of spatial perception, there is a drastic change of temporal perception linked to a networked culture. The immediacy of Internet, and its convenience for the user, fosters a certain impatience and restlessness, incredibly harmful for the experience of certain artworks.

14. In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

15. What are your thoughts on developing a multi-platformed artwork, and does this form of art have an impact on spatial perception?

A multi-platformed artwork has better chances of invading the private and daily space of the public, creating an even more subjective and engaging experience of art.

16. Would you consider what you produced for Geltung[Validity] a multiplatform artwork, two separate artworks, or something else?

WORDCOIN is definitely a multiplatform artwork, that is valid and active in many different contexts.

17. In regard to your own practice, could you reflect on and describe how network technologies might play a role in it? This doesn't necessarily have to be specifically about an artwork, and can include other artistic activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

Network technologies play a role in my practice, not only because I share my work in such platforms, but also because my work comments and problematises such structures.

18. Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your artist persona?

Through Facebook and Instagram I normally share some of my work, but mostly announcements for certain events or exhibitions. With my website I try to create something more than only a documentation of my projects. Specifically with the two projects that have a webpage of their own (WORDCOIN being one of them), the online present becomes a parallel life of the project, designed to experience online.

19. As well, could you reflect on this personal network and how you use it to disseminate your artistic content?

I try to disseminate my work often through my personal contacts, though I'm at the time not so interested in achieving new links or followers by doing so. I mostly like to keep my friends and acquaintances updated about my projects, hoping for some reaction or comment from them.

Appx.2.3.3 Felicity Hammond

1. Can you please describe your artistic practice, areas of interest, and any influences on your practice?

We are at a key moment in image production - whereas the software that is used to produce computer-generated imagery becomes more readily available, and our terrain continues to rapidly transform, the approach to representing the built environment becomes more careless. My practice challenges the photo collage and CGI methods used in architectural visualisations and speculates that errors occurring in the rendered image point to the planned obsolescence that is inherent within the narrative of capitalism. By adopting the image making methodology used by architects, I am placing the sites in which I work within a prophetic context, using aspects of our history and the present day to discuss the way in which our future landscape might look. My practice particularly focuses on areas that undergo rapid socio-political change as a result of gentrification, displacement, and changing industries in the landscape.

2. Can you please describe your knowledge and experience with new media art, in particular Online art, Internet art, and network distributed art?

My work is often placed in the context of new media art, for example one show I have taken part in was at The Lowry Museum in Manchester titled Right Here Right Now, which explored 'artists using digital technologies and new media methods'. I am currently working with Steve Fletcher who used to run Carol Fletcher, a gallery which primarily focused on artists using new media and digital technology. I feel like, as a result of these experiences and my network, my knowledge of artists using new media has expanded. However, I don't necessarily consider myself to be an expert in this field.

3. What Internet artists, if you can name any, stand out to you, and why?

I feel that the internet forms part of all artists practices today, so I don't really know how to answer this question. Does an internet artist only make work online? What happens if this work is then shown on a screen in a gallery?

4. What would you consider your level of digital proficiency to be?

There are many types of digital experiences, most of which I have no proficiency in. My skills lie in digital photography and digital post-production for images.

5. From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

One challenge is the way that most of this type of work has to find a way to operate outside of the art market. There is also often a challenge in finding ways to display this type of work, for example when adapted for the gallery space, the work is brought into a new context, and often the display method is overlooked.

6. Can you please state your relationship with Agorama, i.e. what project you participated in, what artwork was produced for this project or redisplayed for this project?

I participated in the group show Geltung (validity): Perception of a natural right, at NeoN Festival, Dundee. I produced a new installation work titled Property.

7. Reflecting on your process of development, can you describe this process for the Agorama exhibition you took part in?

I developed the concept for the new work through conversations with Agorama regarding the site the work would be situated in but also considering how the work might operate outside of this.

8. Please take us through your perspective on developing a work(s) that is situated in a distributed exhibition?

I'm not exactly sure what a distributed exhibition is. However, I think this question is referring to the online aspect of the work, beyond the gallery exhibition. This part of the work was a challenge, as I didn't just want to present a documentation of the work. I felt that the platform had to be embedded in the concept for the new work made. Therefore, I decided to use the green screen element of my work to situate the objects from the gallery into a new digital space.

9. What made you choose the readymade platform from *Hotglue* over others?

My web-based skills are very basic, so I chose Hotglue for its simple interface. I also chose it because it doesn't work on a grid system like many website makers, allowing autonomy in placing images when creating the collage.

10. Could you provide your experience with each other readymade platform you have used for the development of previous artworks and projects?

I have never used any other online platforms for art works. I have only used Squarespace which I use to host my artist website.

11. In reflection of the final artwork and distributed exhibition, what do you believe were the successful elements?

The most successful part of my project was the physical element, as I feel that I dealt with the themes I am working within my wider practice, whilst retaining a site-specificity for the work.

12. What elements did you find problematic, or potentially limiting for the realisation of the artwork and distributed exhibition?

The least successful element was the online exhibition part of my project – I was potentially let down by my limited web-based skills, meaning that the outcome could only sit within the confines of what I understand.

13. In general could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

I think that there are certain cases where artists might be making physical work to have an impact on social media. I also think that a lot of people will see an artwork on social media and feel that they don't need to see the work in real life.

14. In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

I don't think that digital artworks have such an effect on spatial perception in the same way as my answer above.

15. What is your thoughts on developing a multi-platformed artwork, and does this form of art have an impact on spatial perception?
N/A

16. Would you consider what you produced for Geltung[Validity] a multiplatform artwork, two separate artworks, or something else?

I consider it as a multiplatform artwork. However, when sharing information about this work, I only show the physical part. This is because the success of the project is held in the physical exhibition rather than the online counterpart.

17. In regard to your own practice, could you reflect on and describe how network technologies might play a role in your practice? This doesn't necessarily have to be specifically about an artwork, and can include other artistic activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

Social media has been crucial in finding out about art spaces, current exhibitions, artists working with similar themes, research, competitions, etc. All of these activities have a direct impact on my practice. It has also helped me to develop a wider, more international audience for my work.

18. Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your artist persona?

I have an artist website, Facebook, Instagram, and Twitter. I use all of these for my art practice and very rarely post anything that is related to my personal life.

19. As well, could you reflect on this personal network and how you use it to disseminate your artistic content?

I use these platforms to show work in progress (particularly Instagram stories for this part), and to advertise when I have upcoming exhibitions.

Appx.2.3.4 Petra Szemán

1. Can you please describe your artistic practice, areas of interest, and any influences on your practice?

I'm an artist working with moving image and immersive game-like installations, working around instances in which real life can be experienced as fictional. I use threshold situations and non-localised selves as a basis to explore nostalgia, cinematic experiencing, pop-culture pilgrimages etc, real life spaces that extend beyond their physical realities and make fictional sublayers of reality accessible. I'm influenced by social media, RPG games, retro pixel game aesthetics, Japanese animation, small game worlds (Nintendo DS, etc), ideas of play and roleplaying. I'm interested in social constructionist ideas of an unstable self and memory as an unreliable narrative device, and I like to work these ideas through narrative structures and game structures in my work. I'm generally looking at places where different realms might overlap.
In a specifically art context, I like work that's immersive and suggests a sense of interactivity (i.e. a video that looks like a game, but isn't actually playable), a softer gallery space, a sense of connection and intimacy.

2. Can you please describe your knowledge and experience with new media art, in particular Online art, Internet art, and network distributed art?

I have read extensively about new media art and I'm lowkey aware of current trends and follow different galleries and artists that work within this context. I myself have dabbled in new media art, but I generally struggle to make work that's actually interactive or presented online in an effective

way, though the latter is something that I'm working on to develop as I'm very interested (especially after my positive experience with the Agorama project).

As for art that's generally interactive (whether IRL or URL), I find it more effective to present work that provides a sense of interaction (either in its structure, aesthetics or content) as opposed to actual interaction, because when I've attempted to make work that was completely viewer-controlled it was most often insufficiently explored and/or met with confusion, even though I thought it had a simple concept and controls. I seem to be much more successful at making work that appears to be a game but isn't actually a game.

This is a work in progress though.

3. What Internet artists, if you can name any, stand out to you, and why?

I'm not extensively aware of Internet artists – the first name that comes to mind is Bob Bickell-Knight who runs the isthisit? project that I have worked with before. Most of the artists that I can think of who do Internet work are mainly IRL artists who might run the occasional online residency, but I can't think of anyone who exclusively works on the Internet.

4. What would you consider your level of digital proficiency to be?

I'm fairly digitally proficient – I'm competent with moving image softwares and 3D, and I have experience in game modding and programming (particularly in making games). I don't feel fully proficient, but I have a comfortable sense that if I want to learn something, it's possible and all the materials are readily available online.

5. From your personal experience and perspective, what challenges do Internet artists, and other forms of online art, or networked art, face when coming to fruition?

I think there's a number of possible issues that have to be considered. On the one hand, while Internet art facilitates a broader way of accessing art than say a standard gallery, I feel that it's hard or more complex to utilise a screen space in a way that grabs and holds people's attention successfully. There are ways of working with digital space that work well as concepts, but in practice a complex layout might be hard to access, and with a platform like the Internet, what's there to stop you from immediately clicking away from something that doesn't make sense to you within the first 5 seconds? Whereas in a gallery there's not much else to do but look at the art, so even more impenetrable artworks have longer to be considered, because you wouldn't really walk out of a gallery immediately if you don't quite like it. This mainly comes from my own experiences when interacting with online art – complicated arrangements on a screen or even digital 3D space (where you have to move your handheld device around to see it all) stand out to me as cool ideas but I find it actually hard to consume the art that's contained within those frameworks.

On the other hand, I think it's hard to get people to look at your online art in general, mainly because the platform is so saturated and there's so much to see. And when you go to a gallery, you always go with the intention of looking at art, but unless you specifically want to look at online art, you might miss out on projects that'd otherwise interest you in a more thematically concentrated space just because you weren't quite in the right space to view them when you encountered them online. I think a sort of focus is needed to interact with art successfully, and that focus is harder to gather online than in a real-life gallery just because the platform is so broad.

Lastly, when it comes to interactive surfaces (though this applies to offline art as well), it's very hard to predict and facilitate user interaction that will successfully explore the artwork and won't leave the viewer confused or uninterested. From experience, even with clear instructions, audiences often struggle with simple control-based works, which in turn means that aspects of the work might never reach some of the audience.

6. Can you please state your relationship with Agorama, i.e. what project you participated in, what artwork was produced for this project or redisplayed for this project?

I participated in the Geltung (validity) project, which comprised an offline exhibition at Generator Projects in Dundee and an online platform as an extension/documentation. For the exhibition I created a 3-screen quasi-immersive video installation (I keep forgetting I've been to Tokyo: GAIDEN), whereas for the online component I made a map of vaguely Japan based on the locations that were mentioned in the 3-screen video and other associative areas. Thematically the work was dealing with mapping, non-localised identities and fictionally saturated experiences.

7. Reflecting on your process of development, can you describe this process for the Agorama exhibition you took part in?

I created the 3-screen work for the exhibition, and the map idea was developed alongside with the knowledge of an online surface available. I made 'I keep forgetting…' as a response to the general concept of the exhibition and NEoN Festival, but it also ties into and responds to works I have developed previously. The knowledge that I might have a separate platform for the work to also exist on affected the way I developed the narrative of the main video piece, and I consciously created some aspects of it so that they could be linked to the contents of the online aspects. Specifically the "gaiden" subtitle reflects on this as well, as in Japanese narrative terminology a gaiden is a side-story that exists alongside the main narrative, but knowledge of it isn't necessary for the main narrative world to be conclusive. However it's an insular narrative that aims to add depth to that world, as opposed to extending it like a regular sequel/prequel would. I thought of the online component of my work similarly to this, but now that the real-life exhibition is down the narrative dynamic has shifted as the "main" part of the work is less accessible. (I.e. less effective to watch online than in a video installation.)

8. Please take us through your perspective on developing a work(s) that is situated in a distributed exhibition?

N/A

9. For the exhibition Geltung[Validity] you chose to work in collaboration with Agorama to produce your artwork's online platform, can you reflect on why you chose this mode of development over a readymade platform? In addition, can you iterate your experience with this developmental collaboration?

I mainly chose to work on developing a new platform together as opposed to something ready-made because I was keen to work with a technology I haven't utilised before, as well as expanding my work in an interactive way. Also I don't have much knowledge as to how to develop a more complex online platform on my own, and I saw this as a chance to see what's possible and how it can be done, so that when working on future projects I myself may develop inventive online surfaces. For Geltung(validity), I had a fairly set idea on what I wanted on the page (an interactive map, light-up special clickable locations, side-content popping up in separate smaller windows).

10. Could you provide your experience with other readymade platforms you have used for the development of previous artworks and projects?

Before Geltung, the closest I've gotten to using an online platform for a project was when I created a dressup game in Flash for the character that I use in my videos/myself to put on my artist website. It's more of an in-joke with myself and my convoluted practice than a serious standalone project, but I think it's a nice way to facilitate more screentime with my character for a member of the audience. I made that by drawing the contents in Photoshop, coding it together in Flash, and putting in on a blank page.

11. In reflection of the final artwork and distributed exhibition, what do you believe were the successful elements?

While the physical exhibition was up, I really enjoyed the dynamic between the main work itself and the online component where you could explore elements of it further. From audience feedback,

I have found that people expressed great excitement for looking at the distributed exhibition later in their homes, as a way to further digest and interact with the physical show they've just seen. In hindsight, I wish that I had a handout sheet with a picture of the online map with maybe some routes marked on it, so that people who took their time to check the online component later had some guidance/a way in over other people who only got to see the online part.

Now that only the distributed exhibition exists, I think of it as both an archive and a way to retrospectively access how my main work was developed, and I have put up a link to it on my website because I think it's a very successful extension in its timelessness and persistence.

12. What elements did you find problematic, or potentially limiting for the realisation of the artwork and distributed exhibition?

My main issue was that I generally lack knowledge about website construction/HTML, so it was hard to think of exactly how to organise the work without an extensive base knowledge. Still I think considering that I went in mostly clueless, the help I received made it very possible to realise something that I find generally very successful. The only limiting aspect is that the map only works on a computer, and not on mobile devices, which takes a great deal away from its accessibility, but it was specifically designed to work on a large landscape screen. It's something for me to think about in future projects however.

13. In general could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

I think online spaces have a great potential to extend on aspects of real life, and I especially like the idea of accessing spaces through handheld/small devices, as that may alter how one feels about a public space being accessed privately, and generally more intimate online spaces. I think the main effect of spatial perception that's altered by this kind of technology is the perception of the self and where we are situated in real life, in an enclosed online space, or in both. There's a lot of areas of public and private selves and world that merge and change when it comes to Internet and networked culture specifically.

14. In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

I think it greatly depends on the individual because not everybody is receptive to inbetween spaces, but when it comes to someone who responds to these projects with excitement, I'd say that yes, they can alter spatial perception, or at least perception of that specific artwork in space. It'd greatly depends on how and when and where that work is accessed – I think there's special conditions that have to be met for an online project to be effectively perceived.

15. What are your thoughts on developing a multi-platformed artwork, and does this form of art have an impact on spatial perception?

I think a multi-platform work is the most effective way of creating online works in terms of audience interaction, because then there's a strong real-life incentive to go and interact with the distributed element in your own time. I imagine it'd have an impact on spatial perception, especially because there's a real-life component to constantly refer back to when in the online space, creating a tension between those realms and removing the work from a singular gallery context.

16. Would you consider what you produced for Geltung[Validity] a multiplatform artwork, two separate artworks, or something else?

Like I said in answer to question 7, I thought of the online map as a gaiden-esque introspective expansion to the main work while developing it. Now that only the one component is exhibited, this narrative dynamic shifted and I think of it as a multi-platform piece rather than one main piece and

the gaiden. I'm not sure how this would alter if the 3-screen video were to be exhibited again – it's a sort of precarious position that the works are in.

17. In regard to your own practice, could you reflect on and describe how network technologies might play a role in your practice? This doesn't necessarily have to be specifically about an artwork, and can include other artistic activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

As for my own practice, I think I'm mainly interested in network technologies for the purpose of creating a stronger sense of connection between the viewers and what's in my work. Be this through a coherent social media presence (i.e. I've been planning on making an Instagram account for the character I use in my videos), sharing research on blogs and various social media platforms, or more innovative ways of sharing aspects of the work that might not necessarily come through/make it to a "finished" main piece. I like the idea of creating an intimate and insular online space/presence, like personal letter subscriptions (as opposed to a more formal artists' newsletter), blogging, making as much of my research process available as I can. I think I find this important for my practice specifically because while my works are fairly complex conceptually, they're all deeply personal and network technologies work well to expand on that aspect.

My main issue at the moment is that I find it hard to allocate time to work on these platforms as opposed to making actual work, but I have definite plans and have taken some steps (i.e. sharing my research google drive folder on my website, etc). This is something I definitely have to work on more actively, preferably within the next 4-6 months.

18. Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your artist persona?

- *Artists' Instagram that I don't update enough to work well: @petra.szeman (I think this is the account that I want to use as my virtual self's Instagram + combine that with work promotion)*
- *Personal Instagram that I update often but isn't curated, yet it's followed by many art professionals: @petra_ssz*
- *Art Twitter: @petra_szeman*
- *I also have a personal Twitter but that's private and is only followed by close friends.*
- *Website: petraszeman.com / this is the platform I put the most effort into*
- *Vimeo account where I post my actual work + the occasional WIP video*
- *YouTube account where I put misc. clips (but they might be used for projects like the Agorama online map)*

19. As well, could you reflect on this personal network and how you use it to disseminate your artistic content?

I don't think I handle this personal network well at all at the moment, but I plan to work out an effective method of managing all my accounts and how I share aspects of my work in the near future. It's become especially relevant to me as I'm moving to Japan for 2 years early April to do art research (practice-based), but all my art-related contacts are in the UK, and I want to keep my work active in that context outside of the occasional small exhibition here and there. Additionally, I would also like my research process and new work to be distributed as it is forming, rather than as one big thing at the end of the 2 years. My main focus I think will be to keep up a consistent online presence (twitter mainly), start my character's Instagram, and develop my website in a way that allows for more viewer interaction.

Appx.2.3.5 Rostan Tavasiev

1. Can you please describe your artistic practice, areas of interest, and any influences on your practice?

I am interested in the phenomenon of a game, science fiction and the cosmic universe. What is influencing me: the information I receive from the internet, science researches, the history of art and the reality, which surrounds me. Also, I think, that the aging of my mind and body is starting to influence me as well.

2. Can you please describe your knowledge and experience with new media art, in particular Online art, Internet art, and network distributed art (i.e. an artwork that is located in several place online)?

I am not sure that I can define in which category from the ones you mentioned I can put my experience of working in internet. So I will just name my works connected with the internet.
"It's complicated..." - http://rostan.ru/it-s-complicated
"A drop of Creacin" - http://rostan.ru/A-drop-of-Creacin-1
Imaginary future art - http://imaginaryfutureart.com/
The series of educational videos about Hippopart - https://youtu.be/JicQKBqtdKo
Most of all I am interested in interconnections between the real and virtual world. In the objects, which have been created and are existing in reality, but have a reflection and life in the internet.

3. What Internet artists, if you can name any, stand out to you, and why?

Internet art in itself is not the main point of my attention, so I can just name the artists whom I know personally.

4. What would you consider your level of digital proficiency to be?

Very complicated to answer. I think that my level of digital proficiency is quite low.

5. From your personal experience and perspective, what challenges do artists working with the Internet and/or Network technology face when trying to realise a project?

The main challenge for an artist working with the internet is the quick change of technologies. Interesting technology may stop being supported by smartphones so the good work will never be seen. Another challenge is a very intensive flow of information.

6. Can you please state your relationship with PILproject, i.e. what project you participated in, what artwork was produced for this project or redisplayed for this project?

For PILproject the curators have chosen the part of the project "It's complicated..." The project was created in 2013. It contains 7 sculptures and one video projection. Each sculpture and projection has an account in social media. The sculptures have accounts on Facebook, the projection on Instagram. So the sculptures were communicating with each other, with the public and even with the critics. So it was like a reality show. That was an attempt to bring the artworks to life. Creating the illusion of life - that challenge is not new in the history of art. For example the Masters of the Renaissance tried to solve it by using the technologies and visual effects available at that time. For the PILproject exhibition, due to the technical reasons, only one of 8 characters was chosen.

7. Reflecting on your process of development, can you describe the process for the PILproject exhibition you took part in?

Before the exhibition for PILproject the work "It's complicated..." had already been shown 5 times in different museums and galleries. Technically the process was very well organised so we did not face any challenges. The sculpture was made in situ, from the sketches. The person was writing the character's Facebook page from Mexico. I was watching the process from Moscow.

8. Please take us through your perspective on developing a work(s) that is situated in a distributed exhibition (i.e. it takes place in more than one site, and or, online/ offline)?

I think that the most interesting is to balance between the real world and virtual reality. Between online and offline.

9. In reflection of the final artwork for the PILproject exhibition, what do you believe were the successful elements?

For me, the most interesting part was to create a sculpture on-site. Probably in the future the transportation companies and insurance will not be needed anymore.

10. What elements did you find problematic, or potentially limiting for the realisation of the artwork and the wider distributed PILproject exhibition?

I didn't notice such elements.

11. In general could you please describe your thoughts on possible changes to spatial perception that might be linked to the Internet and a networked culture?

Everything is getting closer.

12. In terms of distributed forms of art and exhibitions, do you find these types of projects alter the idea of spatial perception?

For me probably yes. After this project I feel the space little bit differently.

13. What are your thoughts on developing a multi-platformed artwork, and does this form of art have an impact on spatial perception?

Yes, I think it has an impact. Probably as big as the invention of the linear perspective in the Renaissance.

14. Would you consider It's Complicated as a multiplatform artwork, two separate art-works (meaning the performances and the sculptures), or something else?

Rather a multiplatform artwork. For me "It's complicated.." is firstly an interactive reality show. Resembling a little bit a performance of the puppet theatre on a medieval market square. When the public can participate in the show.

15. In regard to your own practice, could you reflect on and describe how network technologies might play a role in your practice? This doesn't necessarily have to be specifically about an artwork, and can include other artistic activities, such as research, blogging, social media activities, performative gestures, studio work, and so on.

The Internet plays a huge role in my life. It helps me to communicate and receive information. Almost all my works are in some way interacting with the internet, at least by appearing on a backstage of the pictures of the viewers in social media.

16. Can you please describe your network footprint and take us through the various social media accounts, webpages, project webpages that might encompass your artist's persona? As well, could you reflect on this personal network and how you use it to disseminate your artistic content?

I have a website, for me it is important, because I can see what I am doing and where I am going. Also there is an open database of the research project about art in science fiction. Also I have Facebook and Instagram accounts.

Appendix 3

Appx.3.1 PILproject

PILproject began as Agorama's first commission. This project was initially conceived by artists Juan Crespo and Enrique Tutor-Torres in collaboration with amaCollective to mimic an art collecting institution. The chosen subject to collect for was the Internet meme[42], recognised by the artists as a cultural artefact. An underlying principle of the project was to engage with other artists and exhibit their work in a 'chapter' exhibition. During this initial period my role frequently oscillated between curator, artist and technician, after the completion of the exhibition *PIL 1.0* my working relationship with PILproject steadily grew till I became a permanent member of the online group.

PILproject was conceived to emulate a curated collection, while engaging with other artists to produce new works of art. This new work by other artist would be curated into a 'chapter' exhibition, which represented completion points in PILproject's ongoing research into memetic culture. Thus, PIL acts as both an artistic *and* curatorial project simultaneously. Due to this circumstance PILproject has an artist-led ethos, but at the same time it doesn't. To explain further, since PIL's initial project, it has been identified that PILproject has three main types of activity: 'chapter' projects – the culmination of a research project and the curation of an exhibition about said research with artist commissions; artistic projects – work produced in collaboration with another curator or organiser; admin and dissemination – the continuing of meme collecting, maintaining PILproject's multi-platform base, and continual dissemination of creative content. The identification of these activities, over a period of time, points to a more fluid structure to that of Agorama, which focused its output on curation and collaboration. PILproject in its activities focuses on not only curation and collaboration, but also on producing art for external projects.

As an artist-led curatorial initiative, similar to Agorama's creative dissemination activities, PILproject works between online/offline modes for exhibition and event making. Additionally, during these activities PIL has played with other forms of dissemination such as publishing. A more artistic approach can be found with PIL's tactical use of the social media space which acted as a performance site (3.4.3). As to the nature of the roles within the group, the two current main practitioners, Juan Crespo and myself, both fluctuate between artist and curator depending on a project's needs.

However, before unpacking this, it is important to briefly explain PILproject's curatorial approach for online/offline representations. In the previous 'chapter' exhibition conceived by PILproject, artists were approached to reflect on a theme, and thereby provide migratable work and digital objects of memetic quality – specifically in the gif format – for integration between online and offline sites.

Appx.3.1.1 Projects Timeline

PIL Project 1.0
May 2015
Exhibition at Central House, London Metropolitan University

PIL Project in the Wrong Biennale
DAR Residency, Dec 2015
http://digitalartistresidency.org/pil-project/

PIL Project residency in Moscow
Jan 2016

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[42] To briefly explain, an online meme is an extension of the academic field memetics – and essentially comprises a process of cultural transmission - for example, religion and its successive spreading via multiple sects; in the case of the online meme, essentially we can take into consideration this same cultural practice except that it takes the form of a visual one-shot that is to be ingested quickly – in other words the transmission of culture in an online environment.

Step Beyond Grant

PIL Project 2.0. goes to Russia
19th Oct – 29th Oct 2016
Exhibition at VRC Centrespace, Dundee (Scotland)

PIL Project participates in Off-Site Projects exhibition
3 May - 2 July 2017
http://www.offsiteproject.org/

PIL Project, *The One, The Many*, Art Gene Digital U
Nov 2017 – Jan 2018
http://www.art-gene.co.uk/digital/pilprojects-one-many/

Appx.3.1.2 PIL 2.0: Russia.

PIL 2.0 centred its research around findings from PILproject's previous *chapter* exhibition (*PIL 1.0*), which pushed *PIL 2.0* into an investigation into the infamous *Putin Rides* memes – and the news controversy around the Russian President's illegitimate banning of Internet memes in the country (Ball, 2016).

For the commissioned work, Plisova used her practice of searching for digital objects around the Panama Papers scandal and the wealthy Russian figure Sergei Roldugin. As described in the artwork's online exhibition text on the PILproject gallery: "Sergei is a businessman as well as a professional cellist musician and seen as the right-hand man of Vladimir Putin's money laundering strategies, which was something that came to light after the releases of the Panama Papers" (pilproject.net)[43]. Using Sergei's involvement with the Panama scandal as inspiration, Plisova retrieved several digital objects related to the Russian figure, and created two physical pieces, the *Keep Calm* banner and the *Cellist Curtain,* for the exhibition in Centrespace, while also providing several digital components that were to be assembled by PILproject and created into a moving image piece, in addition to digital content for the online gallery.

As previously explained in the introduction to this section, Facebook became one of the main sites for *PIL 2.0: Russia. Be Blinded by an Inner light*. This was due to the conception of Rostan Tavasiev's project *It's Complicated*. The project itself had existed in earlier iterations and encompassed a series of muppet-like sculptures – which Tavasiev constituted as a 'family'. To explain further, each sculpture was developed with the idea that they would all have individualised characters that the audience could interact with through the Facebook platform. Thus, each sculpture had their own Facebook profile that was controlled by a human agent that played the character.

SHIT_POSTING was a late addition to the line-up of the exhibition. The group, which was composed of India Murph and Lisa Reith, effectively engaged with memetic culture through the creation of online digital zines. Prior to their inclusion in the exhibition *PIL 2.0,* PILproject had been hosting the group's digital productions on pilproject.net's repository and distributing the online zine through its social media channels. For this exhibition, SHIT_POSTING was commissioned to make a special edition of the zine to accompany the exhibition content. This issue would not only continue the group's exploration of meme culture but would also expand on the exhibition's theme.

Appx.3.1.2.1 Build Documentation

Built Documentation – Multiple places:: http://pilproject.net/gallery/rostan-tavasiev;
http://pilproject.net/gallery/ksenia-plisova; https://www.facebook.com/hidden.hikkimori;

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[43] http://pilproject.net/gallery/ksenia-plisova.

https://webrecorder.io/PIL-Project/rostan-tavasiev-its-complicated-hidden-hikkimori-2016
(documentation of Facebook performance)

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1.) 27/09/2016:: Reflection documentation – PILproject 2.0::
A major component to this iteration of PILproject will be the commissioned online performance by Rostan Tavasiev. The performance itself is based on an earlier iteration of the series *It's Complicated,* which was exhibited at the Moscow Museum of Modern Art (who in fact collected a few of the sculptures produced for the series). An interesting element about this series was that each sculpture was an originally made doll or muppet looking character, designed by the artist, which also had personalities attributed to them. These personalities were then developed further as individual Facebook accounts (one account for each sculpture), that the artist would control behind the scenes and have them interact with one another and with a live social media audience. This was a very interesting aspect to include in this PIL exhibition, because of how distributed it made the artwork, i.e. how multi-platformed. Another interesting element was that in the original exhibition at MMoMA there were live feeds pointing to each of these character sculptures' Facebook accounts. It's a really inventive concept for an artwork, and very four-dimensional. For this exhibition, Rostan suggested to me and Juan that the sculpture *Hidden Hikkimori* would potentially be one of the better characters for the upcoming PILproject exhibition, explained that this character is very cynical and political, which he felt would work well for our theme of investigating Internet practices in Russia, that examined legislative pieces like the infamous "Putin bans all memes" law.

Karina Abdusalamos is the person who will be directing the performance of Rostan's piece *Hidden Hikkimori*, from the series *It's Complicated*. Normally I would expect the artist to carry out the performance themselves – but with the language barriers faced between Russian and English – Rostan stated that he needed a translator. This is where Karina comes into play. Interestingly she's located in Mexico City, which creates this huge displacement in the exhibition components.

Today she sent through the press info for Hidden's social media performance. I will look at this tomorrow, as well as enact PIL's social media strategy for this distributed exhibition.

On another note Juan sent through the designs for the Facebook banner, printed invites, and the printed poster. Will also review those tomorrow.

2.) 28/09/2016:: Reflection documentation – PILproject 2.0::
Today has been a long day of development for the upcoming exhibition. The components worked on were: 1. The press information pack; 2. The exhibition space layout and technical requirements; and 3. The final step of our Kickstarter campaign.

To begin, today I took several pictures of the space to show Juan the layout of the place, as well as the measurement dimensions, because up to this point he has never seen the space in person. Thus, it's been very difficult to come up with an accurate exhibition floor plan. That being said, for some time now we have been focusing quite a lot on the physical exhibition, and now I

feel I have to shift things back to the virtual elements that are going to be launching soon, i.e. the performative section of Rostan's *It's complicated* series with *Hidden Hikkimori*. I have been in contact with Andrew Dobbs (University of Dundee lead exhibition tech) on the requirement for Rostan's installation and Ksenia's projection. This is particularly important for the successful activation of the live Facebook feed we are creating to have in the space that will display *Hidden*'s Facebook profile.

As part of *Hidden*'s performance, Rostan has discussed with us the narrative he would like to achieve, which is that he has come up with this idea that *Hidden* has been in storage ever since his last exhibition, which also involved the rest of his family (the *It's Complicated* sculpture series). This wakening would mark the beginning of the series and would basically document his journey from Moscow to London, where me and Juan would receive Hidden, and then from there Hidden would travel to the exhibition site in Dundee. We think it's an absolutely great idea. Furthermore, myself and Juan thought we should bring a certain amount of this virtual journey into the gallery. The idea we came up with was to build a crate that could fit the sculpture (which we made ourselves based on a design diagram provided by Rostan), and this would be the crate we would use to ship Hidden up to Dundee from London. This crate would also play the part of a prop in the artwork's installation, meaning that we envisioned a scene where you would be encountered by a crate that was open and a couple of metres away Hidden would be placed, giving this visual effect that continued the online narrative begun by the online performance. Inside the crate we would situate the computer that would have the live feed to Hidden's Facebook, which I am planning to have connected to the internet with an Apple Script running that will continually refresh the page, thereby updating the feed for any new posts, and comments made in real time on Facebook to appear for audiences in the exhibition. I believe that this was a good curator/artistic plan by me and Juan which really ties all the elements together for this piece, because it is a bit all over the place in terms of positioning.
An important note is that we approached Rostan with this additional artistic/curatorial intervention, because we did not just want to begin changing the artwork without his permission, and to our satisfaction he was very happy with the idea, and told us to please progress with that plan.

This returned us back to the circulation of the exhibition material and press info pack. With all the final documents ready for circulation, but I cannot stress how important this area is to curating online content. It seems to be more and more, from my observation, that curating online or networked art is 50% the role of a curator/artist, and 50% the role of a communication marketing expert. As it stands now our strategy is:

1. Facebook event creation – to be circulated throughout our networks (personal and professional), which will include paid ad services.
2. CtC blog circulation – this will be an article that I will write specifically on the exhibition and its theme.
3. University of Dundee circulation – which will be the main strategy for engaging the locality of Dundee in the online and offline components of the exhibition.
4. Exhibition mail-outs – these will specifically target specialised individuals in the arts.

3.) 11/10/2016:: Reflection documentation – PILproject 2.0::
Today's work revolved around the development of the *Hidden Hikkimori* piece's artwork ecology, i.e. the online performance, the physical install, and linking everything together. The work was mainly around the development of the crate prop, which I designed myself, making sure that the crate's aesthetic showed signed of wear, but as well making sure this thing I built would survive the journey to Dundee (which was actually one of my ideas for getting the crate to look travel wore).

Another important thing that was done was the successful research for an Apple Script that would reload Hidden's Facebook page:

```
tell application "Google Chrome"
    activate
    set theUrl to "https://www.facebook.com/hidden.hikkimori"

    if (count every window) = 0 then
         make new window
    end if

    set found to false
    set theTabIndex to -1
    repeat with theWindow in every window
        set theTabIndex to 0
        repeat with theTab in every tab of theWindow
            set theTabIndex to theTabIndex + 1
            if theTab's URL = theUrl then
                 set found to true
                 exit repeat
            end if
        end repeat

        if found then
        repeat
            delay 300
            tell theTab to reload
            set theWindow's active tab index to theTabIndex
            set index of theWindow to 1
        end repeat
    else
        tell window 1 to make new tab with properties {URL:theUrl}
    end if

end tell
```

The script above is a simple one that tells the computer to activate Chrome and load up the URL of your choice. It also adds in a functionality which reopens the corresponding URL if an audience member by chance navigates away from the page the computer is supposed to be on. The other important section of this code is the second loop which essentially reloads the window depending on the loop time. In this case, I have marked down "delay 300" which I believe to be roughly 3 to 4 mins, which should give enough time to an audience member to scroll through the page unaffected by the script's reload function, but simultaneously be fast enough that an audience member would notice a change if the page was reloaded and a new post was made.

Hopefully this script will do the trick by further linking the online space to the offline one, alongside the crate prop.

4.) 13/10/2016:: Reflection documentation – PILproject 2.0::
During the latter half of this past summer, I was invited to participate in a Central Saint Martins course that focused on online art and curating (I had previously advised on important core new media content to the lectures) and took part as a panel judge for this course's end-of-year presentation. Essentially the course had one exhibition spot, which was located in the centre ground floor of the University, and the winning or best project got the exhibition space, which is why I was invited to be a judge for these presentations. During them, there were loads of interesting ideas and projects, but one stuck with me very deeply. The project was called "Shit Posting" and was developed by two young artist/curators Lisa Reith and India Murphy, that was

to be an online magazine about Memes and the subculture attached to them. It was a great presentation, with a great objective and vision, and even better the two collaborators initiated the project, meaning they went beyond just doing a presentation and actually realised one issue of the online mag, with a second in the works.

Obviously, there was a lot of synergy between Shit Posting and PILproject and me and Juan approached Lisa and India to see if they would like to work with us on a special edition of their magazine for the upcoming project, which they agreed to. I believe that this aspect is a really nice one, because they were really forthcoming with ideas, and loved the suggestion of trying to make a mag that focused on the Russian political question, but also wanted to contrast it to the current US political environment. We though that this was great, because it detracted from this negative image of Russian politics and memes and gave it a more generalised insight into the topic, but also a cultural perspective of the meme subculture.

Anyway, today we met up with India and Lisa (who was on Skype) to discuss the make-up of the online mag and also how to connect PIL and Shit Posting together. As to the aspect of connecting to two groups together, myself and Juan pitched to them that we could host their content and distribute it throughout our network, which the two agreed to. As to the special edition of the online mag, we decided that we would do a limited print run, which would be available for free as part of the exhibition in Dundee, but also online in the normal digital format. As to the content of the mag, it was decided that I would write a piece that would accompany the magazine's content and that would also help pull the magazine and exhibition project together.

5.) 18/10/2016:: Reflection documentation – PILproject 2.0::
So, for the past two days, myself and Juan have been up in Dundee doing the installation for the exhibition. It's been a stressful process, as the crate was late… meaning that we were only had the shortest amount of time to fully set up Ksenia's and Rostan' pieces. That being said, the installation, in my opinion, was successful. For instance, Rostan's piece's distribution seems to work really well in linking up all the elements, which is really nice, because the performance online (which has been happening in the two-week lead-up to the exhibition and will continue till the end of the exhibition) feels like it's a good lead-in to this exhibition, which tells me that the narrative we've tried to construct has been a success. Ksenia's piece, which is more of a standard post-internet piece, is also looking good, and in fact her artwork's content fits in really nicely with the overall reach of the project, and with Shit Posting's digital mag contribution.

The one aspect that myself and Juan were disappointed with was the online segment that is being hosted on the pilproject.net gallery webpage. Essentially, what we discovered was that Enrique (who unfortunately stepped down from his role in PILproject) and Victor (the original web designer of pilproject.net) set up the CMS of the site to only allow gifs of a size of 1 or 2mb. As well, these two had been instrumental with the online exhibitions of PIL 1.0 exhibition project, and without them myself and Juan were slightly lost and pushed for time on this aspect. In the end, we made the best of a bad situation and opted to develop the online gallery exhibitions on pilproject.net as informational extensions of the physical exhibition, meaning that an audience member would be encouraged to engage with the exhibition in Centrespace, but through this experience would be encouraged to visit pilproject.net where we would have more information about the exhibiting artists and the wider exhibition structure. Likewise, the online galleries played a similar role in reverse.
However, that being said, this difficultly that we ran into has spurred us to begin thinking about changing the web structure for PILproject and amending it so that it is easily workable. Furthermore, Juan and I decided that this time around we would not engage an external web designer and that I would take on that role for the group, and from there if we did need to engage with more specialised individuals for software and programming needs that I would take the lead in the collaboration to ensure whatever was produced was usable by us after the collaboration was over.

6.) 26/10/2016:: Reflection documentation – PILproject 2.0::

It has come to my attention that webrecorder.io has some compatibility problems with certain browsers. To clarify things, as part of our documentation process for the online performance by Rostan Tavasiev, we decided to use the platform developed by Rhizome called webrecorder.io. This platform builds on the existing technology developed by the Internet Archive (California, US), which they use to document the web and its ever-changing environment. It's a really interesting piece of technology that records all of the webpages visited, and all of the interactions made by the user on this recording. For instance, let's say for Hidden's performance I could start recording from his base Facebook profile page and begin to click on posts, links, images, webrecorder will capture all this and render it into an archive file that is viewable through software called the Wayback Machine. So, for ourselves, I decided that using this platform would be the best option to capture the whole performance from start to finish (on a weekly basis, i.e. 4 recordings, one per each week).

Returning to this problem of compatibility I mentioned, when trying to record the 3rd segment of the performance by Hidden, I began to have trouble with loading the Facebook feed of Hidden, and essentially only the first two posts were recorded, with the rest of the page in a perpetual state of loading. I did find a way around this by using Safari rather than my normal browser (Firefox), which seemed to correct the problem I was having. However, I noted that the problem might be in browser compatibility, because Safari and Chrome use many of the same webkits, whereas Firefox uses their own call Mozkit. This aspect of compatibility seems to plague new media works of art, and their architectures.

7.) 29/09/2016 to 08/10/2016:: Collective refection – PILproject 2.0::
Over the past week my attention has been distracted by my PhD upgrade process. This represents a difficult situation, whereby Juan had to take the brunt of the pressure during my time away from the upcoming PILproject exhibition.

Moving on to PIL 2.0, the main point of focus for myself was Rostan's performance for *Hidden Hikkimori*. The beginning had a slight hiccup, as there was a mistake with the Facebook event's start times. However, reflecting on this communications strategy, I believe now that the strategy to create an event to get people to friend-request Hidden was potentially not the correct one in the first place. This comes off my observation of people using social media in the UK and US, compared to other parts of the world. Hidden was created by Rostan for a Russian audience, and that was my mistake, not understanding the artwork's original context and the difference between Russia and UK consumption as regards habits on the web. Here in the UK, people are seemingly hesitant to friend-request Hidden, and I believe this is a two-stage problem. First, people here seem to view friend requests as a personal thing. Second, there is a lack of engagement with the instruction on the press release circulated, which points to a wider issue that people simply don't read anything these days. Unfortunately, because it's only myself and Juan, circulation can only happen when we are working on it in our spare time, and group this in with myself having to do the PhD transfer, it meant my time was much minimised.

In regard to the actual performance, it's a subtle piece that really blends into the background of the overall exhibition, as well as into the following person's news feed, which does become a performative backdrop. I like this aspect of the performance because, if followed, you will discover a narrative (the one PIL and Rostan put in place) that at the same time could act as a bit of a spam bot throwing up out-of-context posts to the audience member that forgets to follow. I am very happy with this performance so far. However, reflecting on everything I can see the error of the communication campaign.

8.) 09/10/2016 to 14/10/2016:: Collective reflection – PILproject 2.0::
During the course of this period, many of the crucial pieces for the exhibition came together:

1. Construction of the Hidden sculpture and Crate prop
2. Shipping all the materials to Dundee

3. Press circulation
4. Hidden's online performance

The first two items were probably the most important of all. Construction of Hidden and the crate took place between 10th and 12th Oct, and the detail work (done by Juan) was carried out on the 13th, with everything finally being shipped the morning of the 14th. While it was a stressful period, the work was carried out effectively and on time. In terms of items 3 and 4, this also went pretty well. But then again, I do find that my timing in approaching people or handing things in for circulation also plays a factor, and it's a recurring thing it seems that I have experienced in previous exhibitions I have been involved in that utilised the web heavily. I have decided to put more focus on this aspect in the future to better ascertain the effects of communication strategies on distributed exhibition and artwork networks.

Moving on to Hidden's performance… This week has been a lot livelier, and I believe this is a direct consequence of Juan's hard work behind the scenes pushing people to friend request Hidden. I really feel this push by him has elevated the visibility of the performance, thereby making it more recognisable to audiences that this is an artwork in progress. It seems also another good strategy by both of us was to make sure we had a consistent number of Hidden's posts 'shared' with our personal networks, which seemed to have a trickledown effect. The same can be said for our cross-sharing between the PIL Facebook page and our personal accounts. On the other hand, paying for ad space is bollock because it is vetted really, really stupidly. For Facebook at least, they value visual images over images that have written content on them, so even our banner image that we were sharing was flagged by Facebook as not appropriate content for the circulation of paid ads…. And the same thing happened with some of Hidden's posts that we boosted through paid ads… I am unsure why this is the way it is – but this system is not effective for art, it is purely geared towards a consumerist product, i.e. your ad is an image of a product only and the accompanying text your sale pitch… Whereas in art your image might have text (e.g. the title), and, depending on the image used, you might get banned altogether for inappropriate content, despite it being an artwork.

9.) 17/10/2016 to 29/10/2016:: Collective reflection – PILproject 2.0::
To briefly state the visitor numbers and general feedback for the exhibition: visitor numbers were decent, with a total figure of just over 60 visitors. Further to this we had good news and media coverage, for example STV (Scotland's ITV equivalent) local Dundee news covered the exhibition, and we also had some coverage in the local paper. In terms of feedback on the exhibition, generally people were very interested to see and hear about the project concept and, in particular, the Facebook online performance event seemed to garnish a lot of positive attention. However, it's still to be determined how successful was people's engagement with the wider distributed content. One piece of feedback, which was very clear, revolved around putting wall labels near the pieces with perhaps QR codes embedded into them. Essentially people explained that they would have been more inclined to explore the online elements further through this visual link, rather than simply having to rely on the printed press release provided in the exhibition space.

This is a point of concern because it is an indicator of the webpage possibly receiving a lack of attention. How, then, do we raise awareness for this important hub? Part of me feels that the website has to provide a continual stream of information to the users, which also will have to rely on large platform circulation, i.e. Facebook, Twitter, Instagram to name a few. This way people will recognise that the website is an important element in the wider exhibition and displayed artworks. Something tells me that potentially more activities have to be organised through the platform, which then can be linked back to the virtual ecology PIL has set up for itself. Also, the PILproject website needs a lot of work, as stated before in previous reflections.

This prompts a few questions: What is the importance of a physical site? Is a physical site always needed? Are physical sites something for a particular event or all events? A problem I have with the physical site is the fact that it becomes more important than the rest of the

exhibition, to a point where even the artworks suffer at times, which tells me that actually the physical site is an ever specific thing for exhibitions and events, and if used incorrectly can dominate the exhibition structure, especially for distributed exhibitions. As well, when referring back to this particular exhibition, there seems to be a set of infrastructural things needed in every physical site. First, it's this aspect of the labels with QR codes – this seems to be a given as it's the most immediate thing people see which links them to an online entity. This structure reminds me of a treasure hunting game, where the point of the game is to follow a clue to the next one, and so on till you reach the treasure at the end of the rainbow. Maybe that's an idea – make the exhibition process, or the distribution of components, a game like a scavenger or treasure hunt.

Appx.3.1.2.2 Additional Development Resources

The images below pertain to material sent to PILproject by artist Rostan Tavasiev and pertain to the design of *Hidden Hikkimori* (inclusive of dimensions), *Hidden*'s pantone colour. The designs sent were incredibly important for this installation's development and are marked as the first stage in collaborating with Tavasiev and PILproject's eventual extension of the artwork in the final exhibition.
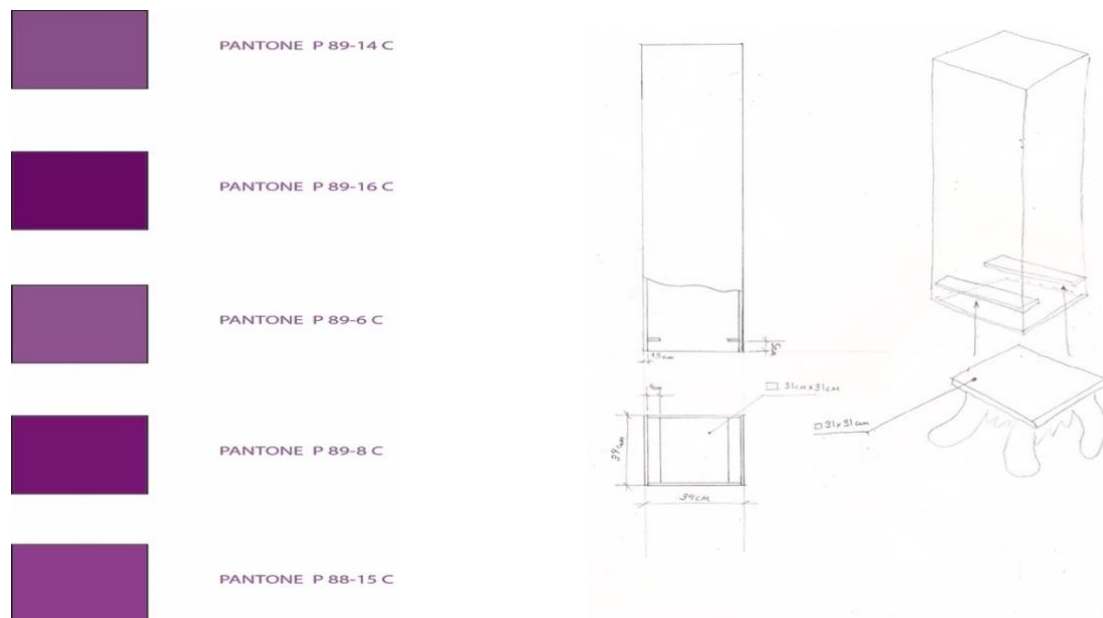
Fig.17.Design diagram for Hidden Hikkimori, by Rostan Tavasiev (Right), with corresponding Pantone colour chart, sent by Tavasiev for the construction of Hidden by PILproject.

The following images are marked as the second stage of the collaboration with Tavasiev. In this stage, PILproject proposed to Tavasiev adding to the sculpture's installation by producing a crate that could accompany the sculpture to further emphasise the narrative of *Hidden* travelling from Russia to London and eventually to Dundee for the exhibition. Tavasiev was very receptive to this idea and gave the go-ahead for this aspect of the installation to proceed.
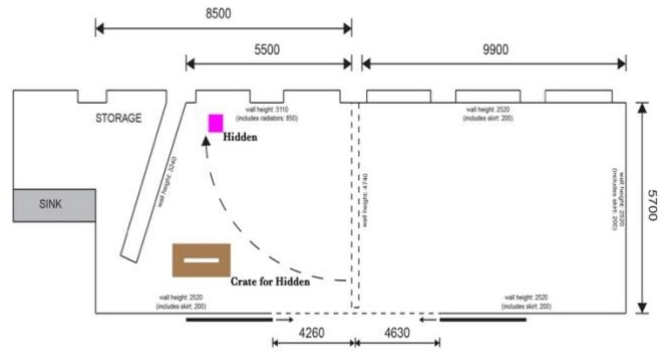
Fig.18.PIL development images. Proposed addition to Hidden Hikkimori with exhibition layout. By PILproject, emailed to Rostan Tavasiev.

Appx.3.1.3 Trolling is the New Punk & The One, The Many

For this group of projects, PILproject found itself in the artist chair. The first project, *Trolling is the New Punk,* was commissioned and developed for the online curatorial platform *Offsiteprojects.org.* The second project was an open call commission which PILproject applied for with the art organisation *Art Gene* (Barrow-in-Furness). In both cases, the artworks produced used the same underlying *embedded system* (Ch.4; Appx.3.?) and, because of this, they are seen as part of the same series of work. The underlying *popup engine* (or *embedded system*) was created by me to be an open tool that could enact the behavioural operation of spanning popup windows.

The initial commission, *Trolling is the New Punk*, was conceived as a political piece and took inspiration from US presidential candidate Donald Trump's Twitter activities, in particular his 'trolling' nature and how, on social media, no one could escape their reach. Through several discussions with Juan, we decided that we would pursue the idea of 'Internet trolls' but that we would also build into the artwork operational features that could extend the piece from a single gif image to a multi-layered piece.

For the project *The One, The Many,* we had proposed to the institution Art Gene to essentially take this tool (*popup engine*) and the conceptual investigation into 'Internet trolls' and attempt to use it as an aesthetic framework. Thus, what was proposed was a takeover of the Art Gene site that would include triggers to the popup engine throughout the website that would become active upon a user's interaction. However, due to concerns over damaging the Art Gene website, it was agreed that PILproject would develop a *Modular Website* (Ch.4; Appx.3.3) that would contain the *popup engine*, and in addition embed *memes* into the Art Gene website on specific pages in the site.

Appx.3.1.3.1 Build Documentation (Trolling is the New Punk)

Built Documentation – http://trolling-punk.pilproject.net

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1. **12/04/2017:: Initial invitation and subsequent development meeting with Juan.**
2. **21/04/2017:: initial prototype sent, and subsequent technical conversation with Elliott (offsiteproject curator).**
3. **29/04/2017:: Development meeting with Juan.**
4. **03/05/2017:: Final installation and artwork reflection.**

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1.) 12/04/2017:: Initial invitation and subsequent development meeting with Juan::

On the 7th of this month I received a message from Elliott Burns, who is one of the curators from the online Internet art space offsiteproject.org. The initial message was directed towards myself and my collaborator for PILproject, Juan Crespo, and asked if we would like to participate in a group show called "Politics of the Absurd." Essentially, from Elliott's explanation, the exhibition was about the contemporary political landscape, with a main focus on the recent US election, Brexit, and other political hiccups happening around the world. From what I gathered, he was looking for artists and groups to make or present work with a satirical critique of whichever political situation the artist(s) chose. It was an interesting invitation and proposal, which I believed would make a great exhibition. However, I am always wary when it comes to group shows that happen exclusively online. The reason for this is because, in the Internet environment, attention is the primary currency, therefore, in a group exhibition where you have a single page with loads of artists' works, the possibility of an artwork being overlooked is quite high.

Despite this wariness, I thought that it would be a good opportunity to present to Juan, because, since the PIL 2.0 exhibition, we had not really done anything, or developed any new work. I believed that it would be a good transitional project, which was doable in a small timeframe, to get us going with more projects for PIL. In my meeting with Juan, it was really nice to hear him express the same concerns as I have about online group shows, but also how he thought this was a good little project to get our PIL activities going. The main thing that drove our initial ideas for this new artwork was that we wanted to move on from the Russian discourse and begin investigating a new field. For example, Juan was very interested in the Twitter-obsessed US president as the basis of an artwork, while I was quite interested in the Wikileaks dump of some of the most sensitive CIA files in history. However, that being said, we were both committed to developing an artwork that was beyond an image or video, something that removed the flatness from a digital image.

In our conversation about the operational make-up of the project, I referred back to the Digital Residency Juan had taken part in as PILproject, where he ran into the same obstacle. It was interesting to hear him reflect on the process of that residency, as he expressed that he wished the interactivity he'd implemented into the works of that project were more in-your-face, iterating this idea of the Internet Troll, and this aesthetical operation, i.e. spamming content, popup windows, virus and, more importantly, this constant barrage of unwanted information. This led me to think about my own development with programming, which in turn led me to remember that I had developed several simple JavaScript games that interacted with a couple of elements of the HTML structure and, while not exactly the same as what Juan was talking about, it led me to believe that we could produce something that could utilise popup windows, similar to when you visit an illegal streaming or download site. This prompted us to attempt a quick test on my laptop just to see if we could do an artwork, which would be a gif (thus, flashing and catching the attention of the audience member, while also playing to our own medium discourse) and, when clicked, would spit out a popup window. Fortunately, the test worked very well, with both me and Juan feeling very confident with this new direction for PILproject. An important note about the clicking action: this was actually how Elliot described to us how all the art works would work, i.e. there would be an initial display piece that would be clickable, and once clicked would activate a popup window where the artists could add in more content like video links, text, more images, etc.

At the end of this meeting, Juan and I decided to move forward with this endeavour, with myself tasked with creating the operational functionality, and Juan developing the gif, and researching the links for the popup windows.

2.) 21/04/2017:: initial prototype sent, and subsequent technical conversation with Elliott (offsiteproject curator)::
Yesterday I contacted Elliott to update him on my and Juan's activities and to submit a prototype of the artwork's operation programming. To take a step back and discuss the development of the popup window engine (what I am calling the program) - it is a very simple function, which you

can find quite a bit of documentation about from the Mozilla developer's page. Essentially, what happens is:

"The Window interface's open() method loads the specified resource into the browsing context (window, <iframe> or tab) with the specified name" (https://developer.mozilla.org/en-US/docs/Web/API/Window/open)

And the function itself looks like:

```
var window = window.open(url, windowName, [windowFeatures]);
```

What is effectively happening here is that we are assigning to the variable "window" the function of opening a new window, which is indicated by "window.open", followed by the parameters of what to load in this new window. Additionally, this function, as stated in the documentation, allows for the opening of a new browser window, iframe element, or a new browser tab, which is exactly what Juan and I were looking to achieve. In terms of connection, adding this functionality to an image to make it interactive is as simple as adding the condition "onclick= yourfunction()" to the HTML element you would like to have this interaction with. Thus, what I came up with for this stage in the artwork's development, looked like this:

```
var popupTrigger = function() {

  var WindowOne = {}
        WindowOne.action = window.open('URL', "mywindow1",
        "location=1,status=1,scrollbars=1,  width=600,height=400");

        WindowOne.action.moveTo(20,20);
}
```

Essentially, what is happening here is that I've converted the original into a workable function that will only activate when the function "popupTrigger()" is called, i.e. when a user interacts with the HTML element we have attached this function to. Another important aspect that I found when I tried to get this popup engine to work was that you could not place several popup variables into a single function, or at least I could not figure out how to, which led me to convert all the variables for each popup window into objects, which is represented by the '{}' next to the var WindowOne. I still have to do a bit more digging on why this is but, from just working on this and using my own observations, it seems that, if you place multiple non-object variables (with popup functionalities attached to each), the computer only seems to run through the first two before cutting out, meaning that it was not finishing its run cycle and cutting out before that. When I changed the code so that each variable was now an object, suddenly everything worked correctly and, in my opinion, this is because browser JS engines (essentially the backend compiler that runs JavaScripts) treat objects differently than static variables. In addition to this, by following the format of OOP, I am also able to do several versatile things such as the last line in the code above, WindowOne.action.moveTo(20,20). In this piece of the code, what is happening is that after setting the object WindowOne, I made the attribute 'action', which you see attached to WindowOne through the notation ".action". This attribute basically means exactly what it entails: an object has attributes and for my object the attribute it has is a popup window as part of it. Furthermore, once you've assigned an attribute to certain functionalities, as in my case window.open(), you can further dictate its functionality with additional functions that are associated with the window.open function, like in this case .moveTo() – which allows you to designate where you want the popup window to appear when generated.

Moving on to the sharing of this application, I was able to send everything to Elliott via WeTransfer as a complete directory which, when he opens the index.HTML file, will activate the whole application. From his feedback it seems that he really enjoyed the functionality and was really excited to see the final production. However, he cited concerns over his ability to install this work on his site… I think this was predominantly because, when he realised that he couldn't

identify the initial script in the HTML file (he accidentally points out the css code, rather than the JS script), I think that made him realise certain limitations he was not aware of. That being said, he was very supportive and, in my experience (just as he's shown now), keen to learn and overcome and actually took the initiative to open a test account for me and Juan to test our work to get it ready and functioning correctly, which I found very helpful. In addition to this, he offered me full access to offsiteproject's backend if we needed it for install, thereby further alleviating the pressure of getting the work installed. Let's see what happens…

3.) 29/04/2017:: Development meeting with Juan::
So, after some time with the test platform Elliott set up for PILproject, we came to realise that we could not pull of the artwork's main functional operation. This was mainly because Cargo Collective (the framework offsiteproject.org uses) charges for a premium service, where you are allowed to input custom HTML. On the test site provided by Elliott, unfortunately it being free, we didn't have access to this feature. Fortunately, we raised this with Elliott, explainig that we think we can pull this piece off, however, we would need the site to be on the premium service package, which Elliott actually confirmed offsiteproject already had. This was a huge piece of information and relieved a lot of stress from the development side, because at this point all the work I and Juan had done would have to be changed or setup differently, if offsiteproject.org didn't have this premium service already.

As to the rest of the development meeting, it was predominantly about our content. Up to this point, I had solidified the popup engine and had it fully operational. However, I was also working on a popup detector, because one of the main points of feedback I was receiving from Juan, and also Elliott when he was testing the piece, was the issue of indicating to audiences who had a popup blocker active (or even the browser's own internal popup blocker) the need to turn it off. I thought to myself, how best to do this? After some research into the subject I found a simple solution, which was to initialise a single popup window, with nothing in it (i.e. URL), and have a logical script to determine how the browser handled the activation of this popup window, meaning did it try to block it or not. The code developed looks like this so far:

```
var test = window.open(null,'test',"width=400,height=400");
if (test && test.innerHeight && test.innerWidth > 0) {
        // POPUP BLOCKER DISABLED! //
        test.close();
} else {
        // POPUP BLOCKER IS NOT DISABLED! //
        alert("Please make sure your popup blocker is disabled for the good stuff!");
        test.close();
}
```

What is happening here, to give a bit more of an in-depth explanation, is that the variable 'test' is the test popup window, which opens a 400px by 400px browser window with nothing in it. The programme then runs through a series of checks to determine how the browser treated this new open window… so basically, in the above code this is done first by determining if the new window's height and width are greater than 0, else something is wrong, and a popup blocker must be active, because if the window's ratio is less then 0, then something has blocked it. In every instance, the logical statement ends with this new test window being closed, which is articulated through the function test.close(). The unfortunate thing I ran into is that, while this code worked with Firefox and Safari, it did not work with Chrome. On deeper investigation, I found that the problem was not really the code itself but the way that Google had programmed Chrome's popup blocker. In Safari and Firefox, when the browsers block the popup, they essentially reduce its ratio to 0, meaning it has a value. When I was debugging the program on Chrome, I noticed that it would throw an error like "null has no value", which confused me at first, but then I realised what Google was effectively doing was when the popup blocker was active it would null the windows, meaning nothing was happening, hence the null value of nothing. But in Safari and Firefox's case they were not nulling the windows, therefore the script would register the test window because it in fact did activate, just only at a 0-ratio size, which the code picked

up. Unfortunately, at the time of writing this I have not solved the Chrome problem with this script... Hopefully I will be able to get it to work before the install.

On Juan's front, things were also progressing well. For instance, in the end he decided that we should focus the project on the antics of Trump, but specifically his Twitter account and the way he utilised this platform to spread his message. I think this is sound, because it plays with the fact that Trump is taking this Internet Troll-like position, with Twitter being the central platform and main vehicle of communication and dissemination. I think this is a nice coming together for our artwork. The operations of the popup engine, with the antics of Trump tied into the mix, will really push this message and subjectivity we've been researching and developing. I believe that the final work will be a very good example of dimension network, that effectively gives the digital piece shape, thereby warding off this fear Juan and I have of producing a 'flat' piece.

4.) 05/05/2017:: Final installation and artwork reflection::
So, the exhibition is up and running now. Looks good and, so far, me and Juan have received good feedback on the work, though both of us were a little concerned with the number of artists included, but hopefully with the interactivity of our piece audiences with be enticed to interact with it. I think overall this experience has been very interesting in a good way. For example, Elliott was very supportive and straight away, like he promised, gave us the login details to offsiteproject.org. This made the installation simple. After having experienced Cargo Collective's framework and CMS, I knew where everything was and was able to input the popup script and connect it to the gif through the "onclick" HTML method. In addition to this, Elliott was hands-on the whole time. When the piece was up and running, he was there to test things on his side and get a feel of the piece which was very nice to have.

More importantly, Elliott also allowed us to go back into the backend at a later date to install the popup detector. That being said, unfortunately I was not able to get the popup blocker detector to work for this piece. Unfortunately, everything I tried would not work correctly on Chrome. Thus, it was decided to leave that bit of the program out because, with the majority of people in the world using Chrome, it would have messed up the operation of the whole website as the popup detector was working but erratically, popping up the test window at random moments, even when the popup blocker was deactivated and sometimes not even closing the test window, leaving it there as a blank void. Going back to the experience with Elliott - again with this problem he was quite supportive and added the fact that you had to turn off your popup blocker in all their press info.

In the end, it was an interesting project. Through small in scale compared with PIL's other projects, there are many things to take into account. This project represented a new direction for PIL in terms of aesthetic, content and general direction. In addition to this, this experience of exhibiting work on another site was also doubly interesting, mainly because of the problems encountered, such as Cargo Collective's different levels of hosting service and the curator's personal knowledge of coding, which in turn persuaded him to allow us into the backend. There are many things to take into account from this project, because I believe that this experience reflects a larger issue with the contemporary art world and its engagement with the network and internet art, and in fact new media art as a whole. People seem to love the medium, the works produced and the possibilities, but there is an underwhelming level of digital proficiency, which in turn creates a level of gatekeeping, that isn't an active player, but more of a passive player that dictates a hierarchy based on knowledge, between the engineers, programmers, and hobbyists and everyone else that simply uses the readymade platform developed by the former.

Appx.3.1.3.2 Build Documentation (The One, The Many)

Built Documentation – http://theone-themany.pilproject.net/

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1.) 22/05/2017:: Initial open call proposal development and send out::

After the development of *Trolling is the New Punk* for the online group exhibition "Politics of the Absurd", both Juan and I were interested in finding more opportunities to further develop the concept of the "Internet Troll". After some searching, I found this one open call for online-only exhibition opportunities from a Northern England organisation called Art Gene. The open call was a simple one, a 300 to 400 word proposal, along with a bio. However, the thing I picked up on when reviewing the open call was their call for artists to play with the idea of non-standard locations for an artwork in the "spirit of curiosity." Having read this, I believed that this would be a good fit for the type of work that Juan and I had recently produced because, thinking about *Trolling is the New Punk*, a key feature of the work was the idea of the spamming pop-up windows and, if given the chance, we could effectively utilise the popup engine throughout the whole page, which would really be ambitious and one of the first instances of this happening on an organisation's page from an external group.

Having thought this a positive opportunity, we began to start drafting small concise proposals for the application that would take *Trolling is the New Punk* to the next level, expanding the GIF series to be a full investigatory series of pieces about this subculture Internet Character, all loaded with popup windows. However, this time, in the interest of a spirit of curiosity we would also embed our popup engine into the fabric of the website, thereby creating a space for the Troll. Personally, I think maybe this idea of the popup engine being embedded throughout the site is a bit ambitions, and that if accepted the Institution might turn down that aspect. Well, let's see what happens.

2.) 09/06/2017:: Checkin with Art Gene and subsequent answer::

To start, it had been almost two full weeks and we had not received a response, or better said an acknowledgement, from Art Gene about our proposal. So I decided to send a follow-up email just to double-check if they had received everything alright, and just to get a confirmation that at least they were reviewing it for consideration. To my surprise, I received an email from Ruth Pringle, who is one of the organisation's curators, and who heads up the online aspect of the Art Gene programme (at least from what I gathered from her email). In her email to us, it seems that it was an honest mistake and the email confirmation got lost in transit, but to my surprise also, she accompanied the email with several questions, which she had attempted to send in the previously lost email confirmation. This lost email went like so:

Hi Alejandro,
Thank you for your interest in the Digital Gene Pool opportunity.
Your proposal is certainly very interesting, although it will need to be reviewed as a committee which includes our founders.
Ordinarily it is myself who places work onto the Art Gene website, but your proposal is beyond my web skills.
Before I speak with the committee, I would like to know how easy it would be for you to do this to our site, which is constructed in WordPress, but which we only have a limited access to the structure of (the web design company who built it for us retain the ultimate editing codes, and to involve them in your project will carry a financial cost).

What the content of the pop-ups would be (it would be most interesting if you could link them to our own remit investigating the local, natural and built environment).
Whether, after the temporary duration of your exhibition, our site would be exactly as it was before. Have you done this to someone else's website before?
Thanks in advance!
Ruth

This was an interesting set of question to be presented with, especially the ones on experience working on other websites, and the question on whether their site would return back to normal. These questions struck me as very physical questions, i.e. the type of question that a person, curator, or space owner would ask an artist or technician before they accepted a proposal for an installation art piece.

In my own answer to these questions, I explained my background and a little about what could be done on a WordPress site, depending if it was a .com or .org site. Both are essentially the same, except that .org allows for more freedom, meaning plugins and other types of cool things like writing scripts into the WYSIWYG text form (this allows for you to post tiny JS games, and other things that use JS!). The main problem that I found was that Ruth explained that this type of install would be beyond her skillset. This is not to say I have a problem with her, not at all, no this focuses on the logistics of installing the work on to the website correctly, without suddenly saying, "Hey give me the keys to the palace" (the admin login details). However, I believe that I should be able to get around this, either by prompting Ruth to a quick web tutorial on JS and WP, or potentially I could do a work around… Meaning that I could potentially run the whole install on my WP sites, and send through a very detailed, step-by-step install guide while making myself available for tech support when the piece's install would be happening. One other thing that I could do is investigate whether I could create a WP plugin, that they could install, which would thereby create this popup engine as part of the integral system to their website. This would allow in my imagination for them to be able to literally link various parts to their part to the engine, making potentially every component on the Art Gene site susceptible to it.

Let's see what the committee say about the piece first.

3.) 22/06/2017:: Acknowledgement of online exhibition acceptance::
So today I received a flurry of emails from Ruth and Art Gene, some about the institution and its mission stance, but the main one was to state that Art Gene would be happy to exhibit us, with the idea in mind that the exhibition would happen towards the latter half of the year, either at the end of summer or later, though there was an interesting part to the email that I did not expect…

"However, I do need to let you know of a couple of things. Because we are funded as a charity we are contractually unable to show anything 'party political.' I think we work within very political realms and have an active practice of social actions - but we absolutely cannot host anything that promotes one party/politician or slanders another.
Secondly, because we are based in Barrow-in-Furness, which has a number of social economic issues and gets a bad press we are keen for intelligent responses to social issues which do not just point out problems, but which find assets amidst all the many reasons to feel disenfranchised, anxious, etc. Of course, there's a valid place for such criticism, but our own philosophy is built on adding positives to our community. One of our greatest problems is an entrenched negativity felt by the townsfolk.
And lastly, we can't give you free run of the whole site, but you can work within the U-Hang/Exhibition areas of the site, and we will put a link to your page on the homepage."

This is the first time that I have experienced this, where an institution steps in and states that they will not accept artworks that criticise political leaders just because it's a charity. I will not express my anger on this reflection, but this is a troubling thing to have heard… How can an art institution, or any charity institution not be allowed to criticise political leaders, especially those from another country that are subpar individuals? That being said, I think this feeds into the

locality, Barrow-in-Furness. A quick Google search on the area will yield loads of news on unemployment, how the whole area voted Brexit, the heavy dependency on manufacturing and the coal mine industry which was never replaced by any government (right or left) since the early 80s. So, taking a step back, I can see what Art Gene is trying to provide for the people of the area, and their mission is a good one which is very inclusive. The request is perfectly reasonable, but it also will affect the current proposal in its state. Juan has agreed that this is a good opportunity for us and to accept (which I did), but we will need to meet and review all of the information Art Gene sent our way, in addition to reviewing their past projects so that we could figure out what direction we can shift the project towards, because in the end we also have a mission statement to fulfil.

4.) 27/06/2017:: Meeting with Juan & follow-up conversation and Art Gene's concerns::
To begin, this period saw myself meet with Juan over the proposal, and have a follow-up conversation with Ruth over the piece and potentially receiving temporary access to Art Gene's backend for the install.

As to the meeting with Juan… He was also expressing the same frustrations as I had – as well as surprise about the charity status comment and political ties. His main concern was that *Trolling is the New Punk* was conceived off the idea of trolling politicians, Donald Trump in the case of the US (amongst several other politicians and high ranking corporate business people), and in the case of the UK individuals like the former mayor of London Boris Johnson, or UKIP's Nigel Farage who effectively stole the referendum vote with the same tactics, i.e. this trolling figure that states nothing coherent, or even a tangible argument. In addition to this, the idea of ending or curving the project to a positive note, i.e. Art Gene's mission, was another difficult point. By nature this element of an Internet Troll is not positive, so how do you make it positive or utilise our technics towards this endeavour?

That being said, the conversation was not all negative, and we began to discuss possible directions to take the work, meaning focusing on the memes and gifs. This is a powerful cultural tool of our time, and it's something that people across the political spectrum understand, it's just a matter of how to use these digital relics and artefacts effectively. One thing that Juan said from the beginning, which I believe was good, was that we should change the name of the piece to free ourselves from the original project - that way we would not have to bend it to another's will.

However, after having this productive conversation with Juan I received an email from Art Gene in a little bit of a panic, with a subsequent request for a phone chat. From what I can re-iterate from that conversation and what Ruth explained to me… There were worrying issues for herself and the committee about displaying our proposed piece. It seems that Art Gene, prior to this webpage, had another that was programmed by one of the two directors, before it suddenly got hacked, destroying their online archive, images, documentation, subscribers, etc. What added to this anxiety was the issue of the popup windows, because of what their operation is perceived to entail, meaning that people associate this functionality as a transmission system for malicious software, and data stealing devices. Understanding where they were coming from, and the anxiety of not having something like that repeat again, I suggested to Ruth that it might be better if I gave them an in-depth and transparent guide to how the popup windows engine works, along with three different solutions for moving forward with the fabrication of the work.

5.) 30/06/2017:: Complication with Art Gene and security::
Today I sent out the document promised to Art Gene, detailing exactly how the popup engine worked and the security risks that would be attached to displaying a work like this, with a final section with three options on how to move forward with this project. To re-iterate the issues Art Gene relayed to me, the main fear was over security risks to the Art Gene website, which is due to previous experiences the organisation had with their first website and that one being hacked and destroyed. What this amounted to was that Art Gene wanted to ensure that their website would not be compromised in anyway whatsoever and could be returned back to its original state. The secondary aspect came from one of the directors, Stuart, who detailed concerns for

the visiting audience member and the legality of spamming them with content without their consent.

In response to this, I promised Ruth, over at Art Gene, that I would compile a document where I would explain the operation of the popup engine in detail and transparently, while also proposing three different solutions on how to proceed with this artwork. The document produced (please see Appendix …), while rather straightforward in terms of the popup engine explanation, actually involved one element that I did not perceive till this moment, which is security and hacking risks. Up to this point I have been mainly focusing on security risks to the backend of web applications, i.e. SQL injection and people attempting to hack and gain access to the backend of these applications. To explain these threats a bit, from my understanding SQL injection entails someone attempting to hack your system to gain access to the database information to a web app, meaning user details, passwords, and confidential details like credit or bank details. This seems to be done when your database queries are not correctly vetted, meaning you have not coded in the essential protection for POST requests. POST requests are essentially moments when information is sent to the backend for verification, this could be password checks and user detail checks or as in the example of Facebook, each user account is loaded with other data, like posts, likes, friends lists, etc. So, when someone is trying to inject SQL into your system, they are trying to trick your application to relinquish sensitive information that normally isn't accessible. This injection can be done in any web browser or hackers tool and entails someone locating a POST request in the HTML doc of the webpage, which is normally easy to find, because they will be attached to HTML forms, submission buttons, user registration buttons and forms, and logins.

When thinking about this piece and what security risks could be attributed to it, for example JavaScript injection. How would this work? Well, in my research I found that it was similar to SQL injects, in the sense that someone has to introduce (or inject) new code into the webpage. However, as opposed to SQL injection, JavaScript is a front-end language, meaning that it runs on the browser of the visiting user and, in normal cases, has no access to the backend. So, when we think about JavaScript injection, if it's a user side language, this means it's used to trick people into handing over their details or installing some type of malicious software on their own computer, rather than someone hacking the system and forcing the web application to dispense its secrets. Right off the bat, this told me that Art Gene had nothing to worry about from their end of things, i.e. the integrity of the organisation's website, but in the case of the end user… well potentially there was a case to be aware of. In addition to that, Stuart's comments on the rights of end users, also brought this concern to the forefront (though… in the case of art organisations, I would expect website visitors to understand there might be intervention, as it is an art institution... but that is by the by).

Essentially, from my preliminary research and surveying of the Art Gene platform, they are not at risk of JavaScript injection, meaning that there would be no risk to the end user, because myself and Juan would be controlling the popup content. However, with the concerns raised, in addition to potential complications with installing the artwork into the Art Gene online exhibition, I decided to make one of the proposals for a parallel site, meaning that I would copy the structure of the Art Gene site and give it a hacked feel, which could be linked to from the main Art Gene web site, and here, on this parallel site, all the popup windows would exist. This way Art Gene would not have any concerns, and users would have too the choice to advance to the link of this parallel page, thereby giving some relief to Stuart's concerns of spamming unsuspecting end users that didn't want to participate.

6.) 15/07/2017:: Building framework for Art Gene Commission::
It has been several weeks since sending off that document to Art Gene, in which time I have only received notification of them receiving the email with attachment. To be honest it is the summer, and people will be away, so I decided to continue forward with the project by working on the framework of the third option given in the document sent to them. The reasons for starting this aspect of the project were i) in anticipation that they would select this option from the new proposals and ii) to develop a base page for PILproject's archive of projects, i.e. have a template

ready for the installation of a new subdomain in PILproject's structure or documentation and portfolio purposes.

I began this process by going to one of the online exhibitions Art Gene presently had on display, for the artist Ant Dickinson, and saved the page to my local hard disk. This is as easy as navigating to the desired page you want to save and hitting 'control s', which saves a HTML structure for the website with all of the corresponding public files, i.e. JavaScript, CSS, and all the images. Files that pertain to the server side of the application are not downloaded of course, because of the security privileges implemented from the hosting server. Once this was obtained, it was quite easy for me to copy the architecture and begin the framework for the proposed commission.
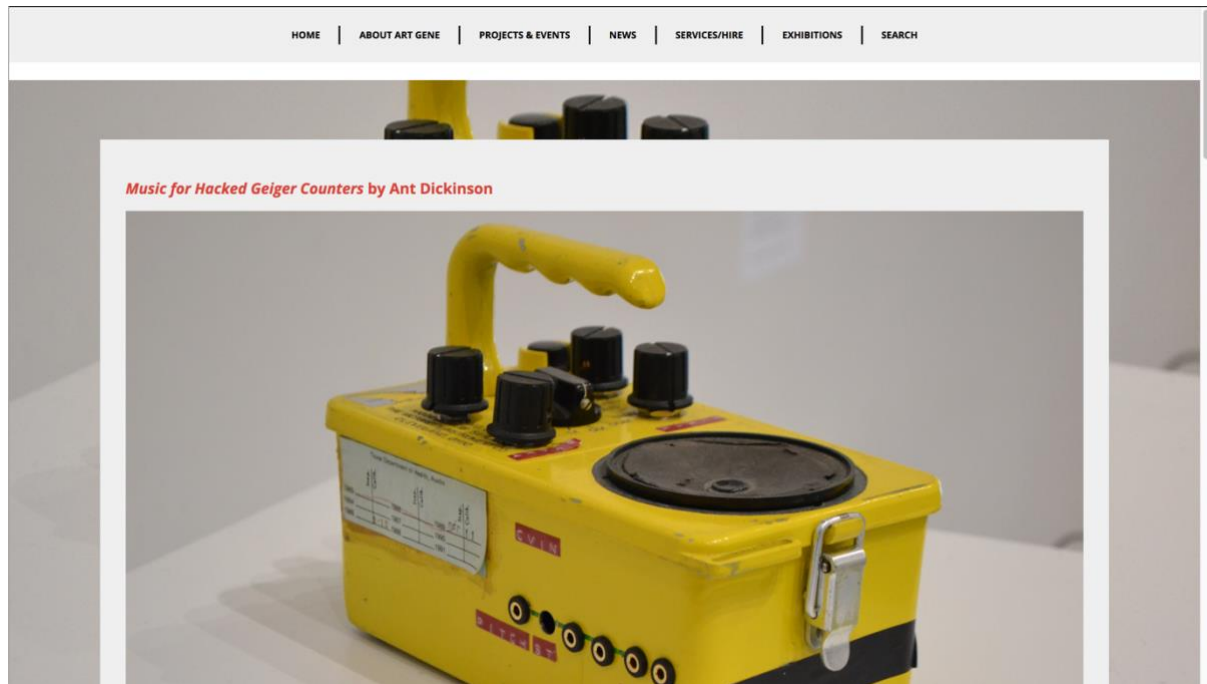
Fig.19.Art Gene Digital U exhibition. Actual Art Gene webpage.
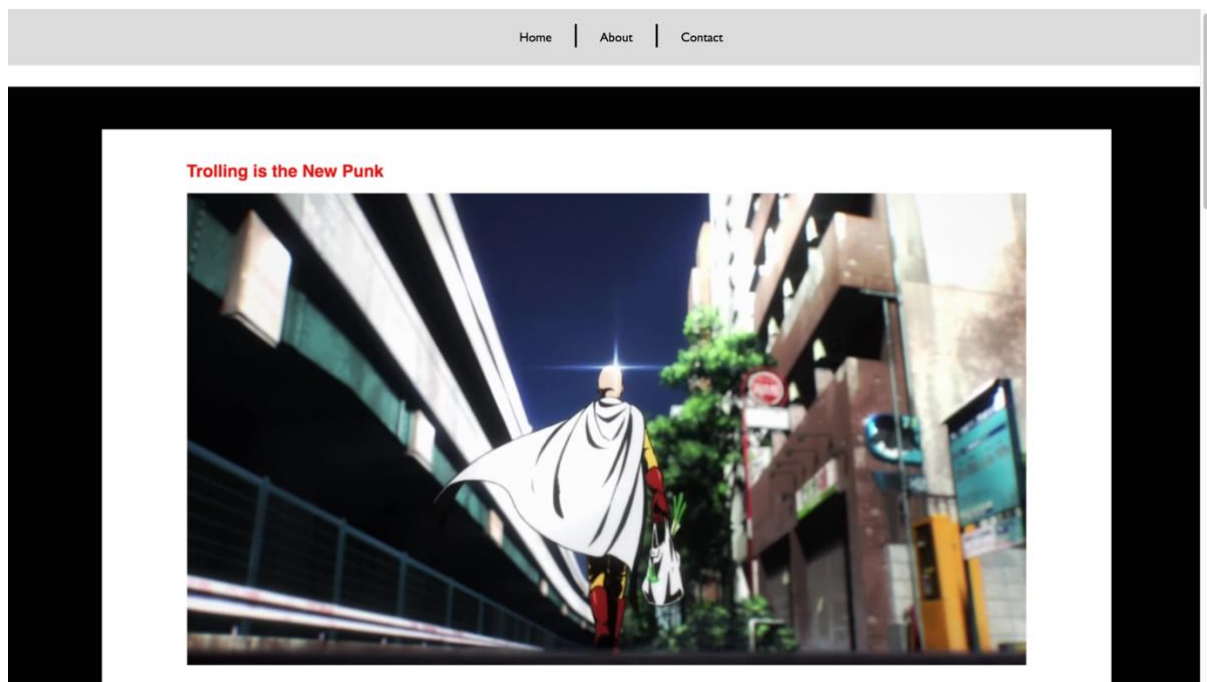
Fig.20.The One the Many pre-design interface. Design to mimic Art Gene Digital U interface. Developed by Alejandro Ball.

As can be seen from the examples above, there are many similarities from the upper navigation bar to the structure of the body element and central contents container. Of course, there are differences between the pages, but that was done purposefully in an attempt to confuse audiences on whether they were actually on the Art Gene site. For example, the navigation bar has fewer options than the original; however, in my experience users seems to neglect aspects such as these, especially if you are careful to replicate key elements, such as the footer of the target webpage you are copying.

Fig.21.Art Gene Digital U footer section. Actual Art Gene webpage.

Fig.22.The One the Many pre-design interface. Image of footer section. Developed by Alejandro Ball.

Again, from the examples given above, we can see that the footers are almost exactly alike, bar the fact that on the PILproject's example the text is italicised. Again, this was a design choice by me, to create subtle differences between the pages, to indicate that maybe a user was not on the

same page anymore. Potentially for the final design (if this option is approved), I might opt to make this framework exactly the same as Art Gene's, which wouldn't be difficult at all.

Returning to this element of confusing audiences, I made the conscious decision to map out key elements in the structure of the original webpage, i.e. structural indicators that tell a person that they're somewhere, when in fact maybe they are not. It's an interesting point to think about, because this project has pushed PILproject to recognise security risks related to hacking and the project itself, Trolling is the New Punk, is actually about this type of spamming, hacking, trolling sub-genre environment.

7.) 16/08/2017:: Further conversations with Art Gene::
So, after a long wait, Ruth from Art Gene contacted me with a response, essentially detailing that Art Gene was in favour of proposal number 3, i.e. the parallel webpage that would host the main body of work (the popup engine). This is a really good thing, because of all the preliminary work done on the framework. Furthermore, in my response back to Ruth I was also able to clarify key things, such as obtaining a new domain name for the project site. Ruth iterated that unfortunately their online exhibitions programme was still unfunded, which might cause a problem in that regard. Fortunately, prior to leaving for Portugal to attend a research conference and subsequent holiday afterwards, I was finally able to get into the backend of PIL's hosting provider and find out that PIL's hosting package actually includes the ability to create a number of subdomains, though only 25 MySQL tables. This means that we won't have to buy, or rent a domain name, thereby avoiding incurring financial obligations to this project site. This is a big point, because it is a problem that I have observed a lot, hosting your own web page takes a bit of money, upwards of £50 to £80 yearly for simply the entry level package; in addition to this, there is the domain name which could be between £11 all the way to over £100 yearly, depending on the desired name and its popularity.

Granted, many artists in my observations use readymade platforms such as Tumblr or WordPress.com to name a few, and on these platforms you are able to obtain a website for free, with loads of free templates. However, while this sounds great, you are exposed to their terms and agreements, i.e. complete control of all your data, no access to the backend, meaning you will not be able to do advance coding. In addition to this, you are relegated to use one of their subdomain prefixes, e.g. www.my-website.com/WordPress or my-website.tumblr.com. This is the kicker: to remove this you have to pay the company an annual fee of let's say £25 (this is from my experience with the organisation CtC and their package deal with WordPress.com), then you'll have to add in the cost of the domain name (£11 upwards to over £100) annually. Thus, in this aspect an artist could be paying around £35 to £45 pound annually per website if they have more than one on one or other of these readymade platforms – not to mention the extraction of all your data. This also speaks to me about the idea of Unsitely aesthetics or artworks, where artworks have intangible constellations of components scattered across the web. In response to this problematic situation, understanding the simple mechanic of self-hosting and utilising sub-domains is in my opinion essential to reduce costs, in addition to keeping this constellation within manageable boundaries under the control of the artist.

In the present development for this project, I believe that using a subdomain is the best possible solution, and this is something Juan is in agreement with, as he also in a previous meeting expressed concerns over maintaining control over external projects like the one for Off Site Project, and now this one with Art Gene.

8.) 23/09/2018:: Project Delay and provisional content sent for Feedback::
After some time, I have been contacted by Art Gene's Ruth Pringle several times over the month of September, with updates on the exhibition timetable, as well as asking for updates and potential previews of the artwork. First off, it seems that Art Gene will be doing an online exhibition with another artist before PILproject, thereby moving the project's launch date to somewhere closer to the end of October or November. This is actually fine for me and Juan, as we have not been able to come together and begin combining our research. In fact, the request

for preview content was the appropriate push for us to focus again on the commission after the long delay.

An important note to make is that after the preproposal of the project's structure, Art Gene had asked if it was possible to have this commission tied to their locality and general audience of Barrow-in-Furness. This honestly threw both me and Juan off, as it became difficult to know how to approach the research for this project, meaning how do you tie in Internet Trolls with a locality in the north of England that has a traditional manufacturing background and bring it all together in a positive productive message? This did stump us, because before this experience, our projects mainly revolved around artist-led initiatives and small organisations which would just about let us do anything we wanted (within reason). In the end, what we decided to present was the framework I built (loaded with place holders), and a selection of memes and gifs that Juan sussed out when researching the locality (please see Appendix…). Hopefully, this will give Art Gene a better picture of what we are attempting to put together for the online exhibition.

9.) 29/10/2018:: Online exhibition and press info dates confirmation::
To date, my conversations with Art Gene have been mainly on obtaining feedback on the previews sent over last month. In that time, Ruth was very good and able to confirm that the framework was slightly scary in the way it mimicked the Art Gene site, as well as expressing her enjoyment of the memes and gifs content Juan had gathered. However, that being said, from our side of things Juan and I still had no clue how to piece everything together. Up until this point, we have been marginalising our time spent on the project due to the lack of a fixed deadline, and a lack of financial support to spend time on the project. Fortunately, this came days ago from Art Gene – who stated that they'd like the project to be live at the end of November (between the 15 – 20 Nov), with a further deadline for the PR by the beginning of November.

While the deadline for the PR isn't that far off, I think this will be a good practice for myself and Juan to get our thoughts together and understand what this project's outcome will be about, and how we will tie it in to the wider ecosystem of PILproject's other activities.

10.) 15/11/2018:: *The One, The Many***: commission development::**
Since receiving a confirmed date for the project's launch, development of the final artwork has steadily come together for myself and Juan. One of the biggest inspirations for us was the completion of the press release for Art Gene (please see Appendix…). In this one aspect, we pull together the idea that the piece would mainly consist of text, thereby making the work quite aesthetically different than previous works displayed on the Art Gene's online exhibition space. This idea came off the back of the description of the work, where we detailed that we would construct a historical meta-narrative of Art Gene's locality, which would be simply based off of generic Internet research, i.e. Wikipedia and other sources of a similar nature. Furthermore, Juan began playing with formatting designs for the press release, which were visually engaging, and thereby (hopefully) enticing for an audience member to read through. It was through this setup that we decided that we would load the final text that was to be made with several different collages of popup windows, loaded with memes and gifs. This way, as a user continued reading, they would encounter designated HTML elements that were rigged with the popup engine's functionality. An important aspect in all of this was Juan's original gathered list of memes and gifs from his preliminary research, which was categorised via various tags (please see Appendix…) such as History, Acceleration, The Internet meme, The Spirit of curiosity to name a few. By developing this preliminary taxonomical system for the grouping of memes and gifs from our research, we gave ourselves a guideline on how to research when developing the final meta-narrative text.

For this final text, the breakdown of the work went like so: Juan was to continue the research he was conducting, while I was to add my own research along with the references used. Once that was completed, I was tasked with the write-up of the final text, while Juan was tasked with energising the text's aesthetic, much as he did for the press release. At the same time, he was also to go through the text indicating where the popup triggers would be, and which trigger corresponded to which category of memes and gifs to attach to each. Additionally, for the last

stages of the build, I was tasked with the final install, while Juan was tasked with using the application and testing it to fish out any potential bugs. Another important point in this runup, is that we changed the name of the piece from *Trolling is the New Punk* to *The One, The Many*. This fact was hugely helpful for the development of the final work, mainly for the reason that it freed us from the previous project's restriction, i.e. the Internet Troll, and allowed for us to explore the idea of a meta-narrative with the popup window as an aid to creating a scattered narrative.

One significant thing that came from all this was the completion of a popup blocker detector that actually worked on all of the big three's browsers (Google's Chrome, Mozilla's Firefox and Apple's Safari). In the previous project, *Trolling is the New Punk*, we had attempted to code a simple function that would prompt an alert window, telling the end user that they had to disable their popup blocker if they wanted to experience the artwork in its fullness. This issue came around again while testing the platform, and with so much invested in this project with Art Gene already, we set about to get this aspect working. The final code is:

```
// Popup blocker detector
var test = window.open("",'test',"width=400,height=400");
if (test != null) {
  test.close();
} else {
  alert("Please make sure your popup blocker is disable for the good stuff!");
  test.close();
}
```

Essentially, here is how I got this thing working…

During my time developing other projects for Agorama.org.uk, in some of my digital literacy research I came across Laravel's community site, Laracast, which had loads of videos on learning to use their PHP framework. Now, while I did not use Laravel for *The One, The Many*, one of the videos from their beginner's tutorial stated that when writing logical phrases, i.e. if else statements, it is better to write them in a restrictive fashion than an inclusive fashion. Thus, what I understood they were saying was that you should start with what you don't want, else do this other operation. Here is an example of what I mean below:

Let's say you are you are looking for odd numbers in an array in a not restrictive way

```
var array = [0,1,2,3,4,5,6,7,8,9,10];

for(i = 0, i < 10, i++) {
        if(i / 2) {
                console.log(array[i]);
        }
}
```

Now, there is nothing wrong with the statement above, however, if we suddenly wanted to look for a different type of number like those divisible by 3, or prime numbers, etc. then the statement above would have to be enlarged, as so….

```
var array = [0,1,2,3,4,5,6,7,8,9,10];

for(i = 0, i < 10, i++) {
        if(i / 2 || i/3) {
                console.log(array[i]);
        }
}
```

The problem here is that I found on certain systems and browsers, such as Chrome, the code tends to be read really badly in this fashion, i.e. that the end result might not be the desired result, therefore it is recommended to do this statement in a restrictive sense:

```
var array = [0,1,2,3,4,5,6,7,8,9,10];

for(i = 0, i < 10, i++) {
        if(! i / 2 ll i / 3) {
                console.log(" ");
        }
        console.log(array[i]);
}
```

Essentially, in this above example I have kept the statement the same but I am telling the computer to look at all the numbers. However, instead of saying if they are this and that, do this, I am telling the computer, Look at the numbers and if they don't match what I want print a blank space, otherwise please continue printing the numbers. On a small scale such at the example array provided, this type of statement variation isn't the most important thing. However, in more complex tasks, i.e. checking if a browser is opening a popup window or not, there are several variables to take into account. For example, in my previous attempt I had upwards of three to four parameter checks - if the window was smaller than 0, equal to 0, if it was null (the problem with Chrome), and this seemed in my perspective to cause the original problems with the popup blocker detector. In the new statement above, I decided instead to query the system as follows: If what's happening to the test popup window is not equal to nothing, do nothing, else please alert the user that they should turn off the popup blocker. I think it was an elegant solution to a longstanding functional problem.

11.) 24/11/2018:: Installation for *The One, The Many*, and final reflections::
This past week entailed the final stage of the exhibition launch, which was the launch page on Art Gene's online exhibition space, the Digital U. From our previous conversation, Art Gene was very keen to still have parts of the artwork on their page, which in the end is composed of the anaesthetised press release Juan did, with a couple images from our research that were left out of the final presentation for *The One, The Many*. I did attempt one final time to implement the popup engine into the Art Gene website, however, due to technical difficulties, in the end we agreed to use a jpg image of the original text, instead of the text in HTML format with CSS injected directly into those HTML elements. It would have been nice to have implemented the popup engine on the site, because the final layout that I sent through to Ruth could be considered an artwork that they could keep (please see Appendix), which I told them when giving them the file, explaining that they would probably want that file in their archive as well.

One key thing that was proposed to us by Ruth, the online exhibitions curator, was that we could attempt an intervention on various pages of their website, thereby resurrecting one of the key elements from our original proposal, which we did. There are three pages in the regular website now that have memes we selected embedded into them (please see Appendix). I think this final move was really a nice play from Art Gene and showed their commitment to artistic practices, because honestly during the process there were several times that Juan and I wondered to ourselves whether this was the appropriate place for our work. This inclusion completely changed the dynamic of the project in a good way and allowed for us to move past the 'canvas' which I think is really nice. Furthermore, in terms of the work developed for Art Gene, it has really highlighted for me this trolling/hacker/memetic aesthetic, and I have told Juan I would like to explore it further and see how far we can push others to let us in and troll them a little, but more importantly to make the content fresh and have that element that takes it out of the current standard for Internet, which unfortunately contains artists in a space they cannot escape from – thereby removing one of the vital aspects of art, that of institutional critique.

Appx.3.2 Agorama

Agorama is the initial artist-led curatorial initiative that I founded with two other curators (Amy E. Brown and Miriam La Rosa) during my MA in curatorial studies. The project was started as the online arm of the collective *amaCollective* (formed of the same members) and was seen as a curatorial strategy to engage with artists working with new media.

Agorama's first commission was with Juan Crespo and Enrique Tutor-Torres, who formed the artist-led curatorial initiative *PILproject*. After this initial project It was decided that amacollective would split into two separate entities, one being amaCollective with only Amy Brown and Miriam La Rosa, and the latter group would be comprised of Agorama (myself and Inês Costa). Following the split, Agorama focused its curatorial and artistic activities in actively engaging with artists on a collaborative level, utilising my skills as a fabricator to build ambitious artworks and artwork components outside of our engaged artists' reach. Currently Agorama is engaged in several branches of activities, namely: the Server Co-op, a socially engaged artistic project that seeks to create an alternative Internet with p2p technology; artistic projects conceived by Agorama's members; artistic residencies, a programme where Agorama invites artists to have a technical residency where they have several sessions with me and Max Dovey and are advised on new technologies and collaborate to develop a new commissioned artwork. These residency projects culminate in an exhibition that is curated by Inês Costa and Anna Viani. Agorama is also engaged in educational activities whereby we run practice-led workshops focused on developing and expanding artistic skills.

The following Appendix contains the documentation from Agorama's two case-studies in chapter 3 (3.3). Each case-study contains an overview, including conceptual framework, build documentation and any additional resources pertinent to my research.

Appx.3.2.1 Projects Timeline

Agorama's first commission: PIL Project 1.0
Exhibition at Central House, London Metropolitan University,
May 2015
http://pilproject.net/

Geltung [validity]: perception of a natural right
GENERATORprojects, Oct – Nov 2017
http://geltung.Agorama.org.uk/

Kubos Neros Screening Platform
NEoN Digital Festival 2017, Nov 2017
http://kubos.Agorama.org.uk/

Raven Row Working Space Residency
Studio space, Jun 2018 – Dec 2020
http://www.ravenrow.org/events/groups_and_organisations/

Server Co-op Project
Active online server project, Mar 2018 – Current
https://coop-map.Agorama.org.uk/

For the Time Being
Artist commission, *Moses the Lonely Londoner,* May 2019
Photographer's Gallery (London), online & on Snapchat
https://moses-aloetta.Agorama.org.uk/
https://www.facebook.com/mosesthechatbot/
http://moses-stream.Agorama.org.uk/

Swayze effect
Platform Southwark, Sept 2019
(Agorama curatorial project)

Appx.3.2.2 Geltung [validity]

The project *Geltung[validity]: perception of a natural right* (2017) is the initial project developed by the now independent online collective Agorama (for further details see Appx.2). The project was organised by me and my main curatorial collaborator, Inês Costa, and developed in collaboration with the artist-run project space GENERATORprojects (Dundee). Furthermore, the exhibition was part of the NEoN 2017 Digital Festival, which takes place every year during the month of November in Dundee, Scotland, and is organised by the North East of North (NEoN) organisation. The overarching theme for the exhibition focused on the notion of 'validity', which was based on a text by Joseph Beuys that explained the many different meanings the word has in the German language. This concept set the stage to allow the participating artists to follow their interests on the topic and develop their works around an abstract view of 'value'. The participating artists were Diogo da Cruz, Max Dovey, Felicity Hammond, and Petra Szemán. Each of the artists was briefed on the concept behind the exhibition and given the single requirement to produce a work, or separate works, for both the physical gallery and online Agorama space.

The artwork presented on behalf of Diogo da Cruz was the progressive research project *WORDCOIN*, which proposed "the implementation of a new currency, that will give a literal value" to the words spoken by a person. The gallery installation took the form of an infomercial booth that worked as a stage and had a perspex podium at its centre, which was used for the live performances by da Cruz on the exhibition's opening, and the NEoN festival walking tour. For Max Dovey's project, he proposed an investigation into blockchain algorithms, which culminated in the artwork *Breath (BRH)*. Dovey had been researching the history of the respirator machine and attempted, for the project, to implement the human action of breathing into a respirator machine as the element of 'work' and 'proof-of-work' in the blockchain algorithm.

Felicity Hammond tends to utilise the digital as a place of research exploration and as an artistic medium and has a practice that is largely physical. For the commission *PROPERTY,* Hammond decided to directly focus on the locality of Dundee, and specifically the waterfront development that was underway at the time[44]. Conceptually, Hammond was interested in the digital renditions of the proposed Dundee Waterfront that were in circulation and was interested in investigating these digital objects, their aesthetics and social power in pushing positive messages of change, such as rejuvenation.

Szemán was selected for the exhibition *Geltung [validity]* by Agorama's collaborator GENERATORprojects. One reason for her selection by GENERATORprojects was because GENERATOR's committee saw her as an ideal candidate that would normally be associated with the artist-run space's exhibitions programme. These connections GENERATORprojects based their selection on revolved around the relationship between Petra Szemán and the lead artist of the NEoN Festival in 2017, Kelly Richardson, a relationship that stemmed from Petra's undergraduate studies, where Richardson had been her tutor and mentor, thus the committee thought this relationship between the established and upcoming, teacher and student, worked well with the project space's mission outlook (Appx.2.2.5).

Appx.3.2.2.1 Build Documentation – Diogo da Cruz

Built Documentation – http://thebankforargumentation.Agorama.org.uk/

Table of Content
1. **19/09/2017:: Initial email and Skype meeting about online element**

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[44] At the time of commissioning (second quarter of 2017) the V&A Dundee was still not completed.

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1.) 19/09/2017:: Initial email and Skype meeting about online element::
Today marks the end of the first initial conversations with Diogo on the potential ideas and possibilities that could be achieved for his online line segment. Our conversation started after my email to all the artists about the online structure for the web exhibition. In response, Diogo mentioned that his project, *WORDCOIN*, actually already had a URL dedicated to the project (http://wordcoin.net). However, while he had this URL, and wanted to make sure this was part of the overall project, he mentioned that he was interested in trying to produce something, related to banking that tied into the overall project of WORDCOIN. Unfortunately, he didn't seem to have a clear idea at that exact moment, which was due to timeframes and ambition limitation. My first reaction to this email was that Diogo wanted to achieve something, but it was a matter of capacity (what was actually achievable) and means (if the resources would be available to realise his ambitions).

When responding back to Diogo, I first suggested a Skype meeting for further conversation (which took place just earlier today), but I also wanted to clarify that I encouraged the usage of his already established web platform for the project. To first describe the platform: it is a very straightforward platform that documents the project's progression, while using the aesthetic of a marketing page, or infomercial. My first reaction was that Diogo, if he chose, could get away with simply displaying this for his online content and it would work perfectly within the distributed exhibition. The reason for this thought was because of the structure of wordcoin.net compared to the rest of the project. It reflected the process that Diogo had conceived for the physical version - a pitch to the audience about an idea for a new currency over argumentation. Therefore, from my perspective, the online version mirrors the physical content in a complementary fashion. That being said, despite these thoughts, I was very happy to hear that Diogo was open to developing a progression for his artwork.

Moving on to our Skype meeting, it was very productive. The first thing we did when Skyping was for him to give me an in-depth explanation on the overview of the project, telling me the story of the conception process and how this idea to place a currency value on words came about. From my understanding, WORDCOIN is the solution to Diogo's observation of a declining culture of wit, or constructive argumentation. Examples he gave included, of course, the now US President Donald Trump, but this was less about his social media activities and more about the idea, regardless where his platform was (on or offline), that his speeches, arguments, anecdotes all made little logical sense, and are not well-constructed arguments. The problem he observed in this example was the uptake of other individuals utilising the same lack of thought in their own arguments, and furthermore how these arguments have somehow gained traction. In other words, this was becoming the norm - intellectual argumentation is in decline. I think this explanation clarified a lot of things for me. First off, that WORDCOIN was not a Bitcoin, not even in the slightest comparison other than both are a form of currency. WORDCOIN was conceived as a counter-measure and artistic response to an observation, thereby showing that Diogo's utilisation of these ideas of finance, marketing, banking and currency were strictly conceptual tools. Whereas Max's Breath(BRH) project actually investigated the potentiality of crypto technology.

Once this overview was established, we began discussing different possibilities and immediately Diogo expressed that when he originally conceived this project he envisioned the artwork to also have a bank. Essentially this bank was all of his ideas for the project made true. An individual would sign up for an account then, once they had an account, they could deposit arguments, which would subsequently be valued and converted into WORDCOINs. In addition to this, users

of this bank would be able to trade arguments between each other. I was taken aback at first, because I was surprised to hear such a well-thought-out idea, and it was apparent to me why Diogo had been sceptical of achieving this. The problem was finding someone that could perform the programming work. That being said, we ended the conversation with the agreement that I would get back to Diogo after researching about potential frameworks we could use that might cut time down, or if we could simply do something from scratch if the time allowed for it.

2.) 29/09/2017:: Research and development for "The Bank for Argumentation"::
In my research and development for the proposed platform from Diogo, I have been hitting a lot of obstacles. To return to my earlier conversation with Diogo on the platform and potentially what he would like to see achieved, he explained to me that he envisioned the online WORDCOIN bank to have several sections. The first was the registration and login pages, after that there would be the individual user's account page that would detail their holdings, how many arguments they had, total WORDCOINs etc. From here, there were two further sections - one was the deposit section, where a user could write their argument and submit it for valuation, and finally a section for trading arguments with other users. My initial thought when Diogo described these sections and their operation was that potentially we could re-appropriate an existing framework, such as those used for forums. If we think internet forum, while they can seem pretty simple and straightforward, they are in fact loaded with a variety of methods and functions that allow users to sign up and register, login, post discussions, reply to a discussion, have private messaging services, and email notifications, administration privileges, and so on. Thus, my thought process was that if we could utilise an open-source framework we could break it down and mould it into the platform for the online bank.

I began my research by first searching for frameworks that existed already for Internet forum platforms, and in particular I kept being prompted to the PHP framework, phpBB (https://www.phpbb.com/). BB stands for Bulletin Board, and it seems from my investigation most frameworks model themselves off of the original Bulletin Board system prior to the WWW. However, I immediately ran into the problem when setting up the framework on my local environment, which was that this system, like many others, was based on a core CMS, whereby the user or person setting up the site could be prompted to use a new UI for customising their platform. While this isn't bad, I immediately came up against the problem that I found when working with WordPress, custom databases. Sure, systems like phpBB and WordPress have sophisticated architecture patterns, multiple uses and a flexible database structure, but what if you want to create a table of arguments that only belong to one person, and then generate a monetary value that isn't actually a real currency? Furthermore, how do you then use this flexible framework to allow users to trade and exchange their data with each other, i.e. passing data from one row to another in a table? The answer is you can, but you will have to re-write quite a lot of the internal code to make it work. In the end, understanding my own skills and previous experience, I realised that it would actually be quicker for me to program something from scratch, than attempt to learn a new framework just to take it apart.

This prompted me to begin programming the platform from my own developed framework that utilised the MVC pattern architecture model. What is MVC? It stands for Model-View-Controller. Essentially, it is a pattern that dictates a separation of components, from the backend to the frontend and, if used correctly, a frontend developer could be working on the design while a backend developer could be working on the server side, with neither impeding on each other's job. I believe an important aspect of this architecture pattern is its object-oriented programming (OOP), which was important for this project. As Diogo had been very clear about the different sections and functional operations possible for the platform, using OOP I could develop specific classes (Models) for each of the components. Once this was complete, the next stage would be to develop the controllers (which are also object classes) that would effectively communicate with the Models and dictate the views that users would see, depending on whether they were logged in or performing some other task. Yet, there was one thing I did not anticipate, and that was the need to create a login/registration page, and then a user exclusive area on the website. Unfortunately, to create this basic structure is extremely difficult, because there are several things someone has to take into account. For instance, a user's password. This aspect seems

pretty straightforward - make a registration form and have the user input their credentials along with a password, and that is it. However, the storage of a password is quite complex. When someone puts in their password and the DB records and stores it, it stores it in plain text, meaning if you are hacked or the DB is compromised in some way, anyone will be able to look at your users' table.

Fig.23.*The Bank for Argumentation*, backend operations, example of password hashing. Developed by Alejandro Ball.

In the above example, we can see a preliminary password table for a secure password DB, and we know this because every single password is encrypted meaning, if you are hacked, your users' accounts maintain their integrity.

Another aspect that I did not anticipate was creating cached values for the user session, i.e. when an individual is logged into their account and the webpage knows because of the cached login, thereby allowing this user and only this user into their account. Then there is the added concern that a person might do a double login, meaning that they sign in, navigate away from the page, then back again, but instead of the site reading to see if the user is still logged in, it permits them to go back to the login page and login, which will cause the site (for this specific individual) to have a fatal error. Because of this steep learning curve for the login requirements and user sessions, and user area, I was at a standstill.

There is one promising thing that came out of all of this. During my investigation I came across the PHP framework Symfony, which is a very well-known and widely used framework, and the offshoot of Symfony, Laravel. Now, Laravel is an interesting framework, because it is specifically programmed for users that use Mac and Linux OS's. Up until this point, I had been pretty good with using most cross-platform frameworks. However, the possibility to engage with a framework that claimed to be easy to pick up for programmers of the MVC pattern, with a lot of built-in features, seemed like a possible solution for my problems. Fortunately, many of this framework's platforms, and other similar programming libraries have good documentation and learning resources, and I was able to find a beginners tutorial for experienced programmers to start with Laravel (https://laracasts.com/series/laravel-from-scratch-2017), and within this tutorial I found basic lessons for programming a registration and login page.

I have now reached a point where I believe Diogo's needs are achievable through Laravel's framework. So, I will be moving forward with the development for *The Bank for Argumentation* with the Laravel framework.

3.) 11/10/2017:: First prototype build plus feedback for "The Bank for Argumentation"::
In today's reflection I will be discussing the final stages of building the first prototype for The Bank for Argumentation, which was uploaded a couple of days ago and shared with Diogo yesterday.

Beginning with the final prototype build, last time I left off right at the point when I was moving to work with the open-source PHP framework, Laravel. I began this changeover because of the realisation that building a registration and login page for the platform with my own MVC framework was going to be more involved than I had previously anticipated. Additionally, after doing a bit of research on the framework and what learning resources were at its disposal, I found that, for my specific needs, Laravel's ecosystem seemed like a reliable one to engage with. Right out of the box, Laravel comes with several middleware classes that allow for programmers to immediately enact things like a user's section for individuals that have a login. This middleware is known as the Auth (short for Authentication), and it is a class that is enacted when someone logs in. To describe the operation, I will start first with how the MVC model (Laravel is an MVC pattern framework) works. Essentially, when you visit a webpage that uses the MVC pattern everything you see, which would be called the View, is controlled by what is called a controller.
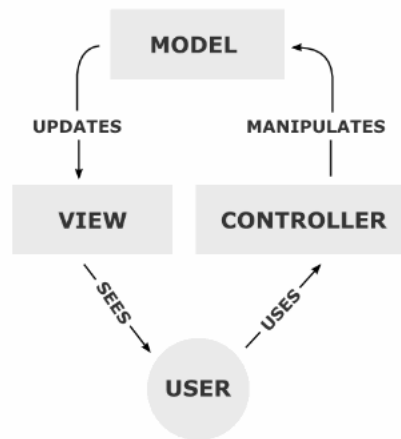
Fig.24.MVC flow chart.

So, from the onset, when programming an MVC application you have to begin the program with a decision about which pages will be visible to all and which will be visible to your users only. If a controller determines your login credentials are real (which is done through the system comparing your login details to those it has stored on its system), it will issue your browser a login token that tells the website that you are an authenticated user and are allowed into the registered users area. In technical terms, if we look at the diagram for the MVC model, the first view would be the login or registration page. When a user enters their details, what they are in fact doing is interacting with the controller, which then validates the information. If the information is valid, the next step is for the controller to do something, which in this case is to communicate with the model (or the backend database) and tell it to load its information into the next view (which would be the thank you for registering page, or maybe the individual's account page).
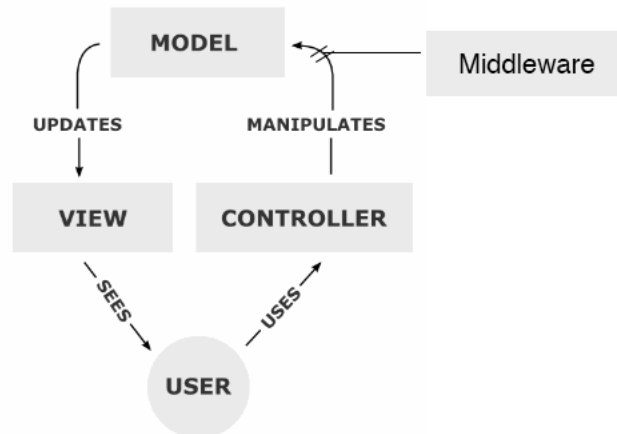
Fig.25.MVC flow chart with middleware.

However, how does the controller determine these things? This is where middleware comes into play. A middleware is another type of class instance that is to be enacted by a controller when determining a certain decision - for instance is a login credible or has a registration been accepted – therefore, in many cases, there are several middleware controllers. Looking at the diagram above, we can see that the middleware is in between the controller and the model. So, when a user, let us say, navigates to the login page and they enter their details and click the "OK" button, the controller enacts a middleware that determines the validity of the details. If the information is true, the middleware returns true with this login token spoken about earlier and this prompts the original controller to tell the corresponding model to load the next view. If the information returns false (maybe because someone misspelled something), the system does the same things except this time it follows a different route, for instance reloads the login page with an error message.

In the case of Laravel, this middleware to authenticate a login is already built into the system, and in addition this middleware comes with the latest "best practice" ways for enacting this system, i.e. it comes with a good amount of hacking deterrence built in. The one thing that it did not come with, though, was a middleware to determine different levels of users, i.e. an administrator user. In the case of The Bank for Argumentation, this is quite important when thinking about the operation of depositing an argument, and then an admin being able to review it and submit an appraisal. Fortunately, Laravel has a very good community support forum and I was able to find a simple answer to my problem: (https://laracasts.com/discuss/channels/laravel/user-admin-authentication).

Essentially, the tutorial, which was given by one of the community members, takes you through the whole process, which is very good because for a new user like me it actually revealed a bit more of how the Laravel architecture works. To discuss this amendment to the middleware system, basically what I wanted to do for the platform was to have the same area for both admin and general user, except that if you logged in as an admin you would be presented with several more navigation options, e.g. appraisal area, broadcast messages to the user, etc. Therefore, I needed an additional middleware that would determine this privilege. Essentially, what the instructions discussed was to use the Laravel template creator and create a middleware that would be called admin. Once this was created, the next step was to access the document Kernel.php, which acts as Laravel's middleware registry, i.e. once registered on this doc the class that was created by the template system would be usable. After this, the next steps were to set up a route that redirects a normal user to a page that says they don't have enough access to

enter that page, and also to add a method into the user class that looks to see if the user is an admin, and to protect the database info of the admin. From there, it is as simple as writing an if/else on the view pages that determine which view to load.

My take on Laravel is that it is a very powerful framework that allows its users to build applications on existing systems, thereby cutting the programming time in half. That being said, I believe that as a programmer becomes more experienced, they will tend to start creating their own MVC pattern that works in their favour, much like the MVC model developed by me. In the end it served its purpose and, for any application that will be taking user data, it is highly recommended because of the quality of its approach and the security features it provides for the application's sensitive data, i.e. user data.

Moving on to the feedback from Diogo, it was very positive, and he believed that it was a very good base to build on. However, one main point that I did not realise was that I initially misunderstood the operations of the trading section and the allocation of WORDCOINs after the appraisal. It seems that Diogo wanted something a bit more like an online store rather than a forum where people would converse with each other and trade. In addition, the allocation of WC was wrong. My initial understanding was that once an argument was deposited and valued by Diogo, the user would be given 5 WORDCOINs and a "bill" with the argument written on it and the representation of how many WORDCOINs it was worth. Fortunately, he has also expressed that he would like to Skype soon, so I will try to clarify these points with him. In the end it seems that things are going according to plan, despite the minor setbacks from misunderstandings. However, this shows the precision that is needed to execute a program in line with the original conceiver's vision.

4.) 17/10/2017:: Further conversation and clarification with Diogo::
Following the immediate feedback from Diogo on the shared platform and the identification of my misunderstanding of a couple of core concepts for the platform, I decided that I would email Diogo a list of question and comments prior to the Skype conversation that took place earlier today. I think this was a very productive step for clarifying the confusion. It was also a good exercise for myself to try and express his concept in a way that I could clearly see how to program these bits, i.e. use the language of enacting the idea in a way pertinent to the fabrication process. For instance, I started my comments by reiterating the idea of the trading post for The Bank for Argumentation, trying to describe it step by step in a fashion that would also indicate how the code is working underneath it all. At the same time, I also recommended certain presentation aspects, e.g. Diogo wants the user to see only a preview of the argument in the trading section (which he calls "Argument Landscape") so I recommended a "Key Points" section for the depositing of the argument. This way, when the user is depositing the argument at hand, they will also have to fill out details in this section, giving us the option to use this additional piece of data for the trading centre and have it as the "preview" needed to entice a person to trade for the argument. In my questioning on the functionality of the currency system itself, I really wanted to understand the fundamentals of how things were supposed to work because, currently in my head, the currency system is an active object, meaning that users will be actively using this currency system as the means to be conducting trades. So, when a trade is completed, you will lose some WORDCOINs that correspond to the price of the argument that you are attempting to trade for. This is actually quite an important aspect, as the internal database tables have to be exact in what they record and how they work together, and I want to insure that these things are exact before we build the design over the framework, because if we get this wrong and then want to go back to change things, we will literally have to rip apart large sections of the platform, thereby putting the whole project at risk.

After our conversation from earlier today, I feel more comfortable with the trading section. It seems to me that was quite a straightforward conversation where Diogo described this field of random argument, thus the name Argument Landscape, which would be presented to a user. However, the individual that would be looking at the Argument Landscape would only see arguments that are not in their own holdings. When the user that is searching this landscape

comes to an argument that looks intriguing, they have the option to click on the argument's link, which will prompt the user to another page where they will be presented with more information about the said argument, except for the full argument, and will be presented with a button that will say "trade for". Once the user clicks on this button, a popup window will appear and inside this popup will be the list of this individual's own arguments, each with a button that will be marked "trade with" which, if clicked, will indicate to the system that the user has selected an argument to trade and therefore commence the operation of trading the two arguments between the owners.

On the other hand, WORDCOIN's currency system is still a little confusing to me. It seems that the currency itself is only a representative figure and not to be used as part of the trading mechanism. Diogo also gave me a list of data pieces that he would like attached to each argument, which include original author and number of times it has been traded. He also has expressed the idea of printing the argument that has been valued the same amount of times as the number of WORDCOINs attributed to its value. This part confuses me a lot and seems like it would be a bit pointless and might confuse the user. The reason that I say this is perhaps I don't quite get it, so it is at this stage difficult for me to visualise the programming for this operation. Personally, I can see the indicator of how many arguments or "bills" the user might have remaining for a particular argument being indicated by a counter, that ticks up if you acquire the same argument again, and ticks down if someone trades for one of your stockpile. Fortunately, it seemed that Diogo also understood that I was still having difficulty comprehending the currency system and told me to do my best with the info, and that next week when he is up in Dundee for the installation we could sit down and chat in person with everything in front of us and iron out the final details.

5.) 31/10/2017:: Final prototype built::
Having Diogo here in person and being able to chat about the website was the exact thing this process needed. To take a step back, the curatorial decision was taken to stagger the release of online content. This was partly to grant time for Diogo's project, but also for Felicity's online one. Felicity's gallery work took a lot of time to put together, and this ate up her time before the official gallery opening. But this was also a chance to release online content for the second public event the exhibition would be part of, this time for NEoN's festival.

As to the in-person conversation about The Bank for Argumentation's platform, the final piece of the puzzle became clear to me. Diogo's ideas for the currency and trading mechanism work as follows. The actual WORDCOIN is to be a representational number of your contribution to the argument pool. Once you have deposited an argument and it has been valued, you are given the same amount of bills or WORDCOINs, each with your argument written on it. In addition, these bills or coins have certain identifiers, such as the creator's ID number, the number of times it's been traded, its current owner's ID number, the number of arguments in circulation. So, these tokens are the things that get passed around but the user never loses the amount of WORDCOINs they have, they can only gain, which they do by depositing more of their own arguments for valuation. In programming terms, the movement of this data utilises several controllers for its operation. One main pattern feature of MVCs in general is that they compartmentalise easily, which is a feature desirable for scaling an application.
Picture this: the Models correspond to the backend database systems so, when looking at the documents that relate to this aspect of the design pattern, what we are seeing is a specific file that when called as an object retains an array of information from the MySQL database (which the model is named after). Next, we have the View, and here what we see happen is that the information from the databases, i.e. user information, deposit information (only for the admin's eyes) and the argument landscapes are rendered. The structure of this grouping of documents is related to frontend development, thus is simpler to any HTML structure that uses a type of templating engine. The final part of the model is the Controller, which carries out the majority of the interaction between the user and the application. This structure, on a small-scale application like The Bank for Argumentation, could easily be run by myself, because everything is organised in a clear fashion. For instance, if I have a problem error, I will look to see if the controller is

correct, because it is the main point of junction. However, I might find that actually the code is written perfectly, so will look to the models and database table to see if there is a problem in there. Additionally, I might actually be having problems with the frontend and have to look at the view documents. So this division of three sections is a good workflow and, if the application expands, each of the three sections could expand on their own terms, with a main engineer leading the lot. It would be an interesting idea to see artists utilise program patterns as a medium for the development of work.

Moving on to the platform's specific operation, the first integral part of the Bank for Argumentation's system is the users' model and database table. This one table acts as the prime index for the whole system, meaning each of the other database tables has one column dedicated to a user_id, which records the ownership of that specific row to the user whose ID is there. Essentially the ID that a user is assigned at registration is their identifier throughout the whole system and could be considered their bank account number. From here the next important aspect is the Accounts model (database) and controller. Essentially, what the accounts controller does is manage a user's account information, i.e. the arguments they have and the number of WORDCOINs their account has registered to it. Due to the amount of operations that are attributed to the accounts section, meaning deposits and trading arguments, I decided that they would be divided as so: Accounts (contains all the user's info, plus creates the view for the main account page, the normal user's deposit page, and the user overview); Deposits (acts as a POST controller for user's info, creates deposit view for admin, has value method for arguments → making a permanent record); Trading Post (creates views for the argument landscapes, creates the show view for a single argument you want to trade, and has the methods for trading arguments).

The deposits controller is an interesting one. When developing the platform's operation, I wondered how I would facilitate the action of receiving a deposit and have it in a suspended state without having to do a massive amount of code to rewrite records in the database. So I came up with the idea that there would be a temporary holdings table that would be called deposits. The idea was that when a user inputted an argument for valuation, it would be recorded to the system without a value to the deposits table. This information would in turn show up in areas only accessible by an admin level user, who would be able to see a list of arguments waiting for valuation. All of this would be controlled by the controller of the same. The final act of the controller would come in the form of the methods the admin uses to value the argument:

```
//main method for creating account record and wallet record/update
    public function value($id, Request $request) {

    $this->validate(request(), ['value' => 'required']);

    $deposit = Deposits::find($id);

    Wallet::create(['tot_wc'  => request('value'),
            'user_id' => $deposit->user_id
    ]);

    $coins = request('value');

    for ($i=0; $i < $coins; $i++) {
      Accounts::create(['subject'   => $deposit->subject,
                'key_points' => $deposit->key_points,
                'argument'  => $deposit->argument,
                'user_id'   => $deposit->user_id,
                'creator_id' => $deposit->creator_id,
                'value'     => request('value')
      ]);
    }
```

```
        $deposit->delete();

        return redirect('/account/pending');
    }
```

Basically, what this method is is a POST method, meaning that it requires an input, which in this case would be the value the admin gives to the argument. From there it creates several new rows in the databases of Wallet and Accounts with all the information received from the argument, but now with the value information. Once this action of creating new records is done, the method is told to destroy the deposit record as it is no longer needed and redirect the admin user to the pending deposits page. A nifty part of the method is the logic for statement that I created for the action of recording the required number of argument records to mimic this action of minting a limited number of coins or bills with your argument on them. Essentially what came to me was that I have to create a record, but maybe what I would do was, before this happened, create a variable that would be the integer representation of the number given for the value and use it in a for loop. Because of the nature of a for loop, I figured that I could have the for loop input a record every time it counted up when comparing itself to the $coin variable (which represents the value submitted by the admin), and this record would be the same, except for the argument's own ID number which would be different. To stop this process, I would simply tell the loop to stop once it reached the target value.

For the trading section, the integral method is the "trade" one:

```
 public function trade(Request $request) {

        $tradeFor_id = request('for_id');
        $tradeWith_id = request('with_id');
        $tradeWith = Accounts::find($tradeWith_id);
        $tradeFor = Accounts::find($tradeFor_id);

// Trade_with user_id change, i.e. id changes from active user to the passive user
        $tradeWith->user_id = $tradeFor->user_id;
        $tradeWith->exchanges = +1;
        $tradeWith->save();

// Trade_for user_id update, i.e. id changed for the user that is trading for it
        $tradeFor->user_id = auth()->id();
        $tradeFor->exchanges += 1;
        $tradeFor->save();

        return redirect('/account');
    }
```

This method is the only record rewriting method in the whole system. For practicality, I wanted to avoid the re-writing of records till the very last possible moment to limit this interaction, thus the reason for the temporary deposits table to avoid the Accounts table having two different re-writing records methods. What is happening above is that when a person submits for a trade, they send two things, the id of their argument they are using for the trade, and the id of the desired argument. From there, the method enacts a search in the Accounts database and retrieves the rows for each ID. The first action after this is that your own argument has its owner's column rewritten with the other user's id (the one whose argument you are trading for), while also adding 1 to the total of the exchanges column on the same record. Then it saves it and moves on to doing the same process, but for the argument that you traded for, thereby making it yours after the trade method is complete and then finally redirecting the user to their own accounts page where they will see this new addition to their holdings page.

I have read in many articles on the MVC framework that argue in favour of having a corresponding model for every controller, so that one controller is only ever interacting with one database. However, in my own development I found this design philosophy to be limiting, slightly devoid of creativity and very restrictive. It would be interesting to observe the maintenance of largescale networked artwork overtime and observe scaling and aging issues. Potentially this might be a good recourse for institution standards of practice in artistic programming methodologies.

6.) 07/11/2017:: Platform troubleshooting, plus artists content received::
The launch for the Bank for Argumentation platform is tomorrow, and it's been a hectic period before the official live date. The first problem that I ran into was a deployment issue, meaning taking the platform from a local development site to a live environment. This live environment is on one of my development subdomains, which I have specifically added the appropriate doc and tags to in order to ensure that it is not indexed by search engines, but all the same moving a project from a local environment to a live host is always a problem. This is mainly because hosting providers have different setups compared with those of your local environment.

For example, in my local environment, I run PHP 7 alongside MySQL's latest version. However, my hosting provider (123-reg) uses by default PHP 5.6, and mariaDB, which is a SQL database language built by an open-source company and not the big conglomerate Oracle. In addition, when deploying from a local environment to a live host, I personally like to refresh the database and have it start from fresh so that, when examining the database at a later date, you don't get things like the index number of a main table starting a 113 (a problem I found recently with the development of PILproject's original website, when analysing the work of the previous web developer).

Another point is that I developed my web app on a Mac, which I have set up a Virtual server for, i.e. I built the environment on my computer for developing and running web applications the way I want. My hosting provider has an old-style shared Linux server. To successfully deploy frameworks like Laravel (where all the corresponding files for the application are put into one directory) you have to find a non-standard deployment, i.e. separating core files in private directories from files that are supposed to show up in the public HTML folder, then rewrite routing documents' source file paths, to ensure that the application knows where to look in the hosting provider for the essential piece it needs to run and render the application. However, I was able to overcome this finer point easily with help from the Laravel community, prior to these problems I experienced this past week.

This fusion for my deployment raised two major problems. The first, which I experienced after sharing the prototype with Diogo, was a problem with my code, written for MySQL, and the hosting provider's mariaDB setup. Unfortunately, the problem was on the main admin overview page (the one that lists all the users and their holdings). What we wanted to achieve was an overview page that would list each person that is registered, along with their account's details, i.e. arguments made, the number they have, number of wordcoins, and trades. The problem was I was trying to group several relational DBs together to bring up specific information to be listed, with several of the data bits having to be COUNT() or SUM(). The problem with this in a relational DB is that grouping several data bits together using functions like COUNT() and SUM() obviously produces integer values for the data. But what if you want to bring in the name of the single user? Well you can't. That is an illegal grouping by SQL standards, because you have to declare some type of grouping for each grouped value. Fortunately in MySQL, they have a function called ANY_VALUE(), which allows the addition of these non-contaminated values, but not in MariaDB. From reading the documentation on mariaDB it seems that they never thought to add in a function value like this, because they do things a little differently, which is to be expected as it is another company. But for my purposes this meant I had to do an extensive amount of research to accomplish what I wanted.

To clarify, in the end I decided to let the issue go and go for a standard Laravel built-in function:

$users = User::all();

Which provides what I needed, i.e. the appropriate associated information separated by user. There are two problems with this. The first is that this brings up all the data from all the tables, thereby making me have to write in a lot of PHP code into the view (which is not the best practice in a MVC pattern). The second is that I wanted this overview list to only list people who had actually contributed an argument to the deposit page. Again, this was because it would have been the most efficient use of the data and application.

The function that I wanted to use is below:

```
$usersAcc = \DB::table('wallets')
            ->leftJoin('users','users.id','=','user_id')
            ->select(\DB::raw('count(user_id) as cnt, sum(tot_wc) as tot_wc,
            any_value(username) as username'))
            ->groupBy('username')
            ->get();
```

Now the idea behind this was to use the Wallets table in the database (which only holds the overview record) to calculate all the figures, which would then be joined by the user id and their account name, and this would be grouped together. The important aspect about this is that, by using the wallet in this way, I could omit users that did not contribute anything. It's a minor detail that I had to let slip in the end. But this deployment issue seems to be a very relevant thing when developing web applications.

The other aspect that I ran into was brought to my attention by Diogo, who sent me error photos when he was trying to login.
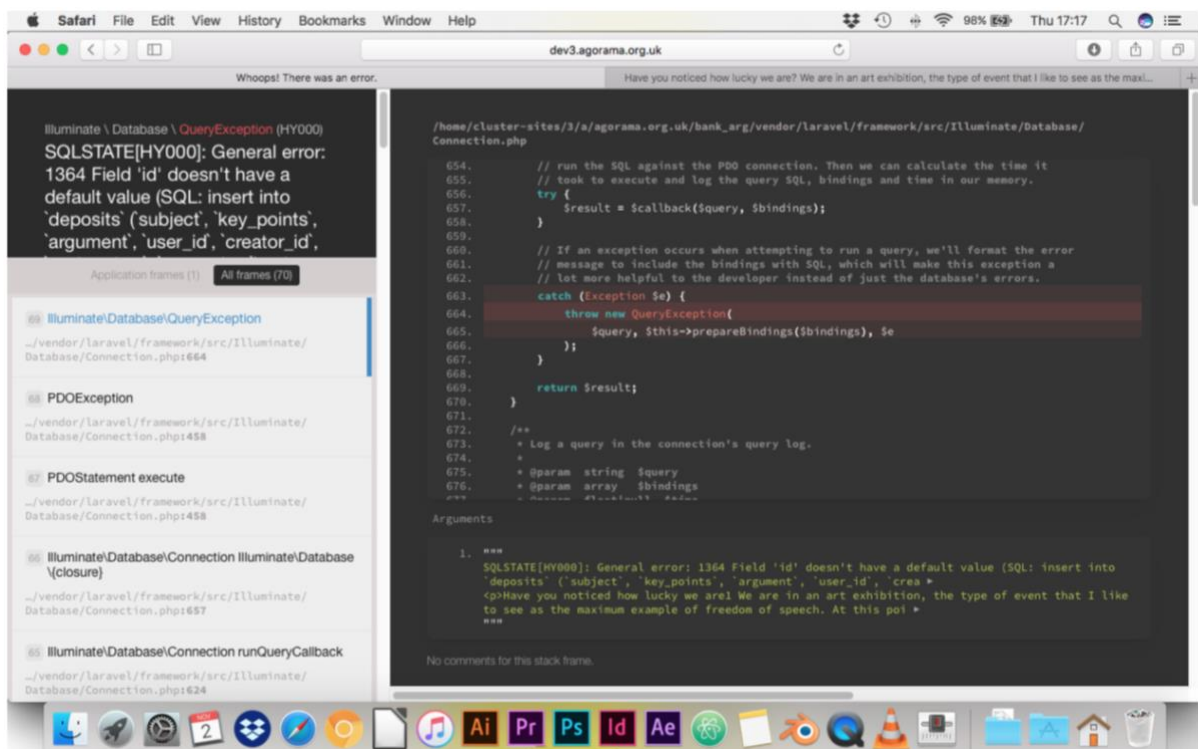
Fig.26.*Bank for Argumentation.* Image of live error page.

In this circumstance the issue was in fact another problem with the DB and deployment. Unfortunately, when refreshing the tables, i.e. wiping all the test data, certain column values in the deposits table were set to not have a NULL value, thereby throwing the whole system into an error. The problem here arose from how developing for a DB can work, meaning I had used a

script to inject false data into my tables so that I could get the application running and its operation correct. In the case of deployment, the DB is completely free of data, meaning certain items in the data tables will be NULL in value before they are aside a piece of data. This is a difficult problem to spot during development, and in my case this problem appeared during deployment. This was easily rectified, however it's a lesson and an experience that will shape future projects, meaning that I will be shaping my local environment to match my live hosting provider, to avoid these issues in the future.

The final design that was provided by Diogo earlier this week went up very, very quickly compared to everything else. It was slightly a different experience to that of Petra, who I would say was actually a more involved aesthetical project, therefore required a lot of attention to achieve its non-linear design.

7.) 10/11/2017:: Afterthought on "The Bank for Argumentation" launch::
Today's entry will probably be the last of the documentation about the platform created in collaboration with Diogo. I wanted to have a quick reflection on the process thus far. It has been an interesting process which has shown me several possibilities about curating content in this way. The first thing is that this process has been similar to other projects I participated in as a technical artist assistant, where I effectively became a collaborator by proximity. In this case, while similar, I felt that I had more authority in the collaboration to add my thoughts and help shape the artwork. I believe this was only possible because there was no middle person to go through. I have experienced several instances in producing artworks for individuals (as a technician and fabricator) where I was this middle person, and in those cases I always felt uncomfortable communicating with too many people, because I am a firm believer in the saying "too many chiefs spoil the broth", meaning, if I am a technician or fabricator having to work with both an artist to make a work and a curator to exhibit the work there are always disconnects. I do not believe in this utopian ideology of several parties working happily together, especially when in reality they don't all have the same objectives, thought process or goals. No, in fact the majority of the art world's artists are really sketchy about curators in my experience. Why? Because the majority of the curators out there seem to not do any physical fabrication or installation work (not saying all, as I am different to that and know several curators that are also like-minded as me), but still dictate the work's context. In my experience, when in the role of a tech or fabricator, I have always noticed the affiliation the artist tends to make with me, so that it suddenly becomes a power game between the curator and me, and the artist and me, where I gain the most trust of all parties about the process because of my situation.

Being the curator of this show, as well as one of the techs, and also a fabricator, I felt was a healthy position to be in. Why? Well, first off, let's look at this process with Diogo. I understand his work so well now, to the point that if I were to try and bend the context of the work for a curatorial narrative (which unfortunately happens more often than not), I really couldn't. The reason being that I became so intimately involved because I took part in the creation process and became invested in the work, and thereby feel a necessity to portray the artist's vision and not my own. As to ownership, well yes, I do have an authorship stake in the project, but only in making Diogo's idea physically real in a computer program.

Another important aspect is the fact that I believe curators are not only facilitators, but also enablers. By curating and inviting artists to realise work, the curator becomes an enabler to the artist. Through my practice, especially on the side of the curator, I have always emphasised my technical ability as part of the curatorial process and adding an additional enabling element for the artist. And it is the same with programming for network and internet art, you become an enabler to someone's thought process. I think this is especially important with the progression of network technology, and the hierarchal gap it is creating between normal individuals, artists, and technologies. If we are to engage with new media art, the curators will have to become involved more thoroughly with the creation process of the platform where the artwork is to reside.

To finish off my brief reflection, it has been a pleasure working with Diogo and making real his vision and helping him progress to a 'next' step in an artwork or project.

Appx.3.2.2.2 Build Documentation – Petra Szemán

Built Documentation – http://tokyogaiden.Agorama.org.uk

Table of Content

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1.) 21/08/2017:: Email on suggestion for online element::
Began today the conversations with Petra about her online component for the Agorama online space. After her initial email back at the end of July, she seemed very keen on creating a distributed artwork, as well as to enter into a dialogue with me over different potential ways this part of the project could go forward.

To continue with the beginning of this discussion with the artist, I decided, instead of overloading her with technical talk, to first give her several examples I have seen artists use when working in a multiplatform exhibition (or distributed exhibition). For example, extending the content of her artwork, by situating the video installation she is proposing also on the web in its own dedicated platform. The other option that I suggested was the idea of complementary elements that would re-enforce the context of her artwork, or potentially exhibition documentation and research that she felt was particularly important to the physical artwork. I did not really go into explaining what a fully distributed artwork is, i.e. what Marialaura observed when a complementary exhibition or art component fully disseminate their information and become essential for each other's existence, because I did not want to overload Petra with too much information at this stage. I realised earlier with Felicity (as well as in other experiences like the Art Gene commission), that too much information about these types of distribution affects their natural production, meaning that I wanted Petra's artwork to naturally develop into one of the observed distributed exhibition models Marialaura observed.

I think in the end this was the most appropriate strategy to follow, because I feel it positions me as creative collaborator, or assisting technician, or fabricator with the artist. Let's see what happens!

2.) 04/09/2017:: Researching for potential readymade platforms or frameworks::
After Petra's reply to my email strategy suggestion, based on my observations and experience, I was happy to find that my earlier suggestion had seemed to help Petra in her thought process. In her earlier reply she leaned towards exploring aspects of the work that were not going to be contained in the moving images she produced. In addition to this, she seems to have expressed interest in making this work truly multi-platformed. In her email she suggested that she wanted to go beyond research and documentation and wanted something that "allows for exploration of aspects of the artwork" (See Email Appendix), and quickly suggested potentially an interactive surface that could occupy one page or a subpage.

I really liked these finer points, because this has made my life a little easier in regard to researching potential platforms to suggest to her. Personally, I have seen interactive surfaces created on platforms like WordPress, not really on Tumblr. The readymade platform Wix also has a good CMS that allows for some interesting visuals to happen on it. However, upon further research looking for simple one-page interactive surfaces or maps, I noticed that the ones I did find were normally custom HTML and JavaScript pages. Those that existed on frameworks like WordPress, Tumblr, or Wix, were quite heavy, meaning that the webpage was a bit slow to respond compared to the custom HTML and JavaScript pages. This can be checked with any

web browser. Simply go to the developer's tool option that opens up the "inspector' window and select the "Network". Under this option the user will be presented with the load statistics for each element on the page and the webpage as a whole (meaning on a slowly loading page this option can be used to troubleshoot that webpage and isolate the content or element that is slowing the load process down).

In the end, when writing back to Petra, I still kept all options open to her, i.e. that she could use any of the readymade platforms, which would give her more autonomy, or go with a custom HTML and JavaScript page. Though I did state towards the end that, hearing her initial thoughts, a custom page hosted under one of Agorama.org.uk's subdomains was potentially a good option that would allow for more freedom to achieve what she was beginning to envision.

3.) 25/09/2017:: Confirmation of artwork plan
After my platform recommendations and potential inclusion of myself as a lead collaborator for the development and building of this web application, I suggested to Petra that she take some time out to think about the make-up of the online work. Over the past few weeks she has been promising us that the video would be completed and sent over to me, Inês and Andy for viewing, and more importantly for assessing the technical requirements. Today she has finally got back to me on the plans that she's thought up for the online element of the work.

Essentially, she is suggesting creating an interactive map, where all of the visuals will be her drawings. In addition to this, there will be points on the map where the user will be able to interact with it and have several things happen. Reading through her email, I envision the operations to be like so: Imagine this interestingly hand-drawn map. There is no menu across the top of the webpage. When the user navigates to this page with the mouse this is where all the interaction and effects created by this action take place. In one instance, the user passes over a point of interest and then suddenly the point of interest highlights, indicating to the user that this is an interactive point. Another thing that can happen is that, while hovering over this point, Petra suggested a route line could appear, connecting the point in question to other points on the map, thereby giving the audience a sense of linear narrative progression, or at least an indication that there are more points on the map. The final interactions would come in the form of labels and popup boxes, i.e. when the user clicked or performed some other action on the point in question. These interactions would propose instances for further content dissemination to the audience member such as writing materials, images, videos, gifs, etc.

What is very nice about Petra's plan is that she provides a very good overview of the project and all of the details she'd like to see. Personally, maybe a couple of examples would be a nice visual aid to assist me, however, after spending some time with Petra's aesthetic I believe that I know the look and feel for her web application. My immediate thoughts on the construction of the project is that it could be a single HTML document with clever JavaScript and css aiding the aesthetics of the page and operations. At first, I did think why not use the MVC framework that I have developed over time, or even Laravel's framework (which I have been using for Diogo's application); however, I think simple is best here. There is no database or server-side interaction, only really user side interactions, meaning that I can make its architecture simpler, maybe even bypassing things like Bootstrap altogether.

4.) 06/10/2017:: framework development
After having the confirmation of the type of work needed for Petra's web application, I have spent the last weeks developing and designing the framework to be sent over to Petra. This took several initial steps which I will online below:

1. Planning and research
2. Dry boarding the project (or producing a non-digital plan)
3. Developing initial visual framework with highlighting hover points and routes
4. Developing popup window programming operation

Beginning with point 1, this was general research used to describe to Petra the different options in front of us. For this research, I focused on technical-centric things, i.e. similar frameworks, potential scripts that I could reuse, guides and tutorials on developing this type of work. My research in this case (after my thoughts from receiving the instruction from Petra) focused on interactive elements at a user level, meaning that I was investigating scripts and potential programs developed in JavaScript. In this particular case, I found that JQuery, which is a very popular JS library that is free and open-source, is a good place to begin. The reason that I knew this was because in my time developing parts of the video distribution app, I had become acquainted with JQuery and the implementation of the control buttons, and the replacing or switching out the play control for a pause one. Thus, in my mind, knowing this simple interaction, I knew that it would be a good place to start with for the map. For instance, a function that I immediately found that could help with the highlighting points of interest:

```
$('#point-of-interest').hover(function() {
            $(this).attr(change the 'src' of an img element).css({change some css for the
            element you are replacing});
    });
```

In this function we find the basics of simply replacing one image for another. Now, while that does not seem to be all that big a deal, for our purposes this is really good, because that means that we have our function (even on a basic level) for this interaction. The next interaction is that of the routes. As I was already researching JQuery functionalities, I decided to limit my search to JQuery, in order to limit the number of separate scripts and plugins that would be needed to get the piece working. In my searches I found this:

```
$('#Route-1').slideToggle("speed of slide");
$('#Route-1').slideDown("speed of slide");
$('#Route-1').slideUp("speed of slide");
```

Now, these three functions are in fact a variation of one function, which is JQuery's slide function. This function essentially allows an element to appear and disappear with a sliding action. Things like this are mainly in my experience used for dropdown menu bars and having other textboxes suddenly appear when a mouse cursor floats over or click with a DOM element. While I didn't actually have the web application together, or in a state that could have been used with the testing of these functions, I was fairly confident that JQuery was the library for this job and that I would do well to stay with this.

In regards to the popup windows, I briefly looked over this part, but from my investigations this aspect could be added into an existing framework, which was really nice, because I didn't necessarily have to plan this part out as precisely as the highlighting points of interests and routes (please see the section on point 2 for clarification). I did notice that there were solutions to this through the use of Bootstrap and the inclusion of another JS program (downloadable through NPM), which meant that it would be pretty straightforward (at least I thought) to install once everything else was done with the base map.

For point 2, I took all the research and resources attained from that session and began to make an actual plan of attack. I guess that this section of the work could be considered a dry board plan before actually moving on to the physical build. I think that the most important aspect of this step was the strategy that was devised. For instance, the actual design for the background and points of interest… how would this be done? Would I do a mock-up myself, would the points of interest be physically located on the background map, or would they be added later? Also how would the routes look? Would they have a freehand drawn feeling, or would they just be straight lines? Furthermore, there was the question of how to effectively present the concept to her, i.e. trying to match her aesthetic and allow easy visualisation of the framework but with her content inside of it. Then there was the problem of how to deliver this framework to her, meaning would I simply send the files all together with a readme that would direct her to click the index.html file, or would I find some sort of live sharing option?

In regard to sharing, I actually had this same issue with Diogo's project and in the end decided that the best option would be to utilise the Agorama hosting structure for these purposes. Up until now I have been trying to collage together this loose web for the Agorama footprint, and in earlier research I have been looking into subdomains. Subdomains are actually quite a common structure for web developers and also quite common to see in use by earlier net and Internet artists, e.g. Jodi's "http://wwwwwwwwww.jodi.org" is actually on a subdomain of http://www.jodi.org. This led me to come up with a solution for both Diogo and Petra that involved not only locating their works in subdomains (which was previously agreed upon between all of us) but also starting a number of additional development subdomains that would not be indexed by search engines but could be shared with the artists for review of the frameworks. In my case, I already had one subdomain for development that was being utilised for the main Agorama exhibition page build, dev.agroama.org.uk. So I opened two more, dev2 (Petra) and dev3 (Diogo). Of course, the best part about this strategy is that once something is finished and finalised, I am then able to easily move these "development" files into the final projects folder in Agorama's hosting provider.

With this aspect out of the way, I then moved on to the actual build and how to approach it. I decided the best plan of action was to approach the framework like this: First, I would find the design that I would use, which I decided would be a video game map from the 16bit era that had several location points that were visually similar. Once I had this image, I would record the size in pixels, to make sure that the webpage would only be for that size (meaning no mobile responsiveness in shrinking images). Once I had done that, I would use Photoshop to edit the image I would be using and would cut out one of these points of interest (that could be used in several locations) and create two versions, one normal, the other with a highlighting effect for the JQuery switch. The idea here was to use the background image as a guide for the placement of the points of interest, thereby preventing any mistakes in that aspect. The second thing I would do is then create the routes on this same Photoshop file.

Fig.27.Tokyo Map for *I keep forgetting I've been to Tokyo: Gaiden* (2018). prototype layout presented to artist for approval.

Once all of these aspects were in place, I moved onto dividing up the entire image into a grid. The reason for this was to begin the HTML planning. In HTML you have different elements that make up a page, the Header, Body and Footer. For all intents and purposes the Body is the main content element, therefore I knew that the body's background image would be the entire map:

```
body {
        width: 1536px;
        height: 1024px;
```

```
        background-image: url(../images/1999AD.png);
}
```

In the example above, we can see what I mean. I have utilised css to identify the body element and insured that it has a maximum image width and height so that there is no leftover white or image bleed, affectively cutting parts of the background out. Finally, we can see that I have also assigned, through css, the background for the element by linking to the image's location in the web architecture.

Essentially what this plan entailed was that I would know the exact size of the background image, thereby allowing me to create a grid that overlaid the image (as seen in Fig.27). By setting up this grid beforehand, I knew exactly where every point of interest belonged and would need little to no css to move things into their exact place. The same rang true for the routes that would appear when a user was hovering over one of these elements.

However, to conclude this reflective entry, I have only reached the point of completing the HTML doc and have implemented all of the graphics and images, including the JQuery script for the hovering effects. At the moment, the routes are working perfectly, but the buildings (or points of interest) for some reason, when hovering over them, move in position when the highlighted version becomes visible, and even more so when the mouse cursor is moved away and the original building comes back, that has moved out of place as well!

5.) 10/10/2017:: Framework completion and shared with Petra Szemán
Today marked the completion of the framework build, setting it up on the subdomain http://dev2.Agorama.org.uk, and finally sharing it with Petra for her feedback and of course for the development of her content. However, before I discuss those finer points, I would also like to reflect on the process of finishing the build.

In my last entry, I had reached a level with the framework, where I had input all of the images, the replacement images for the JQuery effect, and the routes, but I had run into an obstacle which was when hovering over the points of interest (or images of the buildings), the highlighted version would suddenly appear, but out of place. Furthermore, when moving the mouse away from the affected area to bring back the original image of the building, it also was out of place. After a hefty amount of research and reading from the JQuery library documentation page (http://api.jquery.com/), I found a solution to my problem:

```
/**
* Building 1
***/
        $('#building-1').hover(function() {
                $(this).attr("src","./images/building-lit.png").css({"padding-top": "21px","padding-
                left":"133px"});

                $('#line-1').slideToggle("slow");
                $('#line-2').slideToggle("slow");
                $('#line-3').slideToggle("slow");
        });

        $('#building-1').on('mouseleave',function() {
                $(this).attr("src","./images/building.png").css({"padding-top": "25px","padding-
                left":"137px"});
        });
```

Let me explain the function above in depth and how this amendment fixed my problems. Starting first at the top, after the comment, the coding "$('#building-1').hover(function() {" represents the opening argument: when the mouse hovers over element with the ID building-1, do something. So this would be in reference to the action of the user dragging and holding the mouse cursor

over the DOM identified in the HTML as "building-1". In the next line,
"$(this).attr("src","./images/building-lit.png").css({"padding-top": "21px","padding-left":"133px"});"
what is happening is that I have commanded the programme to now replace the existing image
that is attached to this building-1 element with another file, which is represented by the file path.
The latter part of the statement, after the full stop, is the fix. What was happening turns out in my
case to have been that the image of the building with and without the highlights were not exactly
the same, and this was the problem. Thus, when I was asking the program to replace the images
like for like, I was not taking into account that the images were different sizes, thereby
misaligning things. When returning to the original image (upon the mouse cursor leaving
building-1) this problem was further compounded, as the original image was now placed in
replacement of the already misaligned image thereby causing it to be further out place.
This is where the second part of that statement, "").css({"padding-top": "25px","padding-
left":"137px"});", comes into play. This added function, css(), allows me to amend the original
positioning in the css file, thereby correcting it. However, it is important to note that this action
also has to be performed when returning the initial image so that the interaction will happen
seamlessly for the user (this can be seen in the final part of the function, with the argument
mouseleave).

A quick note on the routes. Their functionality can be observed in the same code above as:

```
$('#line-1').slideToggle("slow");
$('#line-2').slideToggle("slow");
$('#line-3').slideToggle("slow");
```

In these statements I am telling the programme when a user hovers over building-1 to not only
highlight the building (by replacing the images), but also to toggle the appearance of line-1 to
line-3. In my previous reflection I mentioned three functions: slideToggle, slideDown, slideUp.
They all perform similar actions, but for my purposes I chose the toggle version because it
incorporates both the actions of slideDown and Up, meaning it allows for the route to slide out
then back in.

Moving on to the popup windows… When a user interacts with a point of interest (building-1), I
found that Bootstrap (getbootstrap.com) was the best solution for achieving this, without having
to build the functionalities of the DOM element myself. Now originally I wanted to avoid
Bootstrap, the reason being that I wanted to make sure to keep every build I am doing for all my
practical research (and just in general for my own practice) as simple and with as few plugins
and additional elements as possible. Why? Because I have seen in past experience, as well as
examples in art history, the biggest failure for new media works comes from the technical side,
either from obsolescence or the artwork being so complicated that the original artist (or
fabricating tech) could not actually work and understand the piece. So, I wanted to avoid adding
too many different elements that could contribute to a situation like this. However, in this case I
found that, for my needs, Bootstrap would be the easiest solution that would also stand the test
of time. The nice thing about Bootstrap's website, like many other pages that provide interesting
and useful libraries for programmers, is that their documentation page is divided into different
sections of stylisation for webpages. In this case, the modal section of the documentation was
perfect for me (https://getbootstrap.com/docs/4.0/components/modal/), because here I could look
through a list of examples of different variations, and see the example code thereby allowing me
to browse, select, copy then paste the element into my own project and begin moulding it to fit.
Of course, there is more to it than simply that. For example, in many cases you have to include a
CDN link to the appropriate API files and, in the case of Bootstrap, they have one for their main
css work that is accompanied with a couple of JavaScript library links. All of these serve the
purpose to give you everything you need in terms of developing a dynamic webpage that is also
mobile responsive. Yet, in my case I already had JQuery's library implemented, therefore I did
not want to add in Bootstrap's own JavaScript and JQuery libraries, to avoid compatibility issues,
but I did want to add the CDN that directly linked me to Bootstrap's css functionalities as these
would not affect the rest of my work. In the end the implementation was very straightforward,
though on initial setup I received an error stating that one resource was needed, tether.min.js (a

library that helps elements stay in place when popup windows appear), which was easily added by heading to the tether git homepage (http://tether.io/).

From this point onwards, it was just a matter of attaching the popup window to all the points of interest in the interactive map framework, test, then push to the live dev2 sud-domain for sharing with Petra.

6.) 26/10/2017:: Completion of webplatform with Petra Szemán provided content
So, for this week of installation (tomorrow is our opening) I had been steadily adding in Petra's provided content. What is nice is that while Petra provided a lot of material and insisted that she wanted upwards of 13 separate points of interest on the map, everything was pretty straightforward with the installation. I believe this is because I took careful steps to inform her of the type of format her content should be provided in, i.e. I gave her the example of my psd doc for her to see how I made the grid, the positioning of the points of interest, their alternative highlighted versions, and the routes. In addition, Petra was very helpful and provided all of the popup window content on separate word docs that either contained written texts or lists of links and/or images that would be placed into these spaces. There was one minor problem, which concerned the gifs she sent over. They were unfortunately over 30mbs each and would have brought the webpage to a standstill. Fortunately, having her around for installation (as well as all the other artists) I was easily able to communicate this.

I think the end result for Petra's work came out very nicely, and it was nice to work on a very interesting and aesthetically visual web project. Many of the different elements learned and used to realise this project, I can easily see being used in different circumstances. For instance, I could use the same format (even the same template) to create an interactive game, or some other type of web install. Another thing is the strategy of turning the surface of the Body DOM into a grid that could then have several things placed inside of it. This form of layout allows for highly complicated designs and layouts. As well as pushing my understanding of web design, this experience has aided me in the building process of Diogo's web application, the Kubos Nero platform, and *The One, The Many* commission being done for PILproject atm.

Appx.3.2.3 Kudos Nero Screening Platform

The Kubos Nero Screening platform was commissioned as an extension to the NEoN 2017 Digital Festival's *Artists' Shorts* physical screening event. The idea behind this collaboration was to propose an online extension for the localised event that could reach past its geographical, and temporal scope. What was proposed by Agorama was to create a screening platform from the ground up that could house the screening content for a period of time, which would become available for online audiences after the initial physical event and remain available till the end of the festival.

Appx.3.2.3.1 Build Documentation – Kubos Neros

Built Documentation – http://kubos.Agorama.org.uk/

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1.) 09/03/2017:: Reflection documentation – Distrib_Cinema::
A new project platform idea came to me recently. It was inspired by the NEoN programme for the upcoming festival to happen in November. The part of the programme that got me thinking was the film screening event, and what came to mind was to have the whole thing online. In other words, the film screening from the onset would be entirely online for anyone to experience. Furthermore, through this system the NEoN organisation could simply connect to the Internet in any location and screen the content in its entirety. In this sense, the screening would not only incorporate people within the locality of Dundee but also viewers from abroad.

To begin this project I first began to research other video distribution platforms for ideas on aesthetics, functionality, type of video player being used, along with simple tutorials for constructing a video platform. In the research, I realised that a good understanding of CSS would be needed, and so I began to brush up on my knowledge of this web design language. The thing I was specifically interested in was strengthening my understanding of the selector elements CSS can use to identify DOM HTML elements. There are a number of different selectors for CSS to use, however, in many of the tutorials I experienced, two are favoured. One is the "ID" selector, the other is "Class selector."

The difference in the two is as follows. A "Class" selector indicates that you are targeting an element in HTML that has the tag "class" within its brackets:

<article class='post'>

<h2><a href='<?php the_permalink(); ?>'><?php the_title(); ?></h2>

<?php the_content(); ?>

</article>

In the above example, the HTML article element has the class of 'post.' Thus, it can be targeted through CSS for stylisation, and everything between the <article> brackets will be affected by any stylisation done to the 'post' class. There is another aspect to this selector that is important, and that is a 'class' selector is much like the OOP terminology for when constructing a class to create objects from. Thus, 'class' specifies elements in the HTML doc that are similar object types that will all have specific stylisation. So, in the instances of the above example, the class 'post' indicates where the content will be shown, so that when styling we can safely assume that this object will look the same on various pages.
In terms of the other selector, "ID," this element indicates the individuality of a specific HTML object element:

<article class='post' id= 'no1'>

<h2><a href='<?php the_permalink(); ?>'><?php the_title(); ?></h2>

<?php the_content(); ?>

</article>

<article class='post' id= 'no2'>

<h2><a href='<?php the_permalink(); ?>'><?php the_title(); ?></h2>

<?php the_content(); ?>

</article>

```
<article class='post' id= 'no3'>
```

```
<h2><a href='<?php the_permalink(); ?>'><?php the_title(); ?></a></h2>
```

```
<?php the_content(); ?>
```

```
</article>
```

In the above example, we have three article HTML elements all with a class of 'post'. However, in this instance we now have individual 'ID' selectors for each, indicating that we can control their stylisation in unison through adding custom CSS to the class selector "post". Furthermore, with the addition of 'ID' tags to each element, we can now create three distinct elements through CSS targeting of their ID selector. This means that we can make templates for overall elements in the HTML document using a class selector and add further individual custom CSS through their individual ID selector.

After the refresher course, I gave myself the task of building a simple video platform. The requirements for the platform were very simple. First, I wanted to implement a video player that used HTML, had a script attached to the player for more dynamic interaction and a different style compared with the standard HTML player. The next requirement for the build was to include an interactive playlist. The reasoning for these requirements was a) because this was what I perceived as the very minimum a video distribution platform required and b) to see if I could build this core platform to develop further at a later stage.

2.) 10/03/2017:: Reflection documentation – Distrib_Cinema::
After my decision from yesterday to build a basic video distribution platform, I set out today to complete this task, and in the process identified several major things to consider:

- Custom coding for a specific WP post page (dedicated to housing a video player)
- JavaScript coding essential for the creation of a player with all the required controls
- Hosting videos on the platform vs. embedding content from a video distribution platform (i.e. Vimeo or YouTube)

1. In proceeding with the build, I conceived several different structures but decided to follow the structure where each post page is a screening. This would create a simple structure as follows:
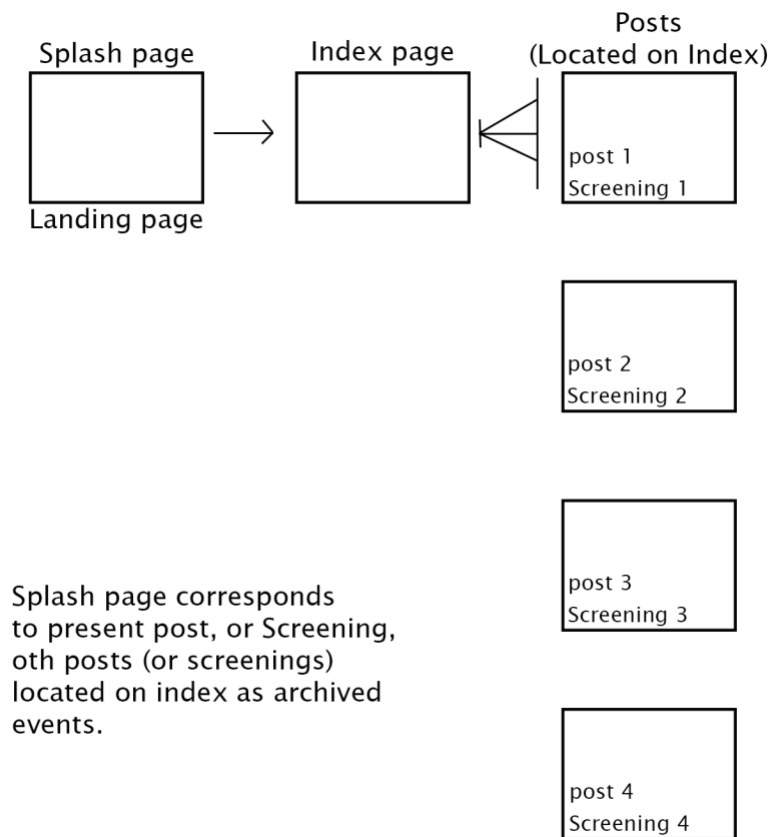
Fig.28.Kubos Nero Index to Post page flow.

To explain the structure… The splash page would be the first element the user experiences, which would be the most recent, or newly launched screening. From there the user could navigate to the core Index page, which would act like the archive for the whole page, housing all previous screenings shown on the platform. The reasoning behind this structure is because the post pages of WordPress are the most fluid elements in the platform's structure. Furthermore, in building something that could potentially be used for further projects and controlled by those less technically able, the posts format offers the simplest means for someone who has limited programming experience to add additional screenings. The rest of the structure was devised as a minimal platform that would not require much load time, due to the fact that the videos would take up most of the bandwidth. Creating a light/lite structure is essential for user experience when interacting and watching videos on this interface.

During the building of this platform, I discovered that WordPress does not have customisable post formats. Previously I thought they did. However, this was in fact customisable formats for posts on the index page, i.e. to give the index page a bit of dynamic content, rather than have every post on the list look the same. This was finally resolved with the inclusion of a plugin called Custom Post Template by Templatic. This plugin seems to have resolved the problem for the time being. However, I am considering either building my own plugin or completely changing the post format for this specific platform, as there will be no real need for posts of other content (as it is a Video distribution platform).

2. The problem with using just a basic HTML player is that it comes with its own controls, which aren't very elaborate. Therefore, it someone wants to create a player with specific controls, JavaScript has to be used to reformat the player in the image of the creator. A further point to note is that the automation and display of the playlist were not activated by the JavaScript file and was in fact controlled completely with the HTML doc elements.

After reflecting on this build, it has come to my attention that I have to decide on the experience that the user will encounter when viewing the screening. After much thought and research on papers I am producing (for instance the AVANCA Cinema paper), I believe the style of presentation adds a lot to the user's experience of the content and so I am playing with the idea of potentially removing the JavaScript coding that creates the ability to play, pause, fast forward etc. and simply stick with the basic HTML video controls, which are just play and pause, which the selection of the playlist automatically loads once the first video is finished. The reason for this is because it's a screening experience, therefore, in my opinion, the user doesn't need all these controls, they should have experience it like the cinema, only I will allow for the pausing of content just in case someone has to go to the bathroom.

3. The final thought comes from research on the best way to distribute video content. According to several articles about the WordPress platform, and running video platforms, an administrator should never host the video themselves, and should try to embed them whenever possible. The reason for this is that videos use a lot of bandwidth and, therefore, if a webpage owner is not on the correct tariff, their web provider is most likely going to reduce the speed to the webpage, to reduce traffic. This will in turn affect the website, most likely causing people not to be able to use the page satisfactorily and cause them to leave.

While I am in agreement with this argument, the main thing to consider here is the tariff that the site will be on. In my case I have subscribed to a hosting package that can house up to 10 heavily trafficked websites, thus rendering the argument null and void. That being said, embedding would be a great thing to set up, as it would speed things up. However, to build a dynamic player that receives streaming input is most likely not a possibility for me with my current knowledge, unless it is possible to do through PHP and MySQL, i.e. create a web application that documents embedding code, that could be used as an API for another platform:

- Playlist – php – backend
- Includes embed links + program that allows for the sequential displaying of video, i.e. one after the other for the instance of a film screening
- Video platform – uses the API webhook to call the content from the MySQL database
- PHP + MySQL – subdomain
- Video platform – frontend

3.) 10/07/2017:: Reflection documentation – Distrib Cinema::
So, after several months of letting this project rest, I have come back to it now and am starting to realise the limitations associated with WordPress platforms. Although WordPress has many positive features, I think, for the purposes of artistic practice and developing online structures for distributed exhibitions, it is actually a difficult platform to use. This became clear with the development of the preliminary screening site (initially made on WordPress), and also while developing the Agorama prototype platform. The main reason for coming to this conclusion is that, when developing the Agorama prototype, I began to notice the more I added into the template and the functions document (functions.php of the WordPress structure, the more difficult it became to track all the different processes happening on the page. This is a big problem, and when running a platform of this type it is essential to know what is happening, where it is coming from in the code, and to have this documentation very clearly organised. This made me start thinking of the idea of modular web application platforms that each have a specific function, i.e. like the screening platform.

I could continue forward with this thought process and use WordPress, however I believe that would be the wrong choice. WordPress's framework, meaning all the files that make up the basic package before installation, is around 5mb which is not too bad, but I think for my purposes that is too much. For example, the artistic Project Deep Throat Done, created as part of the re-development research for Agorama's architecture, was constructed on a basic HTML page. Using WordPress for this endeavour would have been overkill. So I have been checking out simple PHP frameworks and my plan is to investigate different ones around the internet and on

GitHub and begin to use them as blueprints to understand how they work exactly and see what variations are out there (please look at notes from "Trolling is the new punk"). It is also interesting because, during the MOCO conference at Goldsmith University, I received good feedback on my submitted article and, more importantly, part of the feedback was that much of my work seemed to centre around developing a new framework for artists and creatives to use.

Plans to move forward with Cinema distribution platform ->
          -examine this new framework that you have just found…
          -immediately begin to port over the system that you have developed thus far
          -separate main video player and playlist programme and begin to develop separately

simultaneously review research on the distributed cinematic experience (Article for AVANCA)
          -review artist case-studies
          -review Sarah's (Video Vortex) and Virginia's book

4.) 01/09/2017:: Reflection documentation - Distributed Cinema::
So I was able to establish a git repository for the cinema distribution project. Furthermore, I moved the original WordPress site to a subdirectory and also tried creating a new project folder for the MVC project for film screening. Unfortunately, WordPress is a bit of a pain to move from one directory to another on a local server. On my live server moving the prototype of Agorama to a subdomain was simply a case of moving the site to a new directory and everything worked fine. This adds another dampener on the thought of developing with WordPress. Now that the changeover of organisation has been amended, I will move on to the MVC structure and work on it to create a more useful template to build on. Once this is complete, I will transfer the template into the new "NEoN-MVC" folder to begin the development of the screening platform.

-Examination of MVC structure-
The beginning of the structure relies on two primary files, the 'index.php' and 'connect.php' docs. These files represent the actual place where everything is put together (index.php) and the db connection (connect.php). As of now, the current MVC model is developed on a singleton model for connecting to the database. This means that the connection happens once and is a static entity. I have read around this before, and there are positives and negatives to this. I have plans to work with the singleton method this time for the cinema platform. However, I also have plans to develop the framework with a non-singleton method. Those I am planning to add in a config.ini file for security purposes. I am trying to understand how I can get better manoeuvrability to the SQL db. Currently, I am having to go to phpMyAdmin to create tables and view them. What I would like to do is create a template for producing new tables in MySQL automatically. Following up on this I have come to find that Laravel, the framework that I have been studying for MVC frameworks, also has a program inside of it that runs certain files such as scripts to create a new database, so it is probably not worth chasing this at the moment.

In terms of the MVC structure, I have figured out the one I have been looking at from a tutorial. For this basic structure, what is happening is that the first file opening is the top-level 'index.php' file that is calling the db file to establish a connection with a db. Then there is a logical question posed, check the url for elements "controller' and 'action', if they are then these values are assigned to $controller and $action variables. Finally, the layout.php file is called. From this point, we are now on the layout.php file. What we find here is a HTML structure, which is used as a template for the embedded content. Therefore, for this system, once this file was styled a certain way the whole webpage would have that design. In the middle of the markup is a php call where the <body> tag would be, which is calling up the file routes.php.

This takes us to routes.php and here we find a function that determines what the incoming variables $controller and $action are, and what to do from there. This is done by asking the function to load a specific controller file:

require_once('controllers/' . $controller . '_controller.php');

Here what is happening is that the program is asking the computer to load the specific controller file to what the value of $controller is. How is this done? Well, this was already determined in the top-level file index.php. However, this function also wants to call specific methods from the class controller that it is loading. A 'switch' function is used for this:

```
switch($controller) {
    case 'pages':
      $controller = new PagesController();
    break;
    case 'posts':
      // we need the model to query the database later in the controller
      require_once('models/post.php');
      $controller = new PostsController();
    break;
```

Here what we see is the $controller value being passed through two arguments, is it a 'page' or is it a 'post'? If it's a page, the variable $controller is equal to a new page class object, if it's a post then $controller is equal to a new post class object. Finally, the function finishes with:

```
$controller->{ $action }();
```

Which means the value of $action is to be used as the method name called from within that new object's class.

The rest of this php doc uses a logical statement to determine if the value of the $action variable is a real variable, and if so to activate the function "call()" from the beginning of the routes.php doc. From this point, we have two ways to go. One which is the route of displaying the post, and the other for displaying the page.

5.) 04/09/2017:: Reflection documentation - Distributed Cinema::

* Pt.2 Distributed cinema and MVC framework

Continuing from my work on Friday, I will finish the explanation for how the routes.php file prompts the loading for both pages and post class format objects. Beginning with the page class, the file that is loaded at this point is page-controller.php, which contains the page class. The class is quite simple for this tutorial that I got hold of, but this is potentially a good thing. First off, it is easy to read, and the next thing is it's a starting point for further development. Anyway, the class itself, as stated before, is quite simple and only contains three basic public functions: home(), error(), and about(). Originally, it only contained two functions, however I added the about() function to test how to add additional pages if one was to work within this framework. Essentially each function tells the computer to load up the corresponding page file. For example, the about page, about.php, contains:

<p>This is the about page for the Cinema Distribution Platform</p>

<p>What happens next is up to you</p>

So it basically houses the <body> content that is missing from the layout.php page, and that is it. In the case of the home page, we have some values in the function:

```
public function home() {
    $first_name = 'Jon';
    $last_name  = 'Snow';
    require_once('views/pages/home.php');
  }
```

And these values manifest as such when the home.php doc is loaded:

<p>Hello there <?php echo $first_name . ' ' . $last_name; ?>!<p>

<p>You successfully landed on the home page. Congrats!</p>

In reality it would be better to have these values in db along with further details of the blog/website owner, along with admin passwords, etc. But in this case it is nice to have a simple setup to reference.

Moving on to the posts mechanism, the operations are a bit different and a little more complicated. Essentially, when the routes.php sends us the direction of viewing a post, it not only loads the post-controller.php, but also a file called post.php, which is located in the model directory. In this file we have another class called "Post". What this Post class does is give the content form for the construction of the post page. To review this class first:

```php
<?php
  class Post {
    // we define 3 attributes
    // they are public so that we can access them using $post->author directly
    public $id;
    public $author;
    public $content;

    public function __construct($id, $author, $content) {
      $this->id      = $id;
      $this->author  = $author;
      $this->content = $content;
    }

    public static function all() {
      $list = [];
      $db = Db::getInstance();
      $req = $db->query('SELECT * FROM posts');

      // we create a list of Post objects from the database results
      foreach($req->fetchAll() as $post) {
        $list[] = new Post($post['id'], $post['author'], $post['content']);
      }

      return $list;
    }

    public static function find($id) {
      $db = Db::getInstance();
      // we make sure $id is an integer
      $id = intval($id);
      $req = $db->prepare('SELECT * FROM posts WHERE id = :id');
      // the query was prepared, now we replace :id with our actual $id value
      $req->execute(array('id' => $id));
      $post = $req->fetch();

      return new Post($post['id'], $post['author'], $post['content']);
    }
// end of class //
  }
```

?>

This class can be considered in two sections. One is the establishing of public values $id, $author, and $content and assigning them to the post as variables for interacting with db results. The second part contains queries to the db for fetching the content. A quick side-note on this storing of information post information (i.e. the content) on a db. Frameworks like WordPress do this, so when you are in the user backend or CMS, creating a new post for a blog etc., what you are essentially doing is entering the information directly into a db. When you preview this information, you are essentially seeing how the framework will be assembling all of the desired content for viewing. This was one of the problems I had at the beginning with this particular framework - that I had to establish the whole post content inside phpMyAdmin, which isn't designed for this specific purpose. It's an administrational tool for managing a database, not inputting content for a blog.

Returning to the explanation of this class, once the three values are assigned, we find 2 public static functions, one that is all() and the other find(). The function all()is a call to the db asking for everything, i.e. all the posts that exist (content and all), and put it into an array, and returns this item that contains a list of posts (each tagged with their own metadata: $id, $author, $content). The other function takes the $id as input and does another db query that specifically asks to call up the post content (and author info) for the post with that specific $id. It then returns this single post's contents.

At this point, let us turn back to the doc post-controller.php. The class contained in this file is very similar to the pages one, however instead of opening the specific page for a post, it directs the user to view either a sub-level index.php file and a show.php file. This sub-level index.php file acts as the list of all the posts (similar to any standard blog) with links leading to the specific post and its content. The show.php doc displays the post content (exactly like a WordPress blog). It is within these functions, index() and show(), inside this post controller class (similar to the page controller) where we find the interaction with the previous doc we spoke about, post.php and the class's db query functions. For instance, index() as part of its functionality has:

$posts = Post::all();

which is the call for the all() function that is part of the Post class, which is loaded simultaneously as the sub-level index.php file. It is a similar operation for the show() function, which calls the find() method from within the Post class except, for this function, we have some differential logic to determine what $id is in the url. It uses the end of the url to determine which link on the sub-level index.php has been clicked:

?controller=posts&action=show&id=x

That is basically how this MVC works. Of course, I have my queries with a system like this. For example, there is a templating engine in place, which revolves around layout.php and this restricts the design options, which I dislike. Watching a little on Laravel, they have the ability to develop pages separately, and they are routed by the extension of the file name, e.g. they included "blade" in the name, so a page file would look like: home.blade.php.

This "blade" finding acts similar, in my opinion, to how the master controller finds the correct controller for a specific operation. However, there is another question in my mind at the moment…. How do I de-attach the layout.php file from the pages only and not the posts first before developing a similar templating system like Laravel? Because essentially the structure I would like to work with eventually is:

1. top-level index
2. routes.php (now a top-level routes.php doc) to either…
   1. page-controller.php
      1. page1

    2. page2
    3. etc.
    4. layout.php (optional)
  2. post-controller.php
    1. layout.php
    2. index.php (sub-level)
    3. show.php

However, for the time being I will work within this current framework for the cinema distribution platform.

Moved on to update MVC framework, by adding style sheets and classes to HTML DOM elements. In addition, fixed the connection.php doc to now take its credentials from a .ini file called config. Started new repository in git for the NEoN_MVC project. In addition added in new developed MVC framework to begin building on. Moved back to look at old WP work done for the project to begin the scrapping process of transferring over the useful video player code. During this process, I ran into a problem while trying to migrate the code from one platform to another. The problem was that I forgot that this original MVC that I have been messing around with and am beginning the construct of the disturb platform is right now geared towards posts that are text only. And the model for the post is geared towards querying and retrieving that specific data. So what I will need to do is change the post.php model file and modify it to accept different parameters.

On top of this, I have been messing about with different table structures. First, I played with the idea of using two tables, one for the videos and paths to the vids, the other for artists whose videos are in the db. The problem is that at present I am not too sure that I can load multiple files into a video player and create a running playlist. Thus, what I have done is create one table that only has three columns, id, screening, path, and that is it. On top of that I have removed the idea of an artists' table, because at this present stage it is not really needed for the functionality of the application.

On top of this, I removed the separate files from the screening folder and replaced them with a single file that has both vids in it. My plan is to go with the original proposal of collaging all the videos together into a single track and playing the screening that way. The only potential issue is a bandwidth problem on loading the content of the file. On top of that I can't anticipate the speed of a user's internet provider or their computer's age, etc. However, I think this is the best way to go. Thinking about the multiple db queries and the need for calling and retrieving each file path from the db, on top of all the JS coding that would be needed on top of the php and HTML code, this thing could become quite heavy on a browser to load.

6.) 05/09/2017:: Reflection documentation - Distributed cinema::

Pt.3
* Establish three screening tests for data input
* Amend post model to retrieve correct meta from db
* display total meta call on index.php (sub-level) and show.php

Began the day by establishing the three screening files to be used by the cinema platform. After the problem that I ran into yesterday on simply trying to replace certain variables in the old class system, and things not working, I decided to begin from scratch again. This time around I matched the DB to the original DB of the class, meaning I gave the table of data three columns to store, rather than four like the previous day. Working in a method of like for like I was quickly able to replace the functionality of the post class to contain information pertaining to a video distribution platform.

In the initial setup, I began with simply having the application display an active link to the video that would open up into another browser window. The process for this was quite straight

forward, and simpler than programming a WordPress site, except you are not using WordPress's functions and methods, you are using the methods that you've created. After this initial test, this is the point where I was drawing in the scraps obtained from the previously developed platform, which was developed on a WordPress framework.   Again the installing of data into the DOM element, taken form the initial site, was quite straightforward. After having completed the process of learning PHP through starting this research with WordPress's framework, I understand the logic of why and where PHP is to be written in a HTML doc. This isn't to say that we should all learn WordPress, but more that engaging with any framework and trying to learn and understand it, take it apart essentially, is key to learning development. Many, many frameworks utilise the same structure, they just simply do things a little differently, in line with a specific methodology. There is no right methodology to coding. Yes, there are certain codes of practice under the label of "good practice," however, if it works it works. That being said, the present methodologies for developing sites and applications are standards for a reason, each optimises in a different way, and allows for better "types" of application to be built. Furthermore, each framework represents a type of work ethic, i.e. how we approve problem-solving.
The later stages of this development moved on to the test materials, and I spent time collaging together test vids for the display.

It would be interesting to have the videos loaded singly, the reason being that this collaging process is long, and perhaps prevents the application reaching true fruition. I believe collaging people's films together will be something that people are against happening. In reality there is no difference between a collaged roll of films, and separate films played in succession for a screening. The format is the same, you are one of a number of films to be played. But the politics of having several films, each with their own copyright, collaged together technically creates a new object in the mix, and who owns this, what legalities are there for its use afterwards, or maybe its disposal?   Thus, I feel that having a system where separate films can be inputted and played in succession would be bureaucratically easier.

7.) 15/09/2017:: Reflection documentation - Distributed cinema::
Pt.4
* Develop name
* Develop texts
* Develop layout

Preliminary title for platform is Black Kubos. Kubos is the ancient Greek word for cube. It would be nice to develop a better name - or something that plays with the use of ancient elements, i.e. Agora and Agorama. Working on the screening index design, I have realised that I will have to amend the post class, along with the database, to incorporate a thumbnail image for each listing on the index, as well as a small blurb to accompany the listing. Furthermore, I have also realised that it would be nice to include a larger text for each piece. This would increase the DB to 5 columns from the original 3 (id, screening, path => id, screening, path, blurb, text).

++Text for About page++
As part of the Agorama web architecture, Black Kubos acts as a space for the displaying and dissemination of artists' moving image pieces.
As part of its format, the ethic of the platform is to enact the cinematic experience, by providing the viewer with a simple interface, lacking in control.
Each screening is made up of a number of films played in succession, either a curated selection from a single artist's oeuvre or a curated thematic screening of multiple artists' moving image works.

++Text example for screening post++
This is a placeholder for where the curatorial text would go for an actual screening. There will be a word limit due to the fact that DB text will be unformatted and have no structure. The reason for this limit on storage for the structure is to prevent the DB from becoming too big and complicated, for the time being.

8.) 06/10/2017:: Reflection documentation – Distributed cinema::

My task over the previous month has been to update the whole platform's design and deploy the application to the live server. This was probably the most exciting aspect of the project after all the coding. One aspect that I specifically focused on for the design of the platform was that of the cinematic experience, meaning I wanted to develop a simple canvas that could enact the ethics of a screening or cinema environment, similar to Galloway's writing on the interface.
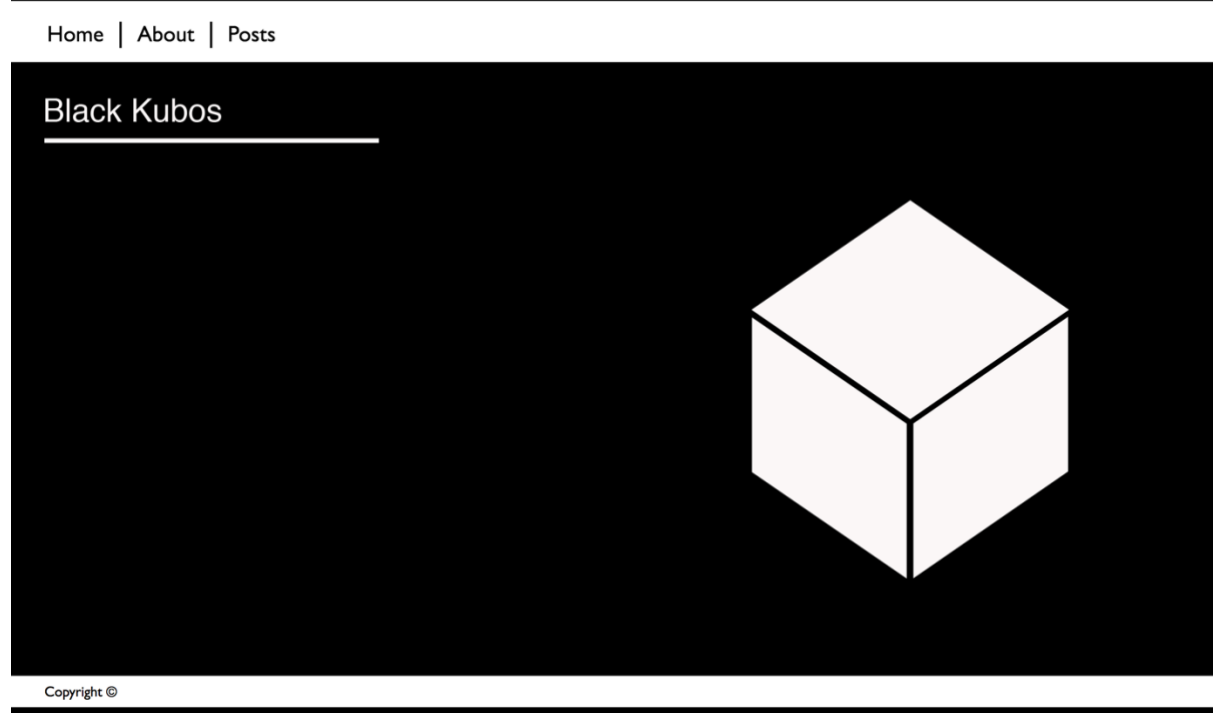
Fig.29.Kubos Nero Home Page.
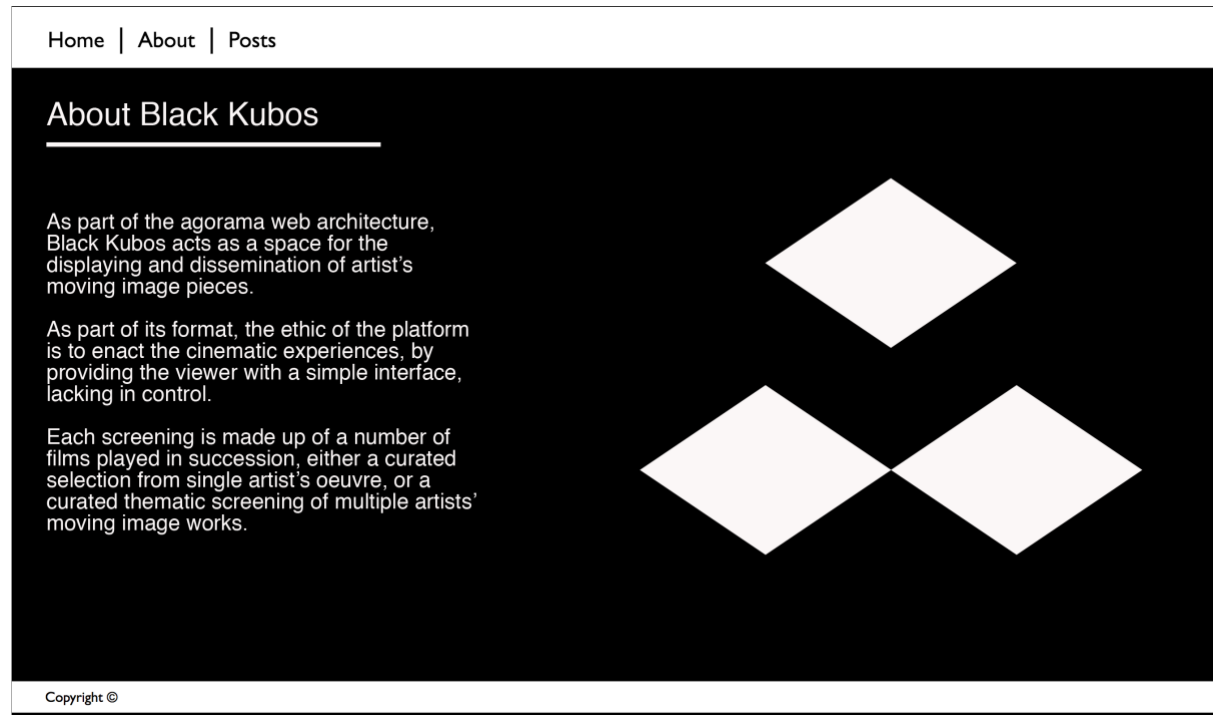
Fig.30.Kubos Nero About Page.

As can be seen from the above examples, I decided to go for a very flat simple environment, which I believe will have the desired effect. I have some work on the Post page (which is actually

the index page that will list all the available and past screenings), however, for the time being, as the platform is now going live, I have decided to add in the information for the screening event just in case users somehow navigate to the page, where they will encounter this:
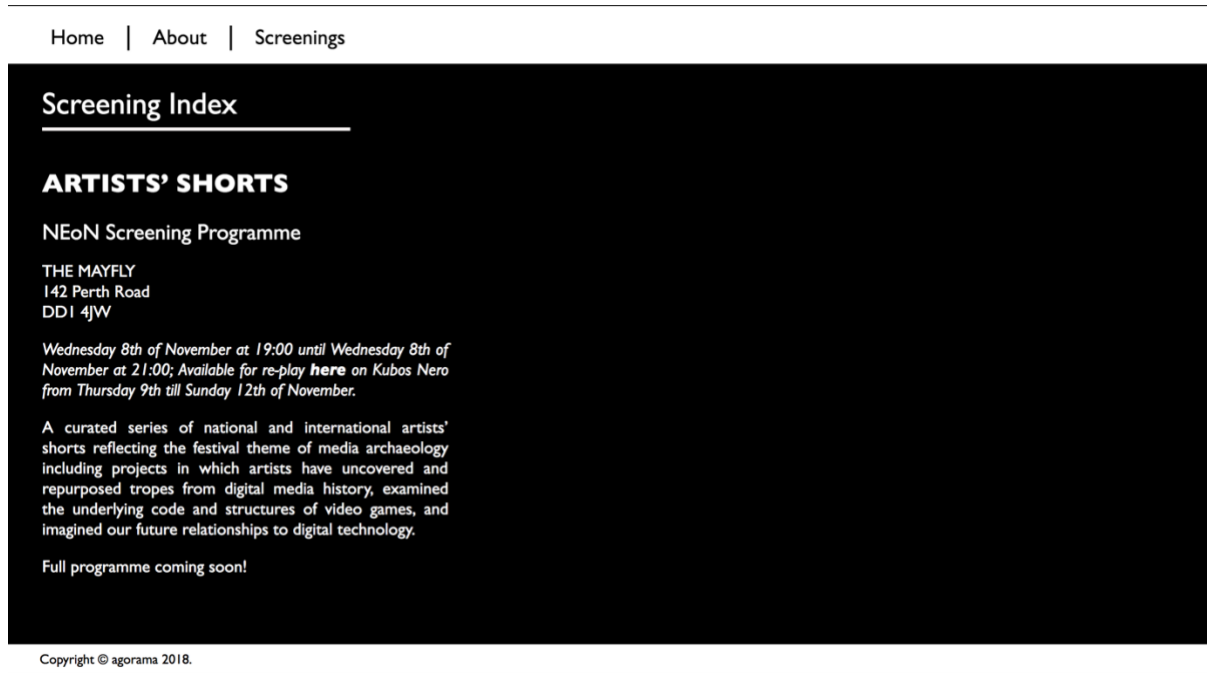
Fig.31.Kubos Nero Screening page, pre-screening event.

As opposed to this…
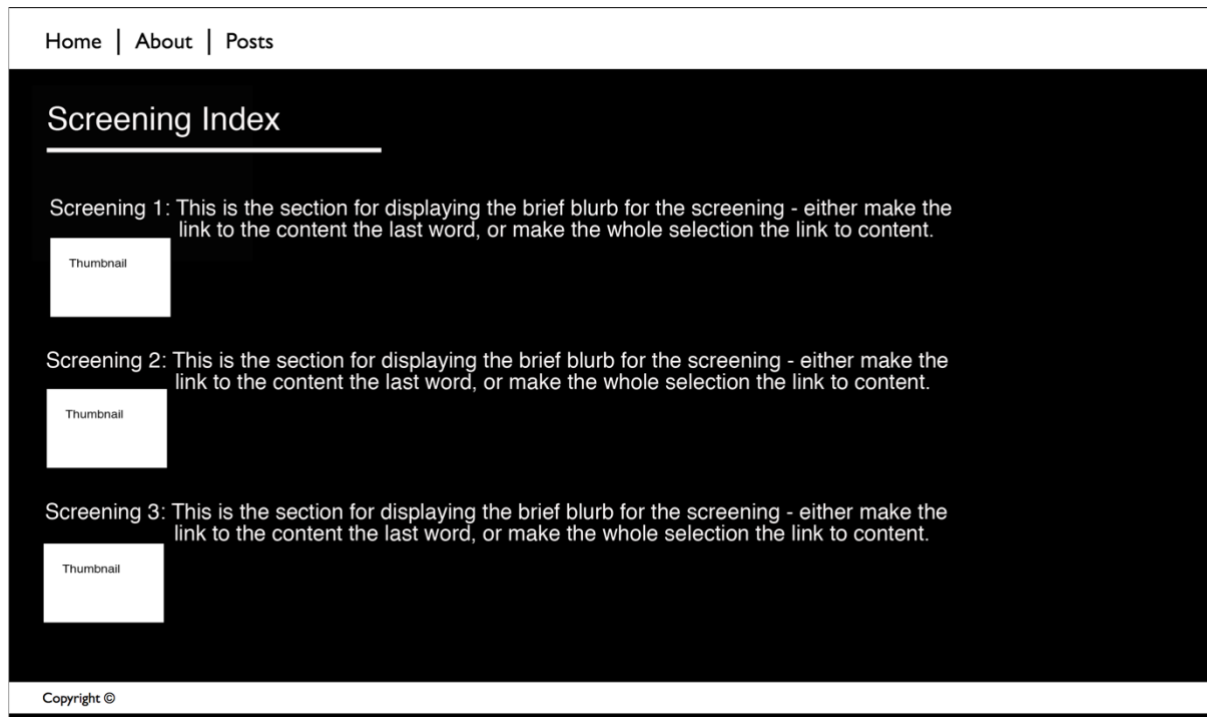
Fig.32.Kubos Nero Screening Index page.

This design is not set yet and is probably going to change. In addition, the actual film screening page with the video player still needs to be done.

9.) 03/11/2017:: Reflection documentation – Distributed cinema::

With approximately 6 days left before the launch of the platform, I have finally finished it in my local environment, which means that now I have a working video player in the correct and matching design that I want. In addition to this, I was able to finish the index page (screening listing page) and implement a newer design that I believe fits better with the site.
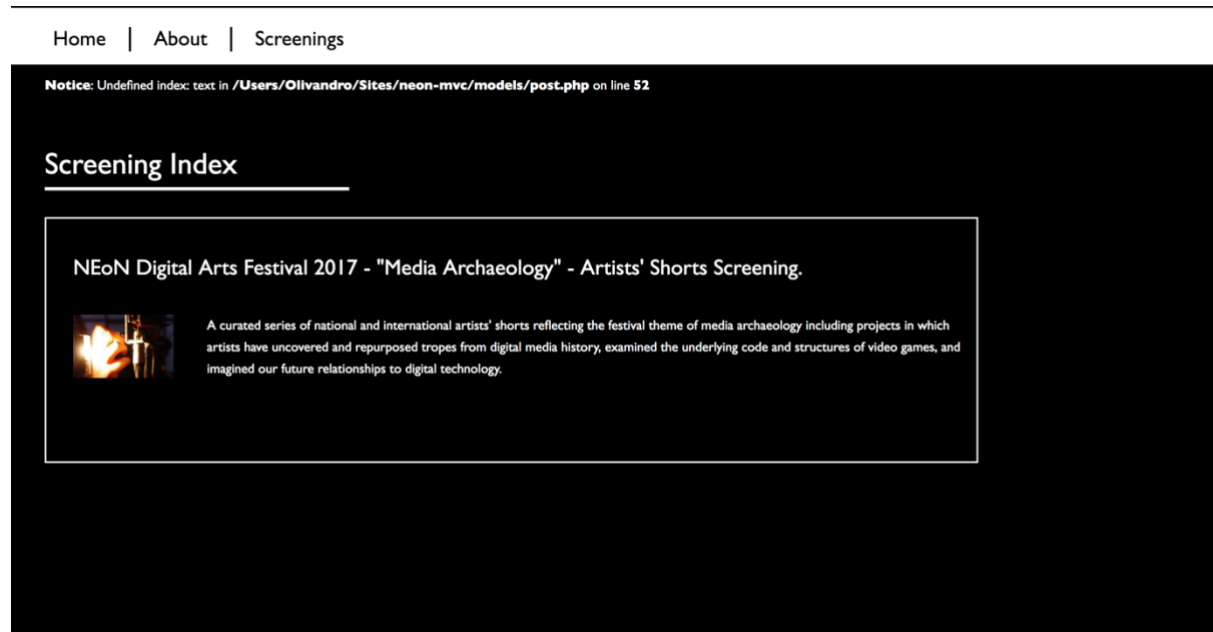
Fig.33.Kubos Nero Screening Index page final build.

As can be seen from the design shown above, I changed the orientation of the index layout quite a lot. The reason for this was because I thought, since the whole page is quite flat, that certain elements should be self-contained, i.e. the screening listings on the index page. If looking at the original design (figure 4), I think now it's very apparent that each listing item was not well defined.

For the video player, work revolved around the control UI mainly, which was powered by two different scripts, videoplayer-controls.js (which was also using the JQuery library) and fullscreen.js. Examining videoplayer-controls.js first, what this file specifically does is implement custom button designs over the original HTML buttons, which also allows for the programmer to add in dynamic features, like a single play/pause button, or having the volume slider appear when you hover your mouse pointer over the sound icon. This is a good thing, especially for me, who was attempting to create a video player and platform that enacted ethics of the cinematic experience because, if using the original HTML controls, first you can't really change their design and second you can't control which one you want and which one you don't want. As I was working towards a specific ethic, this was not a very good option (not to mention the original controls are left wanting), because I only wanted a play/pause button, volume button with the corresponding slider input, a progression bar that only showed the video progression and could not be used to advance to a different place in the video, and finally a full-screen button.

The script for activating this feature is very similar to that which I accomplished with Petra Szemán's online artwork, where I also used JQuery, meaning that I was utilising JavaScript as a tool to dynamically switch out png's or jpeg's behind the scene:

```
// video player element =============== var establishment //
        var mediaPlayer = document.getElementById('media-video');
// play/pause ========================= operation //
        $('#play-pause-button').bind('click', function() {
                if (mediaPlayer.paused) {
                        mediaPlayer.play();
```

```
                              $(this).css('background','url("../public/media/images/pause.png")');
                } else {
                              mediaPlayer.pause();
                              $(this).css('background', 'url("../public/media/images/play.png")');
                }
      });
```

This is something that can be seen in the above example, i.e. after the line where we identify the media player as a whole, we can see on the next line that, just like Petra's work, I am targeting the HTML element with the id of "play-pause-button", and binding the user's interaction (clicking the mouse on the button) to it, thereby telling the script, OK now please replace the current play.png for the pause.png and at the same time play the video file, else pause the video and swap out the pause.png for the play.png. The whole script is basically this: binding user interactions to the buttons, and then assigning an action to these interactions.

The more in-depth work came in the form of the full-screen mode. This is because each browser treats full-screen mode differently due to security reasons (much like popup windows). The reason for this is that, funnily enough, an original strategy to disseminate malicious software like spyware and viruses was to produce a pop-up window when a user was entering full-screen mode and, if not caught by the user, this window is open and essentially running whatever malicious thing it has embedded. So, essentially this script is mainly querying the various webkits that each browser uses, i.e. mozFullScreen (Firefox), webkitIsFullScreen (Chrome, and Safari), msFullScreenElement (Internet Explorer). This script is one of the few that I pieced together from various scripts I found on the web, rather than studying and writing my own, and this was to save on time, but also because many of the scripts I found were very similar, telling me that this was a streamlined process with most people in the community following this practice as standard.

10.) 13/11/2017:: Reflection documentation – Distributed cinema::
I am very happy with the platform as it stands, even with the speed of the page load and, more importantly, the streaming speed and stability. There was a slight worry when Emilie gave me the video film (collaged all into one file) and it was over 3GB, but this was easily remedied when I asked her for the original files to produce a streamable version of the screening.

Unfortunately, I was not able to develop the automatic screening loader, i.e. where I upload each film separately and then my backend application, when queried to play the screening content, would call up all the corresponding videos and play them as a single screening, similar to the VLC playlist option. This was due to time constraints brought on by my other work with the Geltung[Validity] exhibition, and also the upcoming PILproject commission. Furthermore, I was not able to produce an API version of the platform either, leaving this modular platform in its bare-bones state. That being said, I do feel at the very minimum Kubos Nero was a successful modular platform and fit into the overall NEoN festival programme well without making anything complicated, i.e. without embedding things on other organisation sites or having to enter into discussions of backend access. Furthermore, because Kubos Neros was a platform for a specific purpose, meaning a platform to extend an event, we were able to successfully bypass YouTube and Vimeo as staging platforms altogether. Now, some people might think that using these platforms is great and you should just use them for all platforms. However, as seen in media art and exhibition history, these are huge corporate platforms and should be dealt with with a pinch of salt. In my opinion, they are great platforms to store portfolio material but not very good for exhibition purposes. Why is this? Firstly because of censorship - Google and YouTube are infamous for this. Vimeo doesn't have this constraint but what they do have is a paid plan option which allows for different levels of controls to the user, meaning locking certain videos on a password and encrypted links for special viewings, which is cool, but they also put into the paid plan the option to customise your embedded video player. Thus, if you don't pay, you have to see the Vimeo logo.

Overall I do thing this platform was successful for the purposes it set out to accomplish, which was be an extension to a live single night event and enact an ethic that was similar to the event, i.e. the cinematic experience. I do feel though the platform is still slightly incomplete without the backend application process that could collage a screening for a person (similar to VLC's playlist play option), and the corresponding API (which would allow for embedding content into other individuals' and organisations' sites). The problem though is in the API. At this stage, I think producing the backend video collaging application would be do-able, because in my mind it seems simple to give the administrator of the application a small CMS, which only allows for the input of the general information text to accompany the video, and also upload the videos individually. It's the API that isn't simple, and this is because an API (Application Programming Interface) needs a purpose like a tool, which a person could build their own application around. Yes, I could certainly develop an API around this backend video collage screening service, but is that it? That is the question. I think for now I will focus on implementing this backend application, plus the feature to embed the current player on other sites. As to the API, maybe as I progress with these future plans, things will become clear to me... hopefully.

Appx.3.3 System Maker Files

Appx.3.3.1 Digital Literacy Reflective Documentation

The reflective documentation presented in the following section (Appx.3.4.4.1, Appx.3.4.1.2) focuses on a sample of my digital learning resources that I undertook during the course of my PhD studies. The reflective documentation focuses mainly on my thoughts and learning process for assimilating new techniques into my own *system makers* practice.

The first of these reflective documentation pieces is centred around the initial learning process of the WordPress open-source framework, to better understand the capabilities of this platform and to see if I could make an all-inclusive platform that could incorporate various different formatted artworks. This reflective documentation is also incredibly important for understanding how I learned the programming language PHP. Prior to this practice-led research experience, I had had little to no experience with the PHP programming language or server-side languages. Thus, this first piece of documentation also represents my progress from creating a simple *Modular Website* to understanding the difference between a website and web-application and the development of a *Modular Web-application*.

The second piece of reflective documentation presented in this section pertains to my training in and understanding of *Application Programming Interface* (API), and the first engagements with the *protocological* suite *AJAX*. For this practice-led research process, I undertook an open-source API tutorial and created a simple *Modular Web-application* that also had an API that was public-facing, thereby allowing others to build platforms off of it. This process was my first attempt at understanding the API building process and where it could best fit into a practice-led and based process for artists and curators. While the API is not present as a case-study, it is still fundamentally important to my process, as this research process helped me to understand what a web API exactly is and, more importantly, helped me to understand what a *REST API* exactly is.

3.4.1.1 Agorama Prototype Web-application

Built Documentation – http://prototype.Agorama.org.uk/

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_____

1) Reflection documentation – Agorama prototype – 26.10.16

•   Webrecorder.io – Notes on use and limitations thus far

It has come to my attention that webrecorder.io has some limitations in its use, as well as compatibility problems with certain browsers.

Examining the information boards on the site and other various help forums, it seems that the platform favours Google's Chrome browser. To articulate the problem, when trying to record the third part of "PIL 2.0: Russian" performance (by Rostan Tavasiev), which took place via social media on Facebook, I had many problems with the webrecorder system loading content. As the performance was a series of Facebook posts, it was essential to capture every post to document the performance. However, while using the webrecorder system through my Firefox browser I experienced loading problems. Looking into the problem further, it seems to be something to do with cache management within the browser and how this interacts with webrecorder.io. I will have to further test this to be sure exactly which browsers experience this problem, and if it affects viewable content for users.

In terms of limitations, I have been testing webrecorder.io's system with different Internet art content, to understand exactly what type of interactive content this system can in fact capture. The specific test I ran was with Jonas Lund's commission piece "Fair Warning" for Whitechapel's "Electronic Superhighway" exhibition (2016). To describe the artwork, it is a simple JavaScript program that produces an interface for the user which presents two choices to them that they can click on however doesn't produce an effect. Each selection of choices appears on the screen for approx. 5 seconds before presenting the next set of choices to them. There is more to this work of art than this, but that is not important for this test. Thus, what is presented with this artwork is dynamic content in similar shapes to other Internet art. In my attempts to record this website, I was only successful in capturing the body of the page, but not the actual content of the work, i.e. the succession of choices presented to the user/viewer. This is disappointing because upon a quick inspection of the website's content, I could not find a single object within the site (in other words a component of the whole) that was blackboxed - meaning, if I decided to download the page and reproduce the content on my own page, I could do so, while webrecorder.io seemingly cannot.

ADDITIONAL NOTES: upon further reflection on this aspect, I am planning another testing session closer to the completion of the Agorama.org platform to see if this is a true limitation, or again a cache problem.

2) Reflection documentation – Agorama prototype – 17.11.16

• Notes on visual theory and spatial perception [Descartes]

After reading the article by Celia Wolf-Devine on Descartes' ideas of spatial and visual perception, I have a lot of food for thought. The main thing is the link of spatiality to visuality, meaning spatial perception (from the outset) is hereditary in perceiving three dimensions.
In this sense, maybe, in terms of spatiality and the web, it is crucial to think in multi-platforms, rather than a single webpage, to create the illusion (or maybe better, the 'feeling') of three dimensions.

I do know one thing: the utilisation of multiple platforms in a distributed system (especially when done well) has the effect of 'shrinking distance.' A key element for the realisation of this is the interaction of foreign bodies (people, and other platforms both online and off) with the network's multiple nodes and hubs (which does not have to be all at the same time). A key example of this is the idea of 'Skyping'. While not directly related to arts per se, if we take the idea of the human network, e.g. the family unit in a globalised society, this is a distributed network of people spread around the world. The idea of Skype is to close this 'distance' that the physical imposes on this network and create a space of intimacy for you and your loved one. In many ways it is this effect that I am looking to exploit when using it in an arts context.

There are another two things that I got from this reading as well, which is the idea of the Homunculus. This idea, while shrouded in superstition and lacking any scientific backing, brings

the idea of 'little men' or beings in the body that act as the mediators of sensorial inputs, which are then in turn remediated by the soul (i.e. the final produce of what we perceive). Within Wolf-Devine's article she argued that Descartes struggled with polarising ideas, one the idea of the body as more of a mechanical thing with several inputs and outputs all coming from the brain (i.e. the beginnings of modern ideas of human functionality and anatomy), and that of this spiritual (Homunculus) idea.

While this has no basis in terms of my research (unless for a lit review) this idea of the mechanical body with the inclusion of Homunculus is interesting when attributing it to an Internet platform that wants to engage on a multi-platform level. Thus, what I am thinking is: the body [base webpage] is a mechanical being. However, this is not a thinking being, meaning that there is a number of actions that have to be automatized. This is where the idea of the homunculus [Softbot or just bot] comes into play. Bots are, in my opinion, the Internet's Homunculus, because each of these programs has a specific use and mediation function. Furthermore, these softbots can be highly complicated programs, such as the Google AI behind the search engine, or as simple as an API program for creating dynamic content.

3) Reflection documentation – Agorama prototype – 23.11.16

•   WordPress coding

Index.php => This is the main page, i.e. central post page to WordPress, and thus the core

Single.php => coding for single 'posts' and allows for the creation of various templates for different post context

Archive.php => central coding doc for the site's archive. Allows for the creation of various different archive taxonomies depending on the type of metadata attached to content (i.e. author info, tags, catagories, etc.)

Search.php => central coding page for the search results page. Just as flexible as 'archive.php'

Note: all these pages use a similar coding/ content visualisation format and can be consolidated into a single doc file 'content.php,' which can be called through a function, reducing the amount of repeated code inside the website.

Pages coding and options:
Index.php => principle core layout
Page.php => single page format
Page-$slug.php => Target page formatting
Special-template.php => template format for page layout – Note: does not have to be named 'special-template' and can be named anything. However, at the top of the template an id tag has to be attached for WordPress to recognise the template as a valid option within the webpages admin section [example below]:

```
/*
Template Name: JavaScript Page Special Template
*/
```

additional notes:
Content.php is a condensing file, which allows for multiple pages to call up content that is exactly the same on several pages from a single document. Single.php should not be included in this list unless you have complex logical coding that will be present on several posts.
Furthermore, the function get_template_part(), which is a pre-built function by the developer of WordPress that acts as the program that activates files such as 'content.php', allows for two

inputs. In other words, you can have specific page activate 'content.php' for core content that displayed the same throughout the page, but as well call up another template in conjunction to create more versatility.

4) Reflection documentation – Agorama prototype – 05.01.17

• Content work for Agorama.org pilot

List of content for pilot:
1. Rock, paper scissors game [Javascript game – self-made]
2. Dragon Slayer game [Javascript game – self-made]
3. The enigma machine [Javascript program – borrowed from another site]
4. The Anonymous Short Vid [Video – self-made]
5. Exterior connections and inputs
   a. Webrecorder.io archive
   b. Facebook API content
   c. Instagram API content

What this represents is the initial list of content that will be included in the pilot of Agorama.org. At this point in time, each of the components are in close to finished states, and I will be using the next couple of weeks to further finalise these components, while at the same time using this as an excuse to brush up on some other needed skills, i.e. JavaScript programming that is essential for API programming.

Widgets:

-widgets usage needs programming on the site's level for the acceptance and running of widgets.

-within the default list of available widgets there is an archive widget and search widget
NOTE: this could be an option for use to simplify and streamline the coding of the website. Further, as they are part of the 'default' pack of widgets that comes with WordPress, it keeps within my ethos of creating a platform that isn't dependent on purchasable widgets and plugins.

-To add additional widget locations on a variety of pages, simply duplicate the function register_sidebar(), and create new 'ids' for the new desired widget locations, then go to the designated file (index.php, content.php, page.php, etc.) and carve out a place for it in the page.

-Can use differential logic (if/else statements) to determine whether a widget appears or not. E.g. an administrator decides that a widget is not needed on a certain page, so they don't include it. If logic was not used the page would still display with a section designated for the widget/plugin input. However if simple coding is added:

```
<?php if (is_active_sidebar('centerstagebox')) : ?>
        <!-- widget-div -->
        <div class= "widget-page-template">

          <?php dynamic_sidebar('centerstagebox'); ?>

        </div><!-- /widget-div -->
<?php endif ?>
```

WordPress will acknowledge that nothing is there and display the page without the division (i.e. <div> symbol) created for the widget display.

Custom homepage/splash page/static page

-There is a control in the dashboard of the WordPress admin section that allows for the creation of a two-stage home page split. In other words, traditionally in a WordPress site (or blogs in general for that matter) the index page, which displays all of the posts published on the page in a list fashion, is the home page. However, you can choose to change this by selecting the option 'static page' that allows for you to input a $slug for another page to act as the new home page, relinquishing the index page of this position. This is used for site formats that have view content like a bog-standard webpage, but which also have a menu option for the pages blog if they have one.
The new coding file for this static page is called 'front-page.php'

Work on Dragon Slayer JS game

Internal dialogue created for game:

☐   "After a long and stressful journey you have finally found the dragon. Shall ye face the Beast?"

User choice: [written: Yes ☐☐ No]

☐   "Prepare yourself, the Dragon stirs!!"

User choice: [No choice, game engine kicks in]

Reflection:
After working through this component to the pilot I have many thoughts. The first is in relation to the interface between the player and program. For example, the Dragon Slayer game engine looks like this:

```
// Game engine
while(slaying) {
   if(youHit) {
      console.log("You hit!");
      alert("You hit!");
      totalDamage += damageThisRound;

         if(totalDamage >= 4) {
            console.log("You win!");
            alert("Your sword slices through the dragon striking its heart! The beast is dead... You win!");
            slaying = false;
         } else {
            alert("You've struck the beast - but it was not a decisive blow! Here comes the dragon for another pass!");
            youHit = Math.floor(Math.random() * 2);
         }

   } else {
      console.log("You lose!");
      alert("The ghastly demon of a beast has overpowered you... You lose!");
      slaying = false;
   }
}
```

The reasoning behind showing this specific piece of code is that it is almost completely invisible to the user. All of the calculations are invisible and thus, in its basic format, presents nothing to the user, unless they know to look in the internal console logs of their web browser. Thus most of my work today on this program was to make it 'visible' to the user, or in other words show the user a progression when they interact with it. And this becomes a task in itself that is very time-consuming.

Further to this, the idea of making something 'visible' has intrigued me and made me wonder how visible I could make this program (and other programs/content) more visible on the platform. Right now DragonSlayer.js has no visually appealing parts; the only thing the user sees are dialogue boxes which convey the narrative, which is fine for now, but it's the future and artist content that I am thinking of…

5) Reflection documentation – Agorama prototype – 11.01.17

•   Adding JavaScript to WordPress

For this session the objective was to understand the best way possible for integrating JavaScript files into a WordPress page. For the first part, I predominantly researched which options were available, which resulted in the discovery of the following list of options:

1.   Widgets and plugins

Widgets and plugins are one of the many ways in which WordPress can add in scripts. In terms of positives for this process, the 'wrapping' of a script into an application (widget/plugin) is that it becomes usable for another user, platform, etc. However, the pitfall of this is that creating this type of reusable package is time-consuming and counter-productive if the content of the application is niche, especially for an art context which might only be used once.

2.   Scripting directly into page/post content section

Potentially the easiest of all the processes. Essentially all one has to do is select the option 'text editor' when editing the content of a post or page and entering this HTML code:

```
<script= text/javascript>

/* Enter code here */

</script>
```

While this is the most straight forward and easy option, there are severe limitations. First is the placement of the code within the page. Predominantly web pages, when implementing scripts of this type, normally place them in the 'header' or 'footer' of the webpage. The reasoning behind this has to do with load time of the webpage on a user's computer. This is because the footer and header sections are predominately used for enacting these types of functionality, thereby allowing the 'body' or main content, which tend to be the heaviest part of a webpage, to load without the additional strain of loading a program alongside images, videos, sounds, etc. Furthermore, running a script in this fashion on the page also runs the risk of causing compatibility complications between the program's code and webpage code (especially on a PHP based page). This risk is amplified even more if the program coding has not been thoroughly tested.

3.   Adding scripts through WordPress functions.php doc

Possibly the more long-winded and difficult of the options found. This option requires the programmer to enter the core functions file for the WordPress site (i.e. this document contains all of the functions that can be called to all pages or targeted pages and allows for the functionality

of such things as Widgets/plugins, Navigation menus, Search engine, loading templates, stylesheets etc.). The benefit of this method is that it's the most recommended by other users of the WordPress platform and by the developers themselves. Further, this method also automatically loads your scripts in the header of the page without the addition of extra code on the target page, with the added benefit of also allowing one to choose whether to load a script in the header or footer of a page. The pitfall of this process is that it takes coding experience to enact correctly, because if done incorrectly it kills the site unless you correct the code or eliminate this new code altogether.

In terms of which direction I decided to take, I chose path No. 3. The reason behind this is that it is the correct way of doing things and further, having developed the site from the ground up, I was intimately familiar with the functions.php page and how to use it correctly. In regards to my process of enacting this, I used the WordPress codex and forum, investigating similar questions to my own. Once found, I was able to understand three important things about this process: 1. You should register a script with your web page, i.e. add its details and data into the website array of information, so that it can be called up at the appropriate time through a $slug, thereby reducing the amount of code needed; 2. Through this process you can enact the scripts to all pages or to target pages; and 3. Once this infrastructure is understood and built, it's quite easy to manipulate and change scripts for new ones or have them target different pages.

The essential coding for this looks like:

```
// register Javascript scripts
function register_Agorama_scripts() {
  wp_register_script('rpsGenerator', get_template_directory_uri() . '/js/rpsGenerator.js', array(), false, true);
  wp_register_script('DragonSlayer', get_template_directory_uri() . '/js/DragonSlayer.js', array(), false, true);
}

add_action( 'wp_enqueue_scripts', 'register_Agorama_scripts');

// Javascript Functionality
function Agorama_js_engine() {
  if ( is_page( 'js-page-1' ) ) {
    // enqueue specific page script files here
    wp_enqueue_script('rpsGenerator');

  } elseif (is_page( 'js-page-2' )) {
    wp_enqueue_script('DragonSlayer');
  }
}

add_action( 'wp_enqueue_scripts', 'Agorama_js_engine' );
```

To explain it, the function register_Agorama_scripts() is used to internalise all of your JavaScript/script files so that they can be called up at any time through a $slug. E.g. rpsGenerator.js has a $slug = rpsGenerator, and I can use this anywhere I please, and WordPress will recognise it and retrieve the full JavaScript file, else you would have to write each time something like this "wp_enqueue_script('rpsGenerator', get_template_directory_uri() . '/js/rpsGenerator.js', array(), false, true);" which essentially is a lot to write and creates larger margins of error.

The second aspect of the code is the function Agorama_js_engine(). This does exactly what the function says, it runs the JavaScript files you want to run. Normally this process will enact all the script you queue up on every page, unless you use differential logic via PHP. By using this

process you are now able to target various pages without affecting the rest. To look more closely at this section:

```
if ( is_page( 'js-page-1' ) ) {
    // enqueue specific page script files here
    wp_enqueue_script('rpsGenerator');

  } elseif (is_page( 'js-page-2' )) {
    wp_enqueue_script('DragonSlayer');

  }
```

We can see that I have created an if/elseif/else statement (i.e. if something happens do this, if not and this happens do this, or else do this) which specifically asks for the website to look at what page the user is on. If they are on page $slugged as "js-page-1" then please run this script, if they are on this page "js-page-2" then please run this script, else don't do anything.

NOTE: I would only recommend this process for people who already know what they are doing, or if you are the person who built the site from the ground up (i.e. not just grabbing a template available from WordPress and editing it through their admin page – you have to understand PHP to a minimum level to be able to do this).

6) Reflection documentation – Agorama prototype – 13.01.17

•   API research and implementation

This session began with the complication encountered during the implementation of widgets and plugins into certain sections of the WordPress page. The main problem that I have been having is on the newly developed geolocator page. To explain this further, as part of the pilot I have devised a short narrative that when a person visits this website it will be a little like exploring the shed or basement of two wannabe hackers aspiring to be like Anonymous. As part of the page it was devised that upon entering you would be presented with a video, and then directed to a following page which would be a geolocator page that would display in text the viewer's country, city location, and further display a map that would show their exact location (Note: no use data records will be retained).

During the development of this section I was predominantly investigating plugins and widgets to do this work, however, I ran into the problem that the vast majority of these plugins need the site to be already live, which is a problem as Agorama.org is still a localised development site and not live. This is, of course, a problem in terms of testing and added to my knowledge of widgets that they are mainly to be used on sites that are already running, and for people who want additional functionality with a simple installation process. This then led me down the road of APIs.

I devised a new test for this by adding another page to Agorama.org, which would house a live traffic cam stream via the use of TfL (Transport for London)'s available APIs. In the end I set up a simple script (added directly into the page's content section for testing purposes only) that connected the site to my local main roads traffic cam (which was also used for verification purposes to see if it worked). The final result ended up working perfectly fine with the site's page streaming in (as a localised page) a 10-second recording that was updated every couple of minutes. This test provided me with the knowledge that potentially APIs are the way to go for dynamic content for several reasons: first, setting something up is fairly straightforward and, secondly, display design is simpler because the elements of display are controlled by the overall webpage CSS stylesheet, rather than having to be internalised to a point within an app.

NOTE: must do more research on this, because my understanding is that APIs are dumped by companies all the time, for example Google Earth's API was dumped when the company

announced that it was getting rid of Google Earth from its system. Companies seem to do this every couple of years, which means one has to be careful while using experimental APIs that are apart from the company in question's core products. Further research is also to be done on social media APIs.

7) Reflection documentation – Agorama prototype – 17.01.17

• Enigma machine post

During this session, I tackled the problem of implementing JavaScript into a single post, rather than on one of the pages. This took the form of developing a post that has internalised into it a fully functioning enigma machine with graphics. My starting point was the web page of Louise Dade (http://enigma.louisedade.co.uk/), as it is a great program she's developed with a nice visual interface. My process began with downing the entirety of her page designated to her enigma machine – to understand the division of code and the essential part to recreate the machine on a post on Agorama.org. I found two major structures necessary for reproducing the program. The first is the HTML code structure for displaying the components, the next is the file enigma.js, and finally the styling for the content from the CSS stylesheet.

Now having experience with implementing targeted JavaScript content, as well as experience from my work on curatingthecontemporary.org with implementing custom HTML into post content, I imagined how I could implement these three elements to achieve a whole. What I came up with was the idea that I would copy and paste the HTML code directly into a WP post via the normal admin section, which I knew would give me the display unformatted and unfunctional. From this point, I ran a test through Agorama's own stylesheet to see if I could manipulate the HTML as if I were beginning the styling. This was to see if code housed in the secondary coding structure of WP (i.e. pages and post generated within the WP admin section, which lives inside the core structure) was easily accessible from the core structure of core, and thereby understand if any additional coding was needed to do this. My test found that no additional coding was needed for this process, thus any HTML code input into the secondary structure of the web site is able to be manipulated by the core style sheet. Knowing this, I took one step further. Rather than code directly into my core stylesheet and run the risk of having obsolete code, which will develop from project to project, inside my style sheet I figure why not use the same process of targeting a specific stylesheet to a particular page or post, similar to my JavaScript process.

This is what I came up with:

```
function learningWordPress_resources() {

  if (is_single( 'the-enigma' )) {
    wp_enqueue_style('enigma', get_stylesheet_directory_uri() . '/css/enigma.css');
  } else {
    wp_enqueue_style('style', get_stylesheet_uri());
  }
}

add_action('wp_enqueue_scripts', 'learningWordPress_resources');
```

To break down my process, I first realised that to make a custom style sheet I would essentially call the elements from the original stylesheet with the addition of the enigma style code. Creating a new document I did this exact thing and named the file 'enigma.css' for clear identification. Once this was done, I knew that everything on the post's page should look the same with the addition of the enigma machine style. Using differential logic similar to the JavaScript process, I created a statement that targeted the $slug of the post 'the-enigma' and the result, while not

exact, was changed and visual. From the images below you will have Louise Dade's version first and Agorama.org's second:
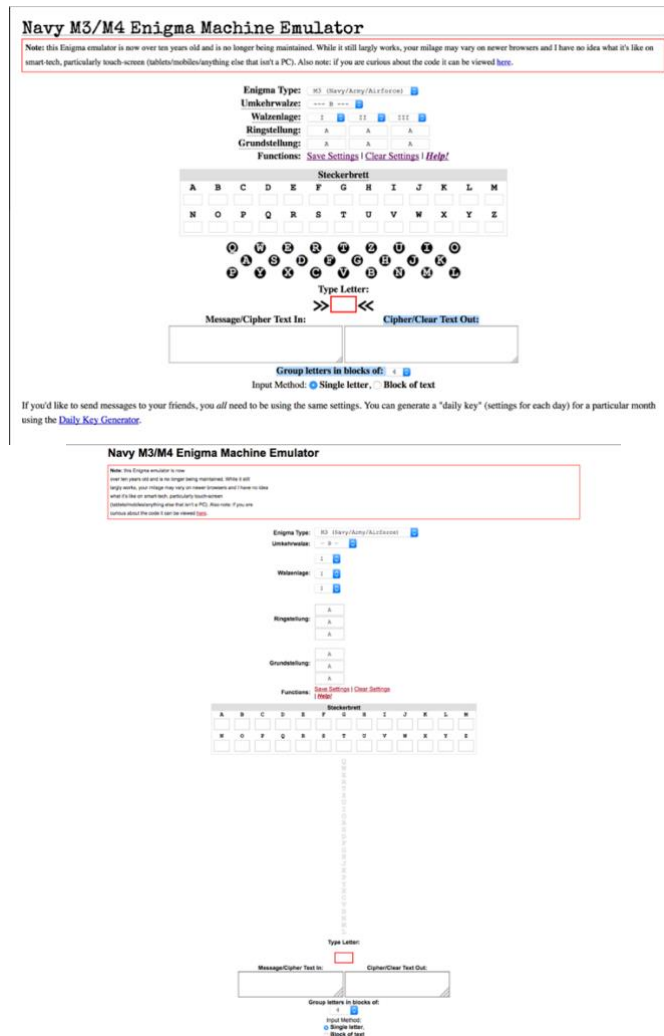
Fig.34.Agorama Prototype, stealing the Enigma emulator. Part of self-development research period.

As the images show, it is not exact, and work still needs to be done; however, the success of this process indicates that once I am working with finalised content, i.e. the artist's work ready for display, the process for implementing this type of dynamic content is very straightforward.

The final stage on this process was the last JavaScript file. JavaScript code and its interaction with HTML is possible from identification tags, for example below:

Javascript code
var pr =
ENIGMA.plaintext.indexOf(document.getElementById('rightw_set').value.toUpperCase());

HTML code
<tr>
<th><label accesskey="g" lang="de" title="Ground Setting"
for="leftw_set">Grundstellung:</label></th>
<td class="settings"><input id="greek_set" style="display: none;" maxlength="1" size="3"
type="text" value="A" />
<input id="leftw_set" maxlength="1" size="3" type="text" value="A" />
<input id="middlew_set" maxlength="1" size="3" type="text" value="A" />

```
<input id="rightw_set" maxlength="1" size="3" type="text" value="A" /></td>
</tr>
```

This is key for making the whole thing work and, since I was reproducing someone else's content, I had to make sure I didn't change any specific tag, which would cause a piece of the program to become inoperable. Once this was done, I used the same process and the target page process – and completed the reproduction process.

8) Reflection documentation – Agorama prototype – 07.11.16

-        WordPress.org [free publishing software]
o   What are its limitations?

* notes on limitation on post and page formats [the core of WordPress], it seems that they are extremely customisable and limitations are dependent on a developer's imagination.

* answering the rest of the question, the limitations seem to lie within the coding of the website. As I continue forward I will discover the limitation as the page progresses in construction. From my initial research, WordPress.org depends on three server software/programming languages: MySQL, Apache, and the coding language PHP. However, in the construction of the website the languages are predominantly HTML5 and CSS, and in terms of PHP this language is used to tether all of the website components together and allow a non-technical user to make changes via the website's management system.
Another thing I I have noted is how flexible WordPress.org is in accepting other programming languages such as JavaScript and Python. Can these be used freely within the system, or will additional levels of programming be necessary for these types of languages to be embedded? Another question in need of investigation is how easy is it to have a WordPress.org website interface with other platforms, such as Facebook, Instagram, Twitter, etc.?

* Coming back to the question on programming languages, I have found that JavaScript can be fully integrated with WordPress.org. This is great, because I have a number of JS games that I have created and will use them as the first subjects for when the page's template shell is ready.

In terms of Python, I have found that there are limitations with this language and Agorama. The main reasoning I have found for this is because WordPress is built on PHP, which creates a conflict when it comes to Python as they are both server-based programming languages. That being said you can input Python coding into WordPress, though this seems to be a complicated endeavour.
NOTE: To research the differences between PHP and Python languages, and the limitations of PHP in terms of dynamic web design.

9) Reflection documentation – Agorama prototype – 08.11.16

Goals for the week:
1.   Create basic webpage structure
2.   Check if site can be documented through webrecorder.io

* The page is beginning to take shape and it seems to be at a point where in the next week or so I can begin the styling of the web template because, God, it's an ugly page at the moment! In terms of the navigation of the website, it's working well and interestingly it's quite simple. Apart from the design issues and styling, the WordPress navigation is very fluid in terms of being able to create a variety of page and post templates and attaching them to each other through permalinks. This aspect makes me happier in my choice with WordPress. Further to this investigation of the differences of PHP and Python, it seems that, while many on the internet swear by Python, PHP is a language which is just as versatile, with the main criticism being that

its looks ugly when coding, and that people hate the symbols the language uses - which tells me that this is like an iOS v. Android type of argument in terms of which is better.

* Tried webrecorder.io on the site and unfortunately it seems that webrecorder.io can only record 'live' sites. However, I will investigate this further in the coming weeks to see if I can resolve this because I would like to start testing the limitations of documenting web content on that platform.

10) Reflection documentation – Agorama prototype – 09.11.16

* In reaction to yesterday's problems with using webrecorder.io for documentation purposes on a localised website, I have researched further on potential web hosting options to better understand how I can rectify this problem.

* After a lot of investigating I have found a number of different solutions to the problem. First, it seems the 'virtual' server which I am using to build Agorama, MAMP, has a paid version which has options to connect to web hosting services, however, again in terms of budget, this does not seem like a good option till the website is ready. I have also tried to find out if this program, MAMP, or any other program, could turn my personal computer into a temporary server to allow for webrecorder.io documentation. However, in my investigation I found that this is potentially a very dangerous thing to do because it creates an opening for hacking.

* MAMP has a 'pro' version which seems to be able to allow for sites to be hooked up to a web server to allow for temporary checking on other platforms (i.e. smart devices). So this doesn't really resolve my problems with using web recorder.io. Further to this, the option of making my computer a temporary server for this type of documentation is a bit risky, as it allows people not only to access the website but also the contents of my HD.

In the end, I have found a way around this by actually saving the webpage to my computer. However, this is a bit of a long-winded process, as I have to save each page, post, or other content pages individually. The only concern for doing the construction documentation this way is that my computer is already equipped with a number of different scripting language libraries, so I will have to test them on another person's machine to ensure that anyone can view them. Furthermore, in deciding to progress with this form of documentation I have decided to accompany each documentation session with screenshots of the page's code to highlight the structural changes, not only visually via website saved files.
NOTE: [24/11/16] I have finally come around to having someone test the website documentation and for the time being they seem to be working!

* END NOTES: To conclude today's reflections: I have decided to progress forward with an offline documentation process till the end of the second stage of the website. To clarify the stages: Stage One is build the website template (from scratch); Stage Two will be to move on to stylisation, begin implementing dynamic content, exploring interfacing options to exterior platforms (Facebook, Instagram, etc.); and finally Stage Three, changing the site structure to better fill the requirements for Agorama.

On MAMP, it seems that while the paid version has a greater degree of flexibility, the only special thing that might interest me is the ability to share content to mobile devices. However, I feel that maybe this is better left to be done when the site goes live for the third stage and in terms of this my minimum requirements for smart device display is to display the site as its desktop version (at least for the time being till stage 3 is reached) - the reason being to minimise the cost of building the site till it's ready to go live.

ADDITIONAL RESEARCH: smart device styling, and research best web hosting service (leaning towards an Icelandic company for their protection laws on websites and user data information).

11) Reflection documentation – Agorama prototype – 13.03.17

Today marks the first day of construction for the 2nd initial build of Agorama. For this build I have decided to focus on certain core content, while bypassing aesthetics for the time being. The list of tasks given to myself are:

1. Splash page
   a. After much debate, it has been decided that the front video should be embedded from a video service platform, i.e. Vimeo. As well, playing with the idea of API's, the decision was made to attempt utilization of Vimeo's API system to see if the content could be livened up. For example, the viewer is presented with a video that automatically plays and once finished loads the next page of the site.
2. Google api + geolocation page
   a. For this I have decided to move away from the use of plugins and work exclusively with API s. In the instance of Google, the map API gives a lot of options that you would have to pay for in a plugin. So this interface will be used to present the map that identifies the user's location. For the geolocation bit, reading through Google's terms and conditions, user data can only be used for input into a map. Hence, I will be investigating potential geolocation APIs that allow for this type of dataset to be used the way I have conceived.
3. About the Agorama page
   a. This is written content about the structure of the platform, types of art work, and general concept for Agorama.
4. FAQ page
   a. General information on terminologies used throughout the page, being approached for collaboration, etc.
5. Privacy Policy page
   a. Terms and conditions for using the web page as a viewer.
6. Overview of current work page
   a. For this page I have decided that it will explain a bit about the current pilot's make-up, a diagram of the website and its navigation principles, and objectives of the current build.
7. External input/output page
   a. This page is the live stream of tfl cctv cameras, and it is planned to expand this page and stylise the video streams (4 are planned now) in a grid layout. Furthermore, the coding for the video players (JS) will be separated from the current construction and implemented through a separate script.

12) Reflection documentation – Agorama prototype – 14.03.17

Tasks for the day:

1. Splash page
2. Geolocation page

-Run into a bit of a problem when coding the pages above. Turns out that WordPress has implemented an auto current for coding on its page and post layout to add in "<p>" for every line of code. This causes a problem for scripts and HTML tags that are directly written into the page.

-Corrected this coding by finding the function to disable this feature, wpautop(), however ran into more problems as this disables this function for the whole site. In this case, I explored the option to implement a free plugin that potentially could correct this and found a simple one that allows for target pages to be tagged and have this function disabled.

-Was successful after the implementation of the wpautop() disable function plugin, in getting the splash page to work, and now the page works exactly as envisioned. Also, the implementation of the plugin fixed certain layout problems, such as the enigma machine post page.

-In implementing the Google Map's API, I ran into more problems. It seems that the code was implemented successfully, however the map was still not visible. After much investigation, and a few troubleshooting tutorials directly from Google, the problem seems to be a margins and padding issue around the container of the maps div. Problem corrected now.

       -required 200px of padding all round.

13) Reflection documentation – Agorama prototype – 15.03.17

Task:
1. Geolocation print out to geolocation page
2. About page
3. Overview page
4. FAQ page

-Found new a new geolocation API - the web provider of this is named ipinfodb.com. Their API seems to be the correct dataset that I would need to achieve the desired results.

-During the testing of this API I ran into problems and was receiving the error message "invalid api key". Emailed the services support for this problem… awaiting a reply…

-Following this hiccup, this prompted me to work more on the information content of the website and was able to update the "about" page and "overview" page. Further to this I took the initiative and also updated the FAQ page to answer several questions a viewer might have, and as well updated the "privacy policies" page.

-For the privacy policy page, I did a bit of research on this in terms of what exactly should reside in this space. From the research undertaken, there are several templates out there that can be used for this. However, further in-depth research needs to be undertaken in terms of UK law, as this, from the media news, is set to change in terms of data collected on viewers. For example I have read one piece of legislation saying that metadata now *has* to be kept for the duration of a year for potential security services investigations (in the case of a suspected terrorist having visited the page and this data being of use to the authorities).

-Reviewing the enigma post page, I have noted that the creator of the original code (which is in use by Agorama) has to be contacted prior to any formal launch of the platform.

14) Reflection documentation – Agorama prototype – 16.03.17

Task:

1. Ipinfodb.com API work

-Received a response from the support team from ipinfodb, basically saying to re-write the link section of their own code they provide. Seems they have changed certain things without updating their documentation page. From their explanation the full link has to be input rather than the fragmented one they gave in their documentation.

-Implemented their suggestion and began to receive appropriate API callback from the company's service. However, I have found a problem in their documentation page. They use coding to establish a cookie on the user's browser. But the problem with this is that, once the cookie is established, there is no comparative function to identify if the viewer has changed positions. For example, when I set this up at the British Library, it rightly gave me the readout for my location there. Upon coming home, I checked this and because of the cookie when loading the page up again it still established that I was in Kings Cross (the BL location). In reviewing the backend callbacks, I noticed that unfortunately there was no callback, meaning the script sees that there is a cookie and doesn't prompt a request from the API server.

-Working on this further I have begun to re-write the code on a separate HTML page to attempt to kill the cookie, and simply request a callback each time a person is on the page. I was able to do this by implementing a further line of differential code in the cookie function. However, for the sake of keeping things streamlined, I will be working on the third initial build towards streamlining the code to eliminate redundant code no longer in use.

15) Reflection documentation – Agorama prototype – 21.03.17

-It has come to my attention that Google's Chrome browser has implemented certain restrictions on non-ssl certificated sites. In this case, the Google maps API will not work without the site being entirely secure, i.e. using the prefix "https".

-The work for the rest of the day was dedicated to implementing a ssl certificate onto the site for full security and avoidance of API conflict over insecure sites.

-Setup was pretty straightforward. The hosting providers seem to have made this a streamlined process.

-Reviewed website for any problems with ssl complications.
       -had to re-establish all links to images from http to https
       -JavaScript games don't seem to be affected
       -new problem with ipinfodb found – basically, the API request link is insecure and has to be changed to be from https. Checked with provider of the API and they have https capability, so will update this in the third initial build.

-NOTE- need to establish a checklist for new website versions to avoid content not being displayed correctly because of ssl certificate problems.

3.4.1.2 API learning process

Build Documentation – API URL Shortener Service (Not online)

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1) Reflection documentation – API – 19.04.17

-For my first project on API development I decided on a simple one that I found on the web. The video tutorial essentially gave you a detailed run-through of developing a simple web application. Furthermore, there was an additional segment added by the same author on turning this web app into a usable dataset for the creation of an API for cross-platform app development.
The web application is a simple URL shortener predominately used for Twitter, I believe, to save on character count. The application would be a simple setup, utilising a MySQL database that is connected to a web app that a user could access to enter in a URL. Once the URL is entered, the application would send the request to the database to create a key or symbol that would

represent the URL in the dataset, which could be used in a custom URL to create a prompt to link to the desired webpage. For instance:

[example]
-original link: https://www.youtube.com/watch?v=gmv54pfxk0Q
-After web app…. Assigned the key '16'
-URL after web app: http://go.php?=16 [note this is not a functioning URL]

While not the most elaborate of applications, this setup is good for understanding the basics of creating datasets for API development, along with developing applications for interacting with these datasets (and adding to them).

-In regards to the building of this application, the setup was quite simple. First one had to establish a MySQL database on a server. In my case I established one on my local virtual MAMP server. For the Web app, the required table for inputting data needed 1 table with two columns, one for the storage of the URLs input by a user on the web app, and a second for the assigned key each URL receives.

This established a table with two columns: url_key and URL. From this point onwards, what was required was to begin the web application, which would be a simple interface that would have a form to input an URL, a submit button, a display of the URLs already stored and converted in the system, and finally the shortened URL version of the URL input.

-In regards to the HTML markup, it is a simple format, which outlines the areas for the form and form submit button. Furthermore, the displaying of datasets (i.e. the URLs and their keys) is produced by php coding within the HTML markup:

```html
<html>
<head>
  <title>web application</title>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
  <meta name="viewport" content="width=device-width">
</head>

<body>

  <div>
   <form action="" method="post">
    <h5>Please enter URL to shorten below</h5>
    <p>
     <input type="text" name="url" />
     <input type="submit" value="Shorten" />
    </p>
     <?php
      if (!empty($errors)) {
       ?>
        <ul>
         <?php
           foreach ($errors as $e) {
         ?>
          <li><?php echo $e; ?></li>
         <?php
          }
         ?>
        </ul>
        <?php
```

```
        } else {
          echo "Your shortened URL: http://localhost:8888/api/ShortenURL/go.php?=$url_key";
        }
      ?>
  </form>
</div>


<hr>


<div>
  <h5>List of URLs plus their keys</h5>

  <?php
  if (!count($records)) {
    echo "No URL entries..";
  } else {

  ?>

    <ul>
      <?php
        foreach ($records as $r) {
        ?>
      <li><?php echo $r->url_key . " - " . $r->url; ?></li>
      <?php
    }
      ?>
    </ul>

  <?php
  }
  ?>

</div>


</body>
</html>
```

-Update on this development… With the recent additions to the PHP versions, certain code is now deprecated. For example, in this web application the original creator utilised the MySQL class, which is now deprecated. Will have to research PHP web manual for further reading on the new mysqli class which is replacing mysql.

2) Reflection documentation – API – 20.04.17

mysql => mysqli

-Having run into a pervious problems related to the deprecation of certain fundamental coding within the PHP language for accessing a MySQL database, today was an investigation day to understand the new PHP coding standard: MySQLi extension.

In regards to this, I had run into fundamental problems through the use of the old MySQL extension, available up till PHP version 5.6. With PHP now entering version 7, this old coding has now been removed, thus it's safe to assume that proceeding forward with any new

development should use the newest available coding, even if the library for the class is still in development.

In the process of creating the URL shortener, I discovered that several of the methods (or functions) used within the tutorial were of the MySQL extension:

mysql_connect(Server, User, Password)

mysql_select_db(database, Resource[= to Var assign to mysql_connect])

mysql_query(String query[= to command sent to MySQL database])

mysql_result(Resource[= to Var assigned to specific mysql_query()], Row[= to selected row in database])

mysql_num_row(Resource[= to Var assigned to specifc mysql_query()])

mysql_real_escape_string(String[= Var assigned to a specific string])

Essentially, the above examples represent nearly all of the functions, methods and extensions utilised by the URL Shortener application, thereby creating several errors in the console when running the application.

- I proceeded to resolve each issue individually, step by step. First was the function mysql_connect, which is the primary function for establishing a database connection, and as well the mysql_select_db() function, which essentially tells the machine which dataset to use after the database connection is established. In terms of rudimentary coding for establishing a simple connection, it would look like this:

```
<?php

$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Not connected : ' . mysql_error());
}

// make foo the current db
$db_selected = mysql_select_db('foo', $link);
if (!$db_selected) {
    die ('Can\'t use foo : ' . mysql_error());
}
?>
```

The basic mechanism behind this operation is that first the machine is told to connect to the database server. Once a connection is established, the machine then proceeds to the next section of code, mysql_select_db(), and finds the correct database and tables to work with. In the new standard, the idea behind the connect function has been extended to now include the selection of the database during connection, thus reducing the coding needed. Furthermore, the new mysqli extension can be written as a constructor (Object Oriented Programming) in addition to procedural. Regardless of the benefits of OOP or procedural, and vice versa, I took the decision to understand OOP constructor operations for the mysqli extension. The present way to establish a connect in the new extension looks like this:

```
<?php
$link = mysqli_connect("127.0.0.1", "my_user", "my_password", "my_db");
```

```
if (!$link) {
    echo "Error: Unable to connect to MySQL." . PHP_EOL;
    echo "Debugging errno: " . mysqli_connect_errno() . PHP_EOL;
    echo "Debugging error: " . mysqli_connect_error() . PHP_EOL;
    exit;
}

echo "Success: A proper connection to MySQL was made! The my_db database is great." .
PHP_EOL;
echo "Host information: " . mysqli_get_host_info($link) . PHP_EOL;

mysqli_close($link);
?>
```

While the coding looks longer than the original, it is in fact similar due to the fact that only one method is being employed for the connection and establishing which database to use, as opposed to two separate functions. In the case of the replacement mysqli extension for mysql_select_db, this is simply now mysqli_select_db(). In regards to its usage, it is recommended for changing databases from a single connection, rather than having to establish a new connection for another database, which makes the computation of the requests and queries faster. For example, if a web application had a login before the user could access the web application, mysqli_select_db is used as a secondary method in this process. Thus what we would have is first the establishment of a connection to the database through mysqli_connect, which would probably connect to the user's database that houses login details. Once the program understands that there is a login for the said user and logs them in, mysqli_select_db would be implemented to change the database from the user's login db to the db corresponding to the application.

Moving onto the other functions: mysql_query, mysql_result, and mysql_num_row all correspond to specific operations for requesting information from the MySQL database. So when researching the changeover for these pieces of code, I investigated them all together. The problem encountered when investigating this change-over was that, unfortunately, due to the changing nature of operations for PHP API, the majority of the original functions operated very differently from the new mysqli extension. The two affected are mysql_result and mysql_num_rom. In regards to mysql_query, it was a straightforward change to the new extension mysqli_query. However, due to the change in operation for the extension focusing on results from the database, the URL shortener application will have to be completely re-written.

3) Reflection documentation – API – 21.04.17

mysql => mysqli pt.2

Continuing from the work carried out over the past couple of days. Today I focused my efforts on transforming the URL shortener app from the original mysql extension to the new standard created for PHP 7, mysqli. In terms of the beginning of the program, the coding changeover was relatively straightforward. It was the body of the web app that was the main issue. Here is the coding that I would be looking at:

mysql_query(String query[= to command sent to MySQL database])

mysql_result(Resource[= to Var assigned to specific mysql_query()], Row[= to selected row in database])

mysql_num_row(Resource[= to Var assigned to specific mysql_query()])

In regards to the structure of the app, the main fold directory break was as follows:

```
=>Main directory [api]
        =>URL Shortener Director
                +shortener.php [main web application file + html markup]
                =>Core directory
                        +init.inc.php [web application file]
                        =>Inc directory
                                +shortener.inc.php [web application file]
```

Within this setup, the three files that I would be focusing on were shortener.php, init.inc.php, and shortener.inc.php. The basic functioning of these three files operated first with init.inc.php being the file to initiate the connection with the database. From this point onwards, within this same php file there is a command prompt to include the file shortener.inc.php when running this file. For the file shortener.inc.php, the content of this file included all of the functions for querying the database, inputting new URLs, and checking if URLs were already in the database, thereby preventing duplication of URLs. This made shortener.inc.php one of the most important files within the application. This was also the file which needed the most amount of work, as it included a lot of deprecated coding.

After many attempts at trying to convert the deprecated code, I could only get the web app to function at a very basic level, which essentially allowed someone to add in an URL and for the system to attach a key to the URL. After much reflecting on this process, I have decided to come back to this at a later time, due to the fact that the coding of this application required a complete re-write, not a quick conversion of the code.

4) Reflection documentation – API – 12.05.17

Note on Libraries and API

-First off, a library is a grouping of code, normally built to create an easier workflow for the programmer through the reduction of coding, by implementing functions and methods previously written.

-A JavaScript library is an API because Application Programming Interface means an interface created specifically for the development of an application. Thus, looking at Google Maps' javascript API, you are provided with a library of JavaScript methods, functions, instances, etc. - along with the raw data of their maps application. This means the accompanying library is made to specifically work with their maps data, allowing users to recreate a Google Map on other sites. The same thing applies to Vimeo. I uploaded a video on my page [Code example]

```
// embedding code for Vimeo media
<div id="vimeo">
<p style="text-align: center;"><iframe
src="https://player.vimeo.com/video/207781072?autoplay=1" width="720" height="405"
frameborder="0" allowfullscreen="allowfullscreen"></iframe></p>
</div>

// API request
<script src="https://player.vimeo.com/api/player.js"></script>

// script program - requires both Embed + API call
<script>
var iframe = document.querySelector('#vimeo iframe');
var player = new Vimeo.Player(iframe);


// When the player is ready, add listeners for pause, finish, and playProgress
    player.on('ended', onFinish);
```

```
    console.log('bang');

function onFinish(id) {
    window.location.href = 'https://Agorama.org.uk/geo-locator-we-know-where-you-are/';
    console.log('page change');
}
</script>
```

As we can see above, the structure of the coding reveals this combination. First, we have the embed coding, which specifies the video device, height, width, autoplay, etc. Below this, you will notice the script implementation. First with the API call in its own script, followed by the code that prompts the browser to load the next page once the video is finished.

Therefore a Javascript library is an API, but without maybe a specific dataset attached or potentially created to manipulate several types of data that the library owner/developer might not have direct control over. This makes the development of these things incredibly flexible. However, it also means that to make something like this a focus will have to be applied. For example, I could develop everything around PIL or Agorama, meaning artworks and functionality of operations, data generated, etc. similar to Stanza's soundtoy.net. Which is great for a multi-platform-oriented work of art. Thus, someone could produce an app for Facebook, which utilises the artwork and implements it into the social media system for people to download.

Ideas for proceeding with this train of thought:
Agorama + PIL to have works built with API functionality
Develop a Facebook app for the Facebook platform, that connects to other potential platforms/API
e.g. Bit_Bot = app that when installed plays 5 distinct sounds on the users browsers that are opened to Facebook. Source of sound could be Soundcloud. Facebook App <= Soundcloud API call
Think about an app for CtC
Bring creating a JS library for P5
Think about this first - study other libraries
Potential = library that interfaces online to offline and vice versa
Potential = library that works with data from different language programs/dictionaries/web apps/translation/etc. {part of languages}

5) Reflection documentation – API – 17.05.17

API.ai work => CtC

-So far, the assignment I have given to myself is the creation of a simple AI bot for the Slack management system for CtC. The following objective is to create a bot that notifies everyone appropriately without having to add into "@" symbols and make Slack's interface a more fluid workspace.

-Integration with Slack is now complete; however, have not installed the bot on Slack yet. The first step I believe is to program the AI with all of our names and the abbreviations of our names so that it can recognise them. This should also work only for the group chats, not the direct messages as they are auto-sent to people's accounts.
-Another feature that could be useful is the adding of things to the calendar, and further notifications of calendar events to the relevant people. Potentially something that Amy could simply fill in in Slack and the bot does everything for her.

-Ok, after looking at the setup of API.ai and Slack, it seems to me that API.ai is for conversational things. For instance, it's more like Siri or Alexa in being a functional bot. I guess that is what AI really is in this instance. It's conversational. In what context would CtC need a conversation AI for? That is a good question. In this instance, I don't think we would need one.

However, in my other projects, like the Language one, or in the instance of creating a specific thing for user interaction, this would be great.

-New project then: the creation of a bot that can easily define words and bring up the Etymology of a word. More importantly, it would be nice to create different types of associations, or followup for queries.
-Furthermore, I will define three types of intents…. 1. define word; 2. show Etymology of word; 3. if a word exists

6) Reflection documentation – API – 22.05.17

Web application – URL Shortener – revisited

Returning to the shorten URL web app, I have decided this time to reconsider every single step and re-write the code for this piece, essentially creating a whole new app. The thought process behind this exercise is to gain the basic skillset required to transfer the API knowledge to the application of Agorama and PIL project so that both can be developed to have active code that interacts with the MySQL db, and thereby allow for each of the projects to access a multi-platform practice further. In this thought process, the development of this type of web application is that it's a core utility of the multi-platform development of the semantic web.

Following these thoughts, I progressed with developing the app once again, giving myself specific requirements. First was that I would utilise the new MySQL extension in its constructor or object-oriented programming mode. Furthermore, another requirement was to simplify the code of the program, because in its current state it required three different files, one for the frontend and HTML mark up, one for the initialising of the MySQL db connection, and finally one for containing the functions. On top of this, I was having problems with understanding how to use functions and methods in OOP…. Thus, further research had to be done on this before proceeding.

Beginning with the research on utilising OOP and the MySQL extension correctly, I did a web search for the question: "Can you use procedural and constructor MySQL coding at the same time?" To break this question down for a moment, procedural and constructor coding are essentially two different ways to do the same job. Procedural, which I believe is the older form of writing code, looks a bit like this.

$link = mysqli_connect(localhost, User, Password, DB);

this is the basics of coding, where you assign a method or function or entity to a variable, which in this case is represented by "$link". In constructor, or OOP programming syntax the structure of the code would look like this:

$link = new mysqli(Localhost, User, Password, DB)

Thus, there isn't a great difference in syntax style at first glance. However, upon closer inspection of the OOP style of writing, we can create classes. Classes are a type of blueprint for an object, for example the simplest way to explain a class is: A cat is an animal, and as well a dog is an animal, thus both cat and dog can be associated together as classes of animal, and animal would in this sense be the blueprint for understanding what an animal was. Of course, this is a simplified explanation.
The problem in all of this is that OOP and procedural can work together. However, their operations together can be a bit tricky. In procedural we have functions, methods, variables etc. and these can be placed together in newly created functions, for example the original coding for shorten_url() looked like this:

```
//add new url to database, returns designated key
function shorten_url($url){
```

```
//first half

  $url = mysqli_real_escape_string($link, $url);
  $result = mysqli_query($link, "SELECT url_key FROM urls WHERE url = '$url'");
  if (mysql_num_rows($result) == 1) {
    return mysql_data_seek($result, 0);
  }

  $url_key = base_convert((string)(get_total_urls() + 1), 10, 36);
//Second half Insert

  mysqli_query($link, "INSERT INTO urls (url_key, url) VALUES ('$url_key', '$url')"));

  return $url_key;

  mysqli_close();
}
```

The beginning of the newly created function, which incorporated other OEM functions, such as the MySQL original extension, starts with "function shorten_url($url){ } ". By creating a function of this type we can combine several functionalities into one - thereby - creating programs with a library of possibilities. Furthermore, these functions are separate entities or methods not dependent on each other, unless programmed otherwise.

In OOP this structure is different. First off, we are working with objects, and objects have methods (or functions/things they do).

7) Reflection documentation – API – 23.05.17

Web application – URL Shortener – revisited – pt2.

After setting out on Monday to redevelop the URL shortener and running into the problem of syntax between procedural and OOP coding, I began today with research into "Can you use procedural and constructor mysqli coding at the same time?"

Interestingly enough, I came across one resource that was incredibly helpful in the understanding of these two styles. The article, entitled "Using PHP with MySQL -the right way" by Lionite (https://www.binpress.com/tutorial/using-php-with-mysql-the-right-way/17), answered this fundamental question of mine. More importantly, it also established a code of practice when setting up a web app to interact with a database more securely. Furthermore, it broke down the process of coding in procedural, as well as OOP, which gave a good example of the distinction between the two coding styles.

The example for procedural coding with MySQL and PHP looks like:

```php
<?php
/**
 * Database functions for a MySQL with PHP tutorial
 *
 * @copyright Eran Galperin
 * @license MIT License
 * @see http://www.binpress.com/tutorial/using-php-with-mysql-the-right-way/17
 */

/**
 * Connect to the database
 *
 * @return bool false on failure / mysqli MySQLi object instance on success
```

```php
 */
function db_connect() {


    // Define connection as a static variable, to avoid connecting more than one
    static $connection;

    // Try and connect to the database, if a connection has not been established yet
    if(!isset($connection)) {
                // Load configuration as an array. Use the actual location of your configuration file
                // Put the configuration file outside of the document root
                $config = parse_ini_file('./config.ini');
        $connection =
mysqli_connect('localhost',$config['username'],$config['password'],$config['dbname']);
    }

    // If connection was not successful, handle the error
    if($connection === false) {
       // Handle error - notify administrator, log to a file, show an error screen, etc.
       return mysqli_connect_error();
    }
    return $connection;
}

/**
 * Query the database
 *
 * @param $query The query string
 * @return mixed The result of the mysqli::query() function
 */
function db_query($query) {
    // Connect to the database
    $connection = db_connect();

    // Query the database
    $result = mysqli_query($connection,$query);

    return $result;
}

/**
 * Fetch rows from the database (SELECT query)
 *
 * @param $query The query string
 * @return bool False on failure / array Database rows on success
 */
function db_select($query) {
    $rows = array();
    $result = db_query($query);

    // If query failed, return `false`
    if($result === false) {
        return false;
    }

    // If query was successful, retrieve all the rows into an array
    while ($row = mysqli_fetch_assoc($result)) {
```

```php
        $rows[] = $row;
    }
    return $rows;
}

/**
 * Fetch the last error from the database
 *
 * @return string Database error message
 */
function db_error() {
    $connection = db_connect();
    return mysqli_error($connection);
}

/**
 * Quote and escape value for use in a database query
 *
 * @param string $value The value to be quoted and escaped
 * @return string The quoted and escaped string
 */
function db_quote($value) {
    $connection = db_connect();
    return "'" . mysqli_real_escape_string($connection,$value) . "'";
}
?>
```

In regard to the OOP style of coding, it would look like this:

```php
<?php

/**
 * Database wrapper for a MySQL with PHP tutorial
 *
 * @copyright Eran Galperin
 * @license MIT License
 * @see http://www.binpress.com/tutorial/using-php-with-mysql-the-right-way/17
 */
class Db {
        // The database connection
        protected static $connection;

        /**
        * Connect to the database
        *
        * @return bool false on failure / mysqli MySQLi object instance on success
        */
        public function connect() {

                // Try and connect to the database
                if(!isset(self::$connection)) {
                        // Load configuration as an array. Use the actual location of your
configuration file
                        // Put the configuration file outside of the document root
                        $config = parse_ini_file('./config.ini');
```

```
                self::$connection = new
mysqli('localhost',$config['username'],$config['password'],$config['dbname']);
                }

                // If connection was not successful, handle the error
                if(self::$connection === false) {
                        // Handle error - notify administrator, log to a file, show an error screen,
etc.
                        return false;
                }
                return self::$connection;
        }

        /**
         * Query the database
         *
         * @param $query The query string
         * @return mixed The result of the mysqli::query() function
         */
        public function query($query) {
                // Connect to the database
                $connection = $this -> connect();

                // Query the database
                $result = $connection -> query($query);

                return $result;
        }

        /**
         * Fetch rows from the database (SELECT query)
         *
         * @param $query The query string
         * @return bool False on failure / array Database rows on success
         */
        public function select($query) {
                $rows = array();
                $result = $this -> query($query);
                if($result === false) {
                        return false;
                }
                while ($row = $result -> fetch_assoc()) {
                        $rows[] = $row;
                }
                return $rows;
        }

        /**
         * Fetch the last error from the database
         *
         * @return string Database error message
         */
        public function error() {
                $connection = $this -> connect();
                return $connection -> error;
        }
```

```
        /**
         * Quote and escape value for use in a database query
         *
         * @param string $value The value to be quoted and escaped
         * @return string The quoted and escaped string
         */
        public function quote($value) {
                $connection = $this -> connect();
                return "'" . $connection -> real_escape_string($value) . "'";
        }
}
?>
```

Both styles do the exact same thing, just differently. In the procedural process, which is the style I am more familiar with when it comes to PHP coding, what we have is the creation of several functions which will act as the connection to the database for the web app. These are identified first by the db_connect() function which will establish the connection, then followed by functions for querying the database (db_query and db_select), a function for outputting errors (for debugging) and finally a function which escapes string inputs to prevent MySQL injection.

In the case of the OOP style, the operation is exactly the same, however in this syntax all the functions (connect, query, select, error, and quote) are grouped together into one class object blueprint. This was the difference in syntax style that I was looking for, the understanding of how to create a workable function in OOP syntax, as prior to this I was having problems initiating self-created functions while using OOP syntax. Essentially, what I was getting wrong was the idea of a function being an isolated thing or object in itself. In this sense the word "method" is probably better served to describe a procedural function within OOP.

Looking at the example above, the first major thing to take into account is that all the functions/methods are wrapped into a "class" called Db. The Db class would be the blueprint for an object, and this specific object would be something for connecting to a MySQL Database, with methods (or functions) that would allow objects of this class type to carry out tasks on a MySQL db. And this is the fundamental difference between the two in procedural terms - we don't have objects per se, thus coding can be individualised from one method to the next. But in OOP an object performs the task, thus the method that allows it to perform these said tasks must be included within the class's body, and this was where my mistake was happening. I was developing functions and methods for an object-oriented way of thinking, that weren't specifically assigned to a class/object.

With this in mind - I quickly reviewed my previous coding with the specific intention of redeveloping the Db class structure the article had provided - and realised that I would implement the original tutorial's functions (get_total_url, get_url, and shorten_url) and embed them into the class as specific methods to be implemented into the HTML markup page, similarly to the original tutorial.

8) Reflection documentation – API – 24.05.17

Web application – URL Shortener – revisited – pt3.

After the success of yesterday's research, today I set out to begin the recoding the URL shortener web application. What this entailed was the creation of a completely new shortener.php page (which is the main frontend of the application, containing the HTML markup), creating a completely new initial connection page (initial.php - containing Db class) and, finally, instead of an additional page for storing the procedural functions (as they would now live within the Db class, written on the initial.php doc) I included a file called "config.ini". A quick note on config.ini: This file is a security precaution for developing web applications. It houses the server address, username, password, and DB name for the MySQL connection. Thus, I figured it would

be good practice to implement this form of separate credential filing, thereby creating a safer more secure connection, so that if someone gained access to the Db class, they could not actually use it to establish a connection to the web app's DB, as the credentials are stored in another file, and "call" into the Db through a OEM function applicable to most backend programming languages.

Returning to the development of the web app, two of the original functions, get_total_urls and shorten_url, I identified as being primary for the development of the users frontend page, and fundamental to this part of the application's functioning.

[original function] get_total_url() - a function which queries the db and returns the number of rows contained in the url_key column in the url table.

[original function] shorten_url() - takes the user input $url (url that the user inputted) and converts it into a safe string (real_escape_string - to prevent against MySQL injection), which is then used to query the DB to see if it exists already, if it does not exist - if utilises the get_total_url() to create a "url_key" that accompanies the URL input by the user.

Once these two values are established, another query is made to insert the two values into the correct columns of the database.

My intention for rewriting these two functions into the class was first to ascertain what their purposes were with respect to the Db class. For example, the original shorten_url() had within it a selection query to understand whether there was an entry for the url input, a method (utilising the get_total_urls()) to creating a url_key for the url, and finally another query to input it into the system. Likewise, get_total_urls() was a specific thing for displaying the total number of keys in the db, and being a support function to shorten_url(). However, upon closer inspection of the Db class, there is already a simplified query public function and a select public function which allow for the handling of a specific query within the HTML markup. For example the $Db->query() can handle heavier queries like inputting values, while the $Db->select() can handle comparison query (i.e. seeing if something exists already). Therefore the shorten_url function doesn't really need these in addition.

In the case of the get_total_urls(), this was originally more of a support function, however, in my re-write I made it a method for simply displaying the total urls and figured that the shorten function, now free of so many queries, could have a similar query in its body, with the specific intention of creating an accompanying url_key to the inputted url.

The rewrite of these two functions (now living inside the Db class) looked like so:

```
/**
 * Function for get total urls
 * @param no param is required - simply call function to display total keys in db
 * @return the total number of valid url key in db - Value is in (int)
 */
public function get_total_urls() {
  $connection = $this -> connect();
  $total = "SELECT url_key FROM urls";
  if ($result = $connection->query($total)) {

    $row_cnt = $result->num_rows;

    return $row_cnt;

    $result->close();
  }
}
```

```
/**
* Function for shorten url function
* query db to see how many URLs are in system {Similar to get_total_urls()}
* @param $url variable that is established by user input
* @return $url_key value for inputting into db
*/
public function shorten_url($url) {
    //$url = $connection->real_escape_string($url);
    $connection = $this->connect();

    $keyprep = "SELECT url_key FROM urls";
    if($result = $connection->query($keyprep)) {
        $row_cnt = $result->num_rows;
        $url_key = base_convert((string)($row_cnt + 1), 10, 36);
        $result->close();
    }

    return $url_key;

}
```

The biggest fundamental change happened to the shorten_url, which was now just a function for creating an url_key. The most important part of this function was that it returned an url_key, whereas the queries that used to exist within it were able to function like this due to an old deprecated function from the MySQL called result(). Result() seemed to be this all-inclusive function that provided the results of a query in a specific way (non-object oriented), that also seemed easier to understand, as opposed to the new mysqli extension. With the changeover in coding, mysql_result() was not usable, and when converting code into the new mysqli extension, processes were different, as results were now returned in object arrays, meaning a row was an object, and the value within this object, let's say an url, would be part of this larger object. Thus, calling on a result for a comparison operated differently, due to the nature of the data. This would as well enlarge the coding needed within the function.

However, in the article I found on the correct process of working with php and MySQL the author (both of the article and the code) had already resolved these query issues through the development of query and select function. Thus, in the main frontend part of the application, I could call upon these functions and use simplified differential logic to quickly check an answer.

```php
<?php
require "core/initial.php";
// estabish connection to DB
$db = new Db();

// Configuration for User's $_POST entry
$errors = array();

if (!empty($_POST)) {

  if (isset($_POST['url'])) {

    if (!empty($_POST['url'])) {

      if (strlen($_POST['url']) > 1024) {
        $errors[] = 'There is a limit of 1024 characters.';
      }
```

```php
        if (filter_var($_POST['url'], FILTER_VALIDATE_URL) === false)  {
          $errors[] = 'Your URL does not appear to be valid.';
        }

        if (empty($errors)) {

          //initiating shorten_url() function/method + insert $url and $url_key values into db
          $url = $db->quote(trim($_POST['url']));
          $check = $db->select("SELECT url FROM urls WHERE url = {$url}");
          if ($check == true) {
            echo $url . " - Already exists in our database, please try another url.";
          } else {
            $url_key = $db->shorten_url($url);

            $insert = $db->query("INSERT INTO urls(url_key, url) VALUES ({$url_key}, {$url})");
            if($insert === false) {
              // Handle failure - log the error, notify administrator, etc.
              $error = $db->error();
              echo $error;
            } else {

              // We successfully inserted a row into the database
              echo "Record was inserted successfully.";
            }

          }
        }
      }
    }
  }
}
?>
```

The above example is from the HTML markup page shortener.php and lives at the top of the doc, right before the HTML code is implemented. What is happening with this code is first php is checking if the submit form has any input in it; if so, then it identifies the input as a potential 'url'. From here php then checks the potential url for two things: if it's longer than 1024 characters (the max. length of the url column row) and if the url is in fact a valid url. Once these checks are completed, php is asked to see if these previous checks left any error. If so, the process stops and the errors are displayed for the user. If no errors are found, the application is prompted to initiate the application process.

This is first done by establishing the url within a variable called $url and, at the same time of establishing this variable, the application calls on the function "quote()" which sterilises the user input making it safe for the MySQL db. From here the application then calls on the select() method to see if any entry inside the db matches the input url. If an entry is found, then the application would present the user with a message that the url already exists, and the application stops. If no entry is found, this prompts the application to create an url_key by calling on the shorten_url() function, and calling on the query() function to insert the variable $url, along with the newly-created variable $url_key into the database. If, for some reason, this process is halted the application will display an error message, but if it is successful the user is presented with a message of success, along with the key to the url.

In regards to the get_total_urls() it now simply displays the total number of keys, which is a good visual development tool, which I used to see if the application was in fact inputting the corresponding values. There is potential to develop this function to bring up an associated array of results that could be used to display the corresponding urls and their accompanying key.

However, at the moment I believe, with this part of the application now working, that is enough, as this is more of a training task than an actual development task.

The last part of this re-write comes in the form of the secondary frontend page which is entitled "go.php", which is the prompt to the desired URL page of the application. For instance, if this go page was live its address would be http://go.com which would display a blank empty page. However, if the given address with the implementation of the database key - http://go.com?key=1 - the user would be prompted to http://Agorama.org.uk for example. This step will be the final step in the applications development before moving on to creating an API for the programme.

9) Reflection documentation – API – 25.05.17

Web application – URL Shortener – revisited – pt4.

Today work focused primarily on developing the go.php page. The original was actually more simplified than the rewrite I came up with. For example, here is the original coding:

```
////// coding for go.php page
if (isset($_GET['key']) === false || ($url = $db->get_url($_GET['key'])) === false) {
  echo "Invalid URL key...";

} else {
  header("Location: {$url}");

}
```

In terms of the re-written code, what we have now is:

```
// Initiate connection!!!!!! DONT FORGET TO DO ON EACH NEW PAGE!!!!!!!
$db = new Db;
/**
* Re-write of code
* the rewrite incorporates the function from
*
*/
// First identify the key element of the URL address
$key = $_GET['key'];

// mysqli_real_escape_string $key value for input into get_url()
$url_key = $db->quote($key);

// Initiate get_url query
if (isset($url_key) == false || ($url = $db->get_url($url_key)) == false) {
  echo "Invalid URL key...";
} else {
  header("Location: {$url}");
}
```

The problem with the original code was that the original get_url function was written to be all-inclusive of every process needed for executing the operation for forwarding a user to the correct url when inputting the URL +key into a web browser. With the OOP class of Db also incorporating a separate function for real_escaping_string, I decided to remove this element from the original function. Furthermore, the original code utilised the mysql_result function within it, meaning the process of querying the db and returning the corresponding url now had to be completely changed to accept the new MySQL standard. Looking at the original code compared to the rewritten one, we have:

[older procedural mysql]

```
function get_url($url_key) {
        $url_key = mysql_real_escape_string($url_key);
        $result = mysql_query(SELECT url FROM urls WHERE url_key = {$url_key})

        return (mysql_num_rows($result) == 1) ? mysql_result($result,0) : false;
}
```

[rewrite - OOP mysqli]

```
public function get_url($url_key) {
    $connection = $this->connect();

    $search = "SELECT url FROM urls WHERE url_key = {$url_key}";
    if ($result = $connection->query($search)) {
      while ($url = $result->fetch_assoc()) {
        return $url['url'];
      }
      $result->free();
    }
  }
```

However, with data being manipulated in object arrays this old standard (while simple) has its limitation. What we can see from the new coding is that when the application makes the query to the db, it is returning an object array, which contains within it the item we want, so we have to tell the computer to look within this variable and give us back the value we want to use. In the case that nothing comes back, the system would return a null/false response.

With this task of re-writing the code to the new standard complete, my next task is to move on to understand how to develop a web app such as this into an API.

10) Reflection documentation – API – 26.05.17

Web application – URL Shortener – revisited – pt5.

After the completion of the frontend web application, URL_Shortener, I moved on to commence development of an API for the site. This form of application development has existed for years and, within programming, API have been utilised to interface various types of software and hardware. In regard to Web technology, APIs are essentially an extension of a web application that allows other developers access to the informational database and functionality of the application. For instance, Facebook shouldn't really be classified as a website, but a web application. The reason for this is because a user signs up for Facebook, enters details and other information to gain access to the services Facebook provides. Thus, the whole of the site can be considered an application program that is live on the web. By extending an API to external developers, they create an environment where developers can engage with the web app and provide new content to the userbase (i.e. Candy Crush), along with application for transferring data straight to Facebook.

Learning about this process was essential prior to beginning the API for the URL_Shortener, so as to better understand how to integrate it into other applications I am developing for the thesis. For instance, in the case of PIL Project, the web page could be re-developed to be a web application all on its own that is centred around the meme collection, allowing external users to add memes into the database themselves. This functionality then could be extended into an api whereby a developer could develop various applications, on smartphones, other websites, etc., all of which could interact directly with the PIL application through a network connect.

Moving into the development of the actual application, the stages of creating an API in a PHP framework are:

1.   Backend development on web application side.
a.   A blank (no HTML markup) php functions page that requests and receives data.
b.   A new class extension for the class developed for communicating to the MySQL database.
2.   End user side.
a.   A new class interface (external connection to URL_Shortener web app).

Beginning with the backend files. These are the most important pieces of the API. The new class extension named "api" is a blueprint for an object that has all the functionality of the parent class, "Db", but with additional methods for specifically tracking end users' API requests, and logging the number of requests from a specific user (or user IP address). In addition to that I developed an extra method for shortening the URL that is specifically to be used with the API, thereby making it more inclusive of the different method utilised separately in the original web app. The reason for coding this extra method was to add protection from MySQL injection in a more compact way.

The second document, api.php, is still considered the backend of the web app. However, it can be described as an entire point for sending and receiving metadata from end users. Essentially, what is programmed into this document is differential logic that queries the information that it is receiving, sees if it has the thing requested, if the end user's number of API requests are not above the daily limit (set at 1000 request per user a day), and what type of request, i.e. Lookup an url key, or shorten an url.

Thus, the new class extension and api.php work in unison together, because the class extension gives the ability to access the hidden parent class's methods to the api.php entry point. The new class extension looks as follows:

```php
require "core/initial.php";

/**
* Extension of the Db class used for the shortener web application
* This child class is created with the specific intention of the API
* @method - 3 total - check number of requests; log the api requests;
* FULL shorten public function [real_escape->check_input->create_url_key->input]
*/
class api extends Db {

  /**
   * logs daily API requests
   * @param user ip address
   */
  public function log_api_request($ip) {
     $connection = $this->connect();
     $ip = $this->quote($ip);

     $query = "INSERT INTO api_log (ip, date, requests) VALUES ('INET_ATON('{$ip}')', NOW(), 0)
            ON DUPLICATE KEY UPDATE requests = requests + 1";

     $sql = $connection->query($query);
  }

  /**
   * Checks number of daily API requests from a single ip address
   * @param user ip address
```

```php
 * @return returns number of API requests from a give ip address
 */
public function api_daily_request($ip) {
  $ip = $this->quote($ip);

  $total = $this->select("SELECT requests FROM api_log WHERE ip = 'INET_ATON('{$ip}')'
AND date = DATE(NOW())");
  foreach ($total as $requests) {
    return $requests['requests'];
  }
}

/**
 * FULL shorten url function - real_escape->check_inputed_url->create_url_key->input_mysql-
>$url + $url_key]
 * @param url to be shorten
 * @return conditional - if $url_key exists return that value - if not return newly created key
 */
public function shorten_api($url){

    $url = $this->quote($url);
    $check = $this->select("SELECT url_key FROM urls WHERE url = {$url}");
      if ($check == true) {
        foreach ($check as $key) {
          return $key['url_key'];
          $check->free();
        }
      } else {
        $url_key = $this->shorten_url($url);
        $insert = $this->query("INSERT INTO urls(url_key, url) VALUES ('{$url_key}', {$url})");
        return $url_key;
      }

      $check->free();
  }

// end of class
}
```

As can be seen, the class extension is a specialised class object that incorporates ALL of the functionality of the parent class, while adding new specific method for its specialised role. The first two methods pertain to logging API requests from the end user, as well as looking up how many requests they have had on that particular day. The final method, shorten_api, is the all-inclusive function, which is made specifically for the end user, which protects against MySQL injection, checks to see if an URL already exists, and finally brings in the original functionality of shorten_url, with a final step of inputting the values created by the method. One final piece to consider in this class extension is the first line that presents a statement 'require.' What this pertains to is the link to the parent class, which allows the object created from the new api extension to access its parent methods.

Moving on to the document api.php or, in other words, the entry point for developers, the doc looks like so:

```php
require "core/inc/api.inc.php";
```

```php
header('Content-Type: application/json');
```

```
// implementation of new child class of Db
// New child class named api - for specific use for api development.
$api = new api();

if (isset($_POST['lookup'])) {
  echo json_encode(array(
    'url' => $api->get_url($_POST['lookup']),
    'key' => $_POST['lookup'],
  ));
} elseif (isset($_POST['shorten'])) {
    $errors = array();
    $dailycount = $api->api_daily_request($_SERVER['REMOTE_ADDR']);

    if ($dailycount > 1000) {
      $errors[] = 'You have exceeded your daily request limit for this free API... Please try again
tomorrow.';
    }

    if (strlen($_POST['shorten']) > 1024) {
      $errors[] = 'There is a limit of 1024 characters, please try a shorter URL.';
    }

    if (filter_var($_POST['shorten'], FILTER_VALIDATE_URL) === false) {
      $errors[] = 'Your URL does not appear to be valid, please try another URL.';
    }

    $key = (empty($errors)) ? $api->shorten_api($_POST['shorten']) : false;
    echo json_encode(array(
        'url'    => $_POST['shorten'],
        'key'    => $key,
        'errors' => $errors,
    ));

    $api->log_api_request($_SERVER['REMOTE_ADDR']);

} else {
  echo json_encode(array(
    'lookup'  => 'Lookup full URL for a given url_key.',
    'shorten' => 'Adds the give URL to the database system.',
  ));
}
```

In the above code what we have is the differential logic that the API utilises to determine if the request is requesting the correct information, how many requests an IP address has made in a single day, before finally processing the request and sending information back to the end user.

11) Reflection documentation – API – 30.05.17

Web application – URL Shortener – revisited – pt6.

For the final part of the build, the task was to develop the end user interface, api_interface.inc.php, that allows for the external application to be built. This consists of two documents. One is the end user class that they will implement into their own application, which gives the methods that connected to the API. The second is an example website showing the user an example of how to use the class to successfully request information from the API and receive a call back.

A minor note: this final process is not necessary per se; the reason being, if the end user is an experienced developer, all they actually need is a bit of documentation on the request information, i.e. 'lookup' [search for a URL exist for a given key] and 'shorten' [shortens URL request and return assigned key], and finally the direct web address to the api, which in my case is: http://localhost:8888/api/URL_Shortener%20web%20app/api.php . This final URL is the most important part, because it is the path which an external application would use to talk to the URL shortener API. However, it is good practice to develop documents such as api_interface.inc.php and apitest_page.php,because they can perform two roles. For less experienced users they will serve as the framework to connect to the API. Secondly, they can also act as the documentation for a more experienced user to develop their own class systems.

Moving on to the development of the end user class interface, api_interface.inc.php, the coding looks like this:

```php
<?php
/**
* Class specifically for user download
* insert into site's subdirectory and call through a require or include statement
* Have a nice day ;)
**/
class url_shortener {

  const API_URL = 'http://localhost:8888/api/URL_Shortener%20web%20app/api.php';

  /**
   * @method private request function
   **/
  private static function send_post_data($data){
      $url = parse_url(self::API_URL);
      $boundary = md5(microtime(true));

      $post = '';

      foreach ($data as $name => $value) {
        $post .= "--{$boundary}\r\n";
        $post .= "Content-Disposition: form-data; name=\"{$name}\"\r\n\r\n";
        $post .= "{$value}\r\n";
      }

      $post .= "--{$boundary}--\r\n";
      if (isset($url['query'])) {
        $head = "POST {$url['path']}?{$url['query']} HTTP/1.1\r\n";
      } else {
        $head = "POST {$url['path']} HTTP/1.1\r\n";
      }

      $head .= "Host: {$url['host']}\r\n";
      $head .= "Content-Type: multipart/form-data; boundary=\"{$boundary}\"\r\n";
      $head .= "Content-Length: " . strlen($post) . "\r\n";
      $head .= "Connection: close\r\n\r\n";

      $socket = fsockopen($url['host'], ((isset($url['port'])) ? $url['port'] : 80));
      fwrite($socket, "{$head}{$post}");

      return end(explode("\r\n\r\n", stream_get_contents($socket)));
  }
```

```
/**
 * lookup URL function
 * @param $key - for specific URL search
 * @return array of requested URL, $key; if (URL == 0) URL => null
 **/
public static function lookup($key) {
    return json_decode(self::send_post_data(array('lookup' => $key)), true);
}

/**
 * shorten URL function
 * @param $url for shortening - will check if URL already exists
 * @return array of requested shortened URL, $key, Error[]
 **/
public static function shorten($url) {
    return json_decode(self::send_post_data(array('shorten' => $url)), true);
}
}
?>
```

In analysing the code, what we have here is a blueprint for an object with the specific task of connecting to the API and performing the 'lookup' url key and 'shorten' url functionalities of the web application. The code that is labelled as 'const API_URL' is the directional path used by the object. Building it as a constant allows for all of the method within the class, or even future method written by the end user, to use that URL path as a variable (which is call API_URL) repeatedly throughout the code, especially in more complicated development projects.

The next piece, which is the method "send_post_data," is the main function of the class. This is where the object created to communicate to the API gathers data, sends it to the API, and also receives it. On top of this, it's been written as a private static function, which is a security setting, due to the fact that this function receives and sends information, including the end user's information. When an end user is implementing this code into their program they only need to worry about using the final two methods, which internally use this send data function, and receive the information, thereby ensuring that, if by chance, someone hacks their system, or something of that sort, these properties will be hidden, as you are supposed to locate the class file in a directory outside of the application directory. Therefore, this is a layering of information. Another important note on this method, is that it is actually the main thing doing everything. The other two functions act as containers for data to be sent by the send_post_data, therefore the last two methods' only job is to take the user's input and give it to the send_post_data function.

Looking at the last two functions/methods… As stated before these are specific containers of input information that are to be sent to the API by send_post_data. It is important to note that, similar to the original web app, these methods would be used in their website or application and linked to an input box where the user could input something. However, for the case of the test page this was not done.

```
<?php require "api_interface.inc.php"; ?>
<html>
  <head>
    <title>web application</title>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
    <meta name="viewport" content="width=device-width">
  </head>

  <body>
```

```php
<?php

    echo '<pre>';

    $example = url_shortener::lookup(1);
    print_r($example);

    echo '</pre>';

?>

  </body>
</html>
```

As can be seen it is a simple HTML doc that has the lookup method being used and then printed on screen. The output on a web browser would look like:

```
Array
(
    [url] => http://Agorama.org.uk
    [key] => 1
)
```

It is to show the output that the class returns after a request. In this way the end user will see this information and should know exactly what to do with the data and how to appropriately output it for their desired goals. An important note: if we were to change in the HTML markup the method 'lookup' to the other method 'shorten' and give it a url input like so:

```
$example = url_shortener::shorten('https://www.facebook.com/messages/t/ines.costa.39982');
    print_r($example);
```

we would receive an API call-back of:

```
Array
(
    [url] => https://www.facebook.com/messages/t/ines.costa.39982
    [key] => 9
    [errors] => Array
      (
      )

)
```

This signifies that the url that was given for shortening was in fact shortened, because we have no errors. In the case of errors, like an URL not being valid, or too long, or maybe the URL already exists, the area where it says error would contain further information, which again the end developer could use and output to their users.
With that the API development is complete. Now it's time to think about applying this lesson to my own web applications.

Appx.3.3.2 System Frameworks

Introduction

This Appendix file consists of the programming frameworks developed over the course of my PhD research. The frameworks are divided into four categories: *the Modular Web framework*, *the Complex Modular Web framework*, *the*

Embedded System framework, and *the Complex Distributed System*. The final of these category sections, *the Complex Distributed System*, in itself is not a template *per se* but an example of a complex distributed system. The framework for this last example includes a combination of different web technologies. The project this final system configuration is used for is the realised project *Moses the Lonely Londoner*, which was exhibited at Raven Row's open day (2019) and the Photographers' Gallery in London (2019).

For the rest, each template corresponds to a realised project that is spoken about within the body of this thesis, or that was completed in the early stages of research and the digital learning segment of my research. The projects pertaining to each section are as follows:

Modular Website:

    1. *Deep Throat Done* (Alejandro Ball)

    2. *Tokyo Gaiden Map* (Petra Szemán, developed by Alejandro Ball)

Embedded Systems:

    1. *Prompt video games* (Alejandro Ball)

    2. *Popup Engine* (PILproject, developed by Alejandro Ball)

Modular Web-application:

    1. Agorama MVC *Kubos Nero* and *Geltung [Validity]* Video streaming platform (Alejandro Ball)

    2. *The Bank for Argumentation* platform (Diogo da Cruz, developed by Alejandro Ball)

Complex Web System:

    1. *Moses the Lonely London* (Developed by Alejandro Ball, includes open-source framework AIVA (https://github.com/Olivandro/aiva)

Each section will have a corresponding introduction, which will act as the project overview, coding and system guide, and its relation to the categorised *type* of platform it pertains to (see Ch. 4). Additionally, the framework's code, or better said the platform's code, will be on display with full documentation notes embedded into the sources. However, I have omitted some code due to size constraints, as some of the projects, for instance *Moses the Lonely Londoner,* consists of thousands of lines of code. That being said, I have ensured that my selection of each projects sources code is as complete as possible to convey the designs functionalities.

Modular Website

The modular web platform is the term I have created for a static webpage, or sometimes called website. Normally the term webpage and website are grossly misused; for instance, webpage usually refers to a single static page of a website, or could refer to a static site that only consists of a single webpage. Website, on the other hand, refers to a site that is made up of several webpages, thus constituting it as a webpage. The key in identifying a *Modular Website* (regardless of whether it is a single page or a site) is that it is *static* as opposed to *dynamic*. The difference lies in the use of data and backend operations. For instance, in my example *Deep Throat Done* the site uses HTML/CSS, JavaScript, and video media, however it requires no backend functionality. Furthermore, the site, as can be seen from the code below, consists of only a HTML page, css document and finally the JQuery JS library with corresponding JQuery open-source module (JQuery.abc.js). If the site were *dynamic,* it would be a much larger set of documents, as will be seen in the *Modular Web-application*, which allows for database querying, login authorisation, active AJAX updating and API functionality. In the case of both my examples, a user visiting each site will be able to obtain all the code and file (video included) to recreate their own version.

Modular Website as immaterial artwork or pseudo-hub

The idea of the *Modular Website* is that it acts as an un-mutable (or unchanging) immaterial object. Thus, it is viewed by me as the primary tool for creating a one-off online exhibition site (Complimentary or Extension), an online *object-oriented* artwork that is immaterial, or a complementary add-on or extension of an artwork. In any case, the purpose of the *Modular Website* is not to change and act as the *object* or *record* (i.e. documentation) for the artistic project.

Deep Throat Done

Please note that for the purposes of space I have not included any CSS, and or, JavaScript files that I have not created or modified myself

```html
<html>
<head>
    <title>Vuk Cosic Deep Throat Done</title>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
    <meta name="viewport" content="width=device-width">
    <link href="CSS/normalize.css" rel="stylesheet" type="text/css">
    <link rel="stylesheet" type="text/css" href="CSS/style.css">
</head>

<body>
    <h1>Deep Throat Done</h1>

    <div class="vid-container">
        <!-- NOTE: To allow for auto play, i.e. the video plays upon load mute must be enabled -->
        <video preload="none" autoplay="" muted="" loop="" height="480px;" width="640px;">
            <source src="media/Deep.Throat.1972(no sound).mp4" type="video/mp4">
        </video>

    </div>

<footer><p class="footer-text">Agorama.org.uk | © 2018</p></footer>
<script type="text/javascript" src="JS/jquery-1.12.4.js"></script>
<script type="text/javascript" src="JS/jquery.abc.js"></script>
<script type="text/javascript">
// Loading function for ASCII video effect. Function comes from file jquery.abc.js
$(window).load(function(){
    $('video').abc().get(0).play();
});
</script>
</body>
</html>
/* Corresponding CSS for Deep Throat Done */

body {
    background: black;
}

h1{
    width: 100%;
    text-align: center;
    font-size: 400%;
    font-family: monospace;
    font-weight: bold;
    padding: 20px;
    color: #00FF00;
}

div{ margin-top: 8px;
    font-size: 8px;
    color: #00FF00;
```

```css
}
.vid-container {
    padding: 20px;
    width: 100%;
    text-align: center;
}

footer {
    position: fixed;
    left: 0px;
    bottom: 0px;
    height: 30px;
    width: 100%;
    border-top: 2px solid #00FF00;
    padding-left: 10px;
    padding-bottom: 5px;
    background-color: black;
}
.footer-text {
    font-size: small;
        color: #00FF00; }
```

Tokyo Map

Please note that for the purposes of space I have not included any CSS, and or, JavaScript files that I have not created or modified myself

```html
<!-- HTML file for Tokyo Map... -->
<!doctype html>
<html>
<head>
<title>web application</title>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
<meta name="viewport" content="width=device-width">
<meta name="robots" content="noindex, nofollow">
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0-beta/css/bootstrap.min.css"
integrity="sha384-/Y6pD6FV/Vv2HJnA6t+vslU6fwYXjCFtcEpHbNJ0lyAFsXTsjBbfaDjzALeQsN6M" crossorigin="anonymous">
<link href="CSS/normalize.css" rel="stylesheet" type="text/css">
<link rel="stylesheet" type="text/css" href="CSS/style.css">
</head>
<body>
<div class="body-container">

   <div class="Top-block 1 clearfix">
     <div class="top-co"><div class="img-container"><img id="line-3" src="images/shape-3.png" /></div></div>
     <div class="top-co"><div class="img-container"><img id="line-2" src="images/shape-2.png" /></div></div>
     <div class="top-co"><div class="img-container"><img id="line-4" src="images/shape-4.png" /></div></div>
     <div class="top-co"></div>
     <div class="top-co"></div>
     <div class="top-co"></div>
   </div>

   <div class="Top-block 2 clearfix ">
```

```
<div class="co-1 rw rw2"><div class="img-container"><img id="line-1" src="images/shape-1.png" /></div></div>

<!-- Building Link -->
<div class="co-2 rw rw2"><div class="img-container"><a href="#" data-toggle="modal" data-target="#modal-1">
<img id="building-1" src="images/building.png" /></a></div></div>

<div class="modal fade bd-example-modal-lg" id="modal-1" tabindex="-1" role="dialog" aria-
labelledby="myLargeModalLabel" aria-hidden="true">
    <div class="modal-dialog modal-lg">
        <div class="modal-content">
            ...
        </div>
    </div>
</div>

<!-- /Building Link -->
<div class="co-3 rw rw2"></div>

<!-- Building Link -->
<div class="co-4 rw rw2"><a href="#" data-toggle="modal" data-target="#modal-2"><img id="building-2"
src="images/building.png" /></a></div>

<div class="modal fade bd-example-modal-lg" id="modal-2" tabindex="-1" role="dialog" aria-
labelledby="myLargeModalLabel" aria-hidden="true">
    <div class="modal-dialog modal-lg">
        <div class="modal-content">
            ... 2
        </div>
    </div>
</div>
<!-- /Building Link -->

<div class="co-5 rw rw2"></div>
</div>

<div class="Top-block 3 clearfix">
    <div class="co-1 rw rw3"></div>

<!-- Building Link -->
<div class="co-2 rw rw3"><div class="img-container"><a href="#" data-toggle="modal" data-target="#modal-3">
<img id="building-3" src="images/building.png" /></a></div></div>

<div class="modal fade bd-example-modal-lg" id="modal-3" tabindex="-1" role="dialog" aria-
labelledby="myLargeModalLabel" aria-hidden="true">
    <div class="modal-dialog modal-lg">
        <div class="modal-content">
            ... 3
        </div>
    </div>
</div>
<!-- Building Link -->

    <div class="co-3 rw rw3"></div>
<div class="co-4 rw rw3"></div>
<div class="co-5 rw rw3"></div>
```

```
        </div>

    <div class="Top-block 4 clearfix">
        <div class="co-1 rw rw3"></div>
        <div class="co-2 rw rw3"><div class="img-container"><img id="line-5" src="images/shape-5.png" /> </div></div>
        <div class="co-3 rw rw3"></div>
        <div class="co-4 rw rw3"></div>
        <div class="co-5 rw rw3"></div>
    </div>

    <div class="row5 clearfix">
        <div class="co-1 rw rw3"></div>

        <!-- Building Link -->
        <div class="co-2 rw rw3"> <div class="img-container"><a href="#" data-toggle="modal" data-target="#modal-4">
<img id="building-4" src="images/building.png" /></a></div> </div>

        <div class="modal fade bd-example-modal-lg" id="modal-4" tabindex="-1" role="dialog" aria-
labelledby="myLargeModalLabel" aria-hidden="true">
            <div class="modal-dialog modal-lg">
                <div class="modal-content">
                    ... 4
                </div>
            </div>
        </div>
        <!-- /Building Link -->

        <div class="co-3-5 rw rw3"> </div>

        <!-- Building Link -->
        <div class="co-5 rw rw3"> <div class="img-container"><a href="#" data-toggle="modal" data-target="#modal-5">
<img id="building-5" src="images/building.png" /></a></div> </div>

        <div class="modal fade bd-example-modal-lg" id="modal-5" tabindex="-1" role="dialog" aria-
labelledby="myLargeModalLabel" aria-hidden="true">
            <div class="modal-dialog modal-lg">
                <div class="modal-content">
                    ... 5
                </div>
            </div>
        </div>
        <!-- /Building Link -->
    </div>
    <div class="row6 clearfix">
        <div class="co-1 rw rw3"></div>
        <div class="co-2 rw rw3"></div>
        <div class="co-3 rw rw3"></div>
        <div class="co-4 rw rw3"></div>
        <div class="co-5 rw rw3"></div>
    </div>
</div>
<script type="text/javascript" src="JS/jquery-3.2.1.min.js"></script>
<script type="text/javascript" src="JS/tether.min.js"></script>
<script type="text/javascript" src="JS/bootstrap.min.js"></script>
```

```
<script type="text/javascript" src="JS/routes.js"></script>
</body>
</html>
```

```
/* CCS File for Tokyo Map */

/*================ clearfix ================*/
.clearfix:before, .clearfix:after {
    content: "";
    display: table;
}..clearfix:after {
    clear: both;
}.clearfix {
*zone: 1;
}/*================ Body size+background ================*/
body { width: 1536px;
    height: 1024px;
    background-image: url(../images/1999AD.png);

}img {
}/*================ Row 1 to 4 ================*/
.Top-block {
    width: 1536px;
    height: 200px;
}/*================ row 5 ================*/

.row5 {
    height: 135px;
    width: 1536px;
}/*================ row 6 ================*/

.row6 {
    height: 89px;
    width: 1536px;
}/*================ Header columns ================*/

.top-co {
    width: 256px;
    height: 100%;
    margin: 0;
    float: left;
    display: block;
}/*================ Global columns ================*/

.co-1 {
    width: 200px;
    height: 100%;
    margin: 0;
    float: left;
    display: block;
```

```
}.co-2 {
     width: 247px;
     height: 100%;
     margin: 0;
     float: left;
     display: block;


}.co-3 {
     width: 479px;
     height: 100%;
     margin: 0;
     float: left;
     display: block;

}.co-4 {
     width: 300px;
     height: 100%;
     margin: 0;
     float: left;
     display: block;

}.co-5 {
     width: 310px;
     height: 100%;
     margin: 0;
     float: left;
     display: block;


}


/*================ custom columns ================*/

.co-3-5 {
     width: 770px;
     height: 100%;
     margin: 0;
     float: left;
     display: block;

}.co-3-div {
     width: 239.5px;
     height: 100%;
     margin: 0;
     float: left;
     display: block;
}

/*================ Building placement ================*/
.img-container {
     margin: 5px;

}#building-1 {
     margin: 10px;
     padding-left: 137px;
     padding-top: 25px;
```

```css
}#building-2 {

    padding-top: 119px;
    padding-left: 4px;

}#building-3 {
    padding-left: 51px;
    padding-top: 107px;

}#building-4 {
    padding-left: 163px;
    padding-top: 43px;

}#building-5 {
    margin: 10px;
    padding-left: 11px;
    padding-top: 15px;
}

/*================ Line placement ================*/

#line-1 {
    margin: 10px;
    padding-left: 295px;
    padding-top: 95px;
    display: none;

}#line-2 {
    margin: 10px;
    padding-top: 265px;
    padding-left: 159px;
    display: none;


}#line-3 {
    margin: 10px;
    padding-left: 375px;
    padding-top: 295px;
    display: none;

}#line-4 {
    margin: 10px;
    padding-left: 460px;
    padding-top: 370px;
    display: none;

}#line-5 {
    margin: 10px;
    padding-top: 250px;
    padding-left: 230px;
    display: none;
}
```

```javascript
// JavaScript program for animation of hotspots. NOTE: this is the original version that still
// includes the route lines Szemán originally request in her initial plans.


$(function() {

// Building highlights + Routes =========================== operation //
```

```
/**
 * Building 1
 ***/
$('#building-1').hover(function() {
        $(this).attr("src","./images/building-lit.png").css({"padding-top": "21px","padding-left":"133px"});
        $('#line-1').slideToggle("slow");
        $('#line-2').slideToggle("slow");
        $('#line-3').slideToggle("slow");
});

$('#building-1').on('mouseleave',function() {
        $(this).attr("src","./images/building.png").css({"padding-top": "25px","padding-left":"137px"});
});

/**
 * Building 2
 ***/
$('#building-2').hover(function() {
        $(this).attr("src","./images/building-lit.png").css({"padding-top": "115px","padding-left":"0px"});
        $('#line-2').slideToggle("slow");
        $('#line-4').slideToggle("slow");
});

$('#building-2').on('mouseleave',function() {
        $(this).attr("src","./images/building.png").css({"padding-top": "119px","padding-left":"4px"});
});

/**
 * Building 3
 ***/
$('#building-3').hover(function() {
        $(this).attr("src","./images/building-lit.png").css({"padding-top": "103px","padding-left":"47px"});
        $('#line-1').slideToggle("slow");
});

$('#building-3').on('mouseleave',function() {
        $(this).attr("src","./images/building.png").css({"padding-top": "107px","padding-left":"51px"});
});

/**
 * Building 4
 ***/
$('#building-4').hover(function() {
        $(this).attr("src","./images/building-lit.png").css({"padding-top": "39px","padding-left":"159px"});
        $('#line-3').slideToggle("slow");
        $('#line-5').slideToggle("slow");
});

$('#building-4').on('mouseleave',function() {
        $(this).attr("src","./images/building.png").css({"padding-top": "43px","padding-left":"163px"});
});

/**
 * Building 5
```

```
***/
    $('#building-5').hover(function() {
        $(this).attr("src","./images/building-lit.png").css({"padding-top": "11px","padding-left":"7px"});
        $('#line-4').slideToggle("slow");
        $('#line-5').slideToggle("slow");
    });


    $('#building-5').on('mouseleave',function() {
        $(this).attr("src","./images/building.png").css({"padding-top": "15px","padding-left":"11px"});
    });
});
```

Embedded Systems

As explained in Chapter 4, an embedded system essentially is a module, script, or small program that enacts an operation upon its programming conditions being met. For example, the *Prompt Games* project is a JavaScript program that is written to use a user's browser prompt API to render a game that is text based. Essentially these types of embedded systems are non-dependent on a base platform and are easily removed from a platform and installed within another. One important aspect of these systems is that they are not OOP code, but procedural, meaning that they are read as a script from top to bottom and are reset once the computer has reached the end of the coding script. However, each of the examples in this section is a collection of functions, which allows for the program to be attached to a HTML web architecture.

example of Popup engine embed

```
<a href="#" title="Please Click Image">
    <img id="Trigger" src="trolling-white.gif" onclick="popupTrigger()" alt="test image" onmouseover="hover-text">
</a>
```

In the case of *Prompt Games,* this embedding works slightly differently, as it is the simple act of loading the program that enacts the operation.

example of Prompt Game embed

```
<script type="text/javascript" src="http://prototype.Agorama.org.uk/wp-
content/themes/AgoramaTheme/js/rpsGenerator.js?ver=4.8.9"></script>
```

The difference between the two is basically the *Popup Engine* was created to enact functions upon certain user interactions with the embedded webpage, while the *Prompt Games* becomes operational upon the webpage loading in the browser. In this instance, each example represents a different type of operational outcome, and also shows different strategies one might take in implementing a said system, and the versatility that these types of systems have.

Embedded Systems as movable site-specific artwork

One important observation in my research is that the code for these types of web art projects is non-reliant on an interface, *per se*. Why? This is because, at least in the examples I have provided, the programs generate their own interface effect (Galloway, 2012) through the code, meaning that part of their operation is to pull in visual components that could be considered an interface. In the instance of *Prompt Games,* this interface is pulled together from the browser's API prompt box functions (see image above), whereas *Popup Engine* uses the browser again, but this time to create new browser window instances that load different URLs from the webpage the system is embedded in.

Because of these observations and findings, I suggest that embedded systems, or programs, that are non-reliant on a base HTML architecture for their operation are in a sense akin to Kwon's movable site-specific art (REF Kwon). This is an interesting finding because, similar to Kwon's observation of site-specific art at one point being grounded in its original site of installation, net art and Internet art have been subject to similar academic and exhibition research findings (Berry, 2001; Conservation ref Dekker; irational exhibition catalogue), wherein the art under analysis had a

dependency on its original website.

In my research I have found that, because of the evolution in web technology, much of the user experience (UX) is dictated by the programming language JavaScript. This means that we can separate these levels of UX design. Additionally, similar to Kwon's mobile site-specific artworks which have certain pre-requisites, the Embedded system needs the site of the Internet (or the web browser) to work.

Prompt Video Games

```javascript
// Global varibles
var slaying = prompt("After a long and stressful journey you have finally found the dragon. Shall ye face the
beast, yes or no?!"); {
// User prompt respond logic engine
    if(slaying === 'yes') {
        slaying = true;
        alert("Prepare yourself, the dragon stirs!!!");
        alert("Filled with rage the mighty beast rushes forward, jaws gaping open! You draw your sword from its sheath
in response and perpare to attack...");
    } else if (slaying === 'no') {
        slaying = false;
        alert('What is the point of coming out all this way and not slaying the bleeding thing?! Oh wait the dragon
saw you... Opps it ate you... try again!');
        location.reload();
    } else if (slaying === null) {
        alert("Dammit you've found the serect to get out! You're really smart!");
        end();
    } else {
        alert('What is the point of coming out all this way and not slaying the bleeding thing?! Oh wait the dragon
saw you... Opps it ate you... try again!');
        location.reload();
    }
}console.log(slaying);
// User value beginning prompt/alert for values

var youHit = Math.floor(Math.random() * 2);
// this is the flipping of the coin on whether the hero hits or not

var damageThisRound = Math.floor(Math.random() * 5 + 1);
//This is how the damage is calulated

var totalDamage = 0
//What this is the base value of damage, and thus is used to add to the value 'damageThisRound'

// Game engine
while(slaying) {
    if(youHit) {
        console.log("You hit!");
        alert("You hit!");
        totalDamage += damageThisRound;

            if(totalDamage >= 4) {
                console.log("You win!");
                alert("Your sword slices through the dragon striking its heart! The beast is dead... You win!");
                slaying = false;
            } else {
```

```
                            alert("You've struck the beast - but it was not a decisive blow! Here comes the dragon for another
pass!");

                            youHit = Math.floor(Math.random() * 2);

                    }

        } else {
            console.log("You lose!");
            alert("The gastly demon of a beast has overpowered you... You lose!");
            slaying = false;
        }
    }
}

location.reload();
```

Popup Engine

```
// Popup blocker detector
    var test = window.open("",'test',"width=400,height=400");
    if (test != null) {
        test.close();
    } else {
        alert("Please make sure your popup blocker is disable for the good stuff!");
        test.close();
    }
var popupTrigger = function() {
// No. 1 //
    var WindowOne = {}
    WindowOne.action = window.open('https://twitter.com/realDonaldTrump/status/857605104417026049', "mywindow1",
"location=1,status=1,scrollbars=1, width=600,height=400");
    WindowOne.action.moveTo(20,20);
// No. 2 //
    var WindowTwo = {}
    WindowTwo.action = window.open('https://twitter.com/realDonaldTrump/status/842117164144431104', "mywindow2",
"location=1,status=1,scrollbars=1, width=600,height=400");
    WindowTwo.action.moveTo(1000,1000);
// No. 3 //
    var WindowThree = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/839883804315684864', "mywindow3",
"location=1,status=1,scrollbars=1, width=600,height=400");
    WindowThree.action.moveTo(500,500);
// No. 4 //
    var WindowFour = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/839116941956640768', "mywindow4",
"location=1,status=1,scrollbars=1, width=600,height=400");
    WindowThree.action.moveTo(0,1000);
// No. 5 //
    var WindowFive = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/839433951957696513', "mywindow5",
"location=1,status=1,scrollbars=1, width=600,height=400");
    WindowThree.action.moveTo(1000,0);
// No. 6 //
    var WindowSix = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/839433678275153921', "mywindow6",
"location=1,status=1,scrollbars=1, width=600,height=400");
```

```
    WindowThree.action.moveTo(500,0);
// No. 7 //
   var WindowSeven = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/836933725602656256', "mywindow7",
"location=1,status=1,scrollbars=1, width=600,height=400");
      WindowThree.action.moveTo(20,20);
// No. 8 //
   var WindowEight = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/834181712783560705', "mywindow8",
"location=1,status=1,scrollbars=1, width=600,height=400");
      WindowThree.action.moveTo(1000,1000);
// No. 9 //
   var WindowNine = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/855859245023211520', "mywindow9",
"location=1,status=1,scrollbars=1, width=600,height=400");
      WindowThree.action.moveTo(0,1000);
// No. 10 //
   var WindowTen = {}
    WindowThree.action = window.open('https://twitter.com/realDonaldTrump/status/853604334944354305',
"mywindow10", "location=1,status=1,scrollbars=1, width=600,height=400");
         WindowThree.action.moveTo(1000,0); }
```

Modular Web-application:

The *Modular Web-application* is potentially the most prolific type of platform on the web today. Several services including WordPress, Squarespace, Cargo Collective, Wix to name a few, all provide dynamic web platforms for their users. The basic idea behind this type of platform is that it is dynamic, meaning it has several backend operations which allow for a framework to be established. The benefit of these types of frameworks is that they allow users with little to no coding experience to create their own web platforms, e.g. WordPress and its famous Content Management System (CMS). Additionally, other operations are allowed, such as database compilation and querying. One such operation is the login ability and allowing for different types of authority, i.e.distinguishing if a user is a basic user or if a user is the platform's administrator.

Moreover, when discussing the *Modular Web-application* we are also in the territory of what is termed *templating engines*. A templating engine can be described as a way to program a web platform so that you only need one instance of an HTML doc for its architecture, regardless of how many pages the platform has. This is one of the biggest difference between the *Modular Website*, which needs an HTML doc for each page that is part of the website. Templating engines allow for users to simply install a new architecture to change the aesthetic of a platform (think WordPress themes), and this aspect of the *Modular Web-application* has generated a significant economy of web designers creating themes for various web application services.

Self-Developed MVC Framework

During the course of my PhD. studies a main issue that was consistently arising during the development of online creative or cultural projects was the limitations of readymade platform such as WordPress (Open-source), Cargo Collective (proprietary development built of open-source projects), and other non-open-source commercial platforms (i.e. Wix, Square Space, etc.). When I speak of limitations - I mostly speak about the bending a predefined web architecture geared towards a specific purposes, i.e. WordPress excels as a blogging or similar writing platform, or Cargo Collectives which excels as a visual portfolio and visual gallery platform.

There is nothing wrong with these frameworks. However, in my case I found these systems to be cumbersome and *very* limiting for the creation of Internet art. This was primarily because the aforementioned architectures are built for specific uses which, in the case of art, limits the type of creative project able to be devised, developed and deployed on them. In many case I found myself starting from the bottom up, meaning creating a completely new base for each project I was undertaking. As can be imagined, it is a lot of work to start every project from scratch. Thus, taking cues from software developers, I sought to develop a simple framework that could utilise HTML templating and access a database for more complex operations and other 'server' based operations that are not possible with client-side technologies. This led me to investigate the MVC design pattern to potentially use for my own framework.

While the PHP MVC framework was developed by me, it is a combination of re-appropriated open-source tutorials, forked open-source repositories, and my own self-developed code. It was designed to create a functional web

architecture that could be used by other creatives developing projects for the web. The framework is designed to bring the basic functionality that is expected with standard Model-View-Controller (MVC) templating engines, however pared down with the intention to be built up with a specific project in mind.

The Bank for Argumentation

NOTE: this project is created in the Laravel PHP framework, and was used by my to save on time to create Diogo da Cruz's online WORDCOIN bank, the Bank for Argumentation. While not created by me, Laravel (similar to Symfony and other such MVC frameworks) represents the bare-bones of a Modular Web-application, meaning it is for coders. Because of this, the code shown below pertains to the classes I created, including the implementation of an authorisation class for creating a hierarchical login system

```php
<?php


/*|----------------------------------------------------------------------
| Web Routes
|----------------------------------------------------------------------
| This is the basic beginning of the Laraval framework. This document
| Is where you register routes, or URL end points such as
| yourwebsite.com/about. It additionally allows for complex routing,
| for instance the Admin routing and method sections below.
|*//** Guest
Area
* Login/Register
*/Route::get('/', 'LoginController@index');


Route::get('/about', 'LoginController@create');
Route::get('/login', [ 'as' => 'login', 'uses' => 'LoginController@index']);


Route::post('/login', 'SessionsController@store');


Route::post('/register', 'RegistrationController@store');


Route::post('/logout', 'SessionsController@destroy');


/** Account area
*/Route::get('/account', 'AccountsController@index')->name('home');


Route::get('/account/arg/{id}', 'AccountsController@show');


Route::get('/account/deposit', 'AccountsController@create');


Route::post('/account/deposit', 'DepositsController@store');


/** Notices Area
*/Route::get('/notices', 'ForumController@index');


// Admin methods -->
Route::get('/notices/create', 'ForumController@create');


Route::post('/notices', 'ForumController@store');
// End of Admin methods <--


Route::get('/notices/{notice}', 'ForumController@show');
```

```
Route::post('/notices/{forum}/comments', 'CommentsController@store');


/** Trading Post Area

*/Route::get('/trade_post/1', 'TradesController@landscape1');


Route::get('/trade_post/2', 'TradesController@landscape2');


Route::get('/trade_post/arg/{id}', 'TradesController@show');


Route::post('/trade_post', 'TradesController@trade');


/** Admin routes

*/Route::get('protected', ['middleware' => ['auth', 'admin'], function() {
        return "this page requires that you be logged in and an Admin";
}]);


Route::get('/account/pending/', 'DepositsController@pending');


Route::get('/account/pending/{id}', 'DepositsController@show');


Route::delete('/account/pending/{id}', 'DepositsController@value');


Route::get('/account/personal', 'AccountsController@personal');
<!-- Master Login and Registration Area -->
<!DOCTYPE html>
<html lang="en">


    <head>


        <meta charset="utf-8">
        <meta http-equiv="X-UA-Compatible" content="IE=edge">
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <meta name="robots" content="noindex, nofollow">


        <title>Bank-4-arg</title>


        <link rel="stylesheet" href="{{ URL::asset('css/bootstrap.min.css') }}">
                <link rel="stylesheet" href="{{ URL::asset('css/form-elements.css') }}">
        <link rel="stylesheet" href="{{ URL::asset('css/style.css') }}">


        <!-- HTML5 Shim and Respond.js IE8 support of HTML5 elements and media queries -->
        <!-- WARNING: Respond.js doesn't work if you view the page via file:// -->
        <!--[if lt IE 9]>
                <script src="https://oss.maxcdn.com/libs/html5shiv/3.7.0/html5shiv.js"></script>
                <script src="https://oss.maxcdn.com/libs/respond.js/1.4.2/respond.min.js"></script>
        <![endif]-->


        <!-- Favicon and touch icons -->
        <link rel="shortcut icon" href="assets/ico/favicon.png">
        <link rel="apple-touch-icon-precomposed" sizes="144x144" href="assets/ico/apple-touch-icon-144-
precomposed.png">
        <link rel="apple-touch-icon-precomposed" sizes="114x114" href="assets/ico/apple-touch-icon-114-
precomposed.png">
```

```html
            <link rel="apple-touch-icon-precomposed" sizes="72x72" href="assets/ico/apple-touch-icon-72-
precomposed.png">
            <link rel="apple-touch-icon-precomposed" href="assets/ico/apple-touch-icon-57-precomposed.png">


    </head>


    <body>
       <!-- Top content -->
      <div class="top-content">


            <div class="inner-bg">
                  <div class="container">


                        <div class="row">
                              <div class="col-sm-8 col-sm-offset-2 text">
                                    <h1><strong>Bank-4-arg</strong></h1>
                                    <div class="description">


                                        <p> This is a free responsive <strong>"login and register forms"</strong> template made
with Bootstrap.
       Download it on <a href="http://azmind.com" target="_blank"><strong>AZMIND</strong>
</a>,
                                          customize and use it as you like!
                                    </p>
                              </div>
                        </div>
                  </div>


              @yield('content')

              @yield('logout')
              @include ('layouts.partsLogin.footer')



      </body>

</html>

<!-- Master User Area HTML -->
<!DOCTYPE html>
<html lang="en">
    <head>
      <meta charset="utf-8">
      <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
      <meta name="description" content="">
      <meta name="author" content="">
      <meta name="robots" content="noindex, nofollow">
      <link rel="icon" href="../../../../favicon.ico">


      <title>Bank-4-arg</title>


      <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0-beta/css/bootstrap.min.css"
      integrity="sha384-/Y6pD6FV/Vv2HJnA6t+vslU6fwYXjCFtcEpHbNJ0lyAFsXTsjBbfaDjzALeQsN6M" crossorigin="anonymous">
      <link href="{{ URL::asset('css/dashboard.css') }}" rel="stylesheet">
      <script src='https://cloud.tinymce.com/stable/tinymce.min.js'></script>
    </head>
```

```html
<body>

  @include ('layouts.partsUser.navTop')

  <div class="container-fluid">
    <div class="row">

      @include ('layouts.partsUser.navSide')

      <main class="col-sm-9 ml-sm-auto col-md-10 pt-3" role="main">

        @yield ('accOverview')
        @yield ('create')
        @yield ('index')
        @yield ('thread')
        @yield ('singleArg')
        @yield ('personal')
        @yield ('landscape1')
        @yield ('landscape2')
        @yield ('singleTrade')


      <!--/main-->
      </main>
    </div>
  </div>

  <!-- Bootstrap core JavaScript
  ================================================== -->
  <!-- Placed at the end of the document so the pages load faster -->
  <script src="https://code.jquery.com/jquery-3.2.1.slim.min.js" integrity="sha384-KJ3o2DKtIkvYIK3UENzmM7KCkRr/rE9/Qpg6aAZGJwFDMVNA/GpGFF93hXpG5KkN" crossorigin="anonymous"></script>
  <script>window.jQuery || document.write('<script src="../../../../assets/js/vendor/jquery.min.js"><\/script>')</script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.11.0/umd/popper.min.js" integrity="sha384-b/U6ypiBEHpOf/4+1nzFpr53nxSS+GLCkfwBdFNTxtclqqenISfwAzpKaMNFNmj4" crossorigin="anonymous"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0-beta/js/bootstrap.min.js" integrity="sha384-h0AbiXch4ZDo7tp9hKZ4TsHbi047NrKGLO3SEJAg45jXxnGIfYzk4Si90RDIqNm1" crossorigin="anonymous"></script>
  <!-- IE10 viewport hack for Surface/desktop Windows 8 bug -->
  <script src="js/ie10-viewport-bug-workaround.js"></script>
</body>
</html>


/* ***************************************** */
/* Master Cascading Style Sheet for Modular */
/* Web-application */


body { background: url(../img/bg.jpg) left top repeat;
      font-family: 'Roboto', sans-serif;
      font-size: 16px;
      font-weight: 300;
      color: #888;
      line-height: 30px;
```

```css
    text-align: center;
}strong { font-weight: 500; }


a, a:hover, a:focus {
    color: #19b9e7;
    text-decoration: none;
    -o-transition: all .3s; -moz-transition: all .3s; -webkit-transition: all .3s; -ms-transition: all .3s;
transition: all .3s;

}h1, h2 {
    margin-top: 10px;
    font-size: 38px;
    font-weight: 100;
    color: #555;
    line-height: 50px;

}h3 { font-size: 22px;
    font-weight: 300;
    color: #555;
    line-height: 30px;

}img { max-width: 100%; }


::-moz-selection { background: #19b9e7; color: #fff; text-shadow: none; }
::selection { background: #19b9e7; color: #fff; text-shadow: none; }



.btn-link-1 {
    display: inline-block;
    height: 50px;
    margin: 5px;
    padding: 16px 20px 0 20px;
    background: #19b9e7;
    font-size: 16px;
    font-weight: 300;
    line-height: 16px;
    color: #fff;
    -moz-border-radius: 4px; -webkit-border-radius: 4px; border-radius: 4px;

}.btn-link-1:hover, .btn-link-1:focus, .btn-link-1:active { outline: 0; opacity: 0.6; color: #fff; }


.btn-link-1.btn-link-1-facebook { background: #4862a3; }
.btn-link-1.btn-link-1-twitter { background: #55acee; }
.btn-link-1.btn-link-1-google-plus { background: #dd4b39; }


.btn-link-1 i {
    padding-right: 5px;
    vertical-align: middle;
    font-size: 20px;
    line-height: 20px;

}.btn-link-2 {
    display: inline-block;
    height: 50px;
    margin: 5px;
    padding: 15px 20px 0 20px;
    background: rgba(0, 0, 0, 0.3);
```

```
    border: 1px solid #fff;

    font-size: 16px;

    font-weight: 300;

    line-height: 16px;

    color: #fff;

    -moz-border-radius: 4px; -webkit-border-radius: 4px; border-radius: 4px;

}.btn-link-2:hover, .btn-link-2:focus,

.btn-link-2:active, .btn-link-2:active:focus { outline: 0; opacity: 0.6; background: rgba(0, 0, 0, 0.3); color:

#fff; }



/***** Top content *****/

.inner-bg {

    padding: 60px 0 80px 0;

}.top-content .description {

    margin: 20px 0 10px 0;

}.top-content .description a:hover,

.top-content .description a:focus { border-bottom: 1px dotted #19b9e7; }

.form-box {

    margin-top: 70px;

}.form-top {

    overflow: hidden;

    padding: 0 25px 15px 25px;

    background: #f3f3f3;

    -moz-border-radius: 4px 4px 0 0; -webkit-border-radius: 4px 4px 0 0; border-radius: 4px 4px 0 0;
    text-align: left;

}.form-top-left {

    float: left;

    width: 75%;

    padding-top: 25px;

}.form-top-left h3 { margin-top: 0; }

.form-top-right {

    float: left;

    width: 25%;

    padding-top: 5px;

    font-size: 66px;

    color: #ddd;

    line-height: 100px;

    text-align: right;

}.form-bottom {

    padding: 25px 25px 30px 25px;

    background: #eee;

    -moz-border-radius: 0 0 4px 4px; -webkit-border-radius: 0 0 4px 4px; border-radius: 0 0 4px 4px;

    text-align: left;

}.form-bottom form textarea {

    height: 100px;

}.form-bottom form button.btn {

    width: 100%;
```

```
}.form-bottom form .input-error {
     border-color: #19b9e7;

}.social-login {
     margin-top: 35px;

}.social-login-buttons {
     margin-top: 25px;

}.middle-border {
     min-height: 300px;
     margin-top: 170px;
     border-right: 1px solid #ddd;
}
/***** Footer *****/

footer {
     padding-bottom: 70px;
}
footer .footer-border {
     width: 200px;
     margin: 0 auto;
     padding-bottom: 30px;
     border-top: 1px solid #ddd;
}footer a:hover, footer a:focus { border-bottom: 1px dotted #19b9e7; }


/***** Media queries *****/

@media (min-width: 992px) and (max-width: 1199px) {}

@media (min-width: 768px) and (max-width: 991px) {}

@media (max-width: 767px) {

     .middle-border { min-height: auto; margin: 65px 30px 0 30px; border-right: 0; border-top: 1px solid #ddd; }

}@media (max-width: 415px) {

     h1, h2 { font-size: 32px; }

}/* *************************************** */
/* Dashboard Cascading Style Sheet for */
/* Modular Web-application */

/* * Base structure
 */

/* Move down content because we have a fixed navbar that is 3.5rem tall */
body {
   padding-top: 3.5rem;
}/* * Typography
 */
```

```css
h1 { margin-bottom: 20px;
    padding-bottom: 9px;
    border-bottom: 1px solid #eee;
}/* * Sidebar
  */

.sidebar {
    position: fixed;
    top: 51px;
    bottom: 0;
    left: 0;
    z-index: 1000;
    padding: 20px;
    overflow-x: hidden;
    overflow-y: auto; /* Scrollable contents if viewport is shorter than content. */
    border-right: 1px solid #eee;
}/* Sidebar navigation */
.sidebar {
    padding-left: 0;
    padding-right: 0;
}.sidebar .nav {
    margin-bottom: 20px;
}.sidebar .nav-item {
    width: 100%;
}.sidebar .nav-item + .nav-item {
    margin-left: 0;
}.sidebar .nav-link {
    border-radius: 0;
}/* *
Dashboard
  */ /* Placeholders */
.placeholders {
    padding-bottom: 3rem;
}.placeholder img {
    padding-top: 1.5rem;
    padding-bottom: 1.5rem;
}
```

```php
<?php
/**************************************/
/* Accounts Controller */
/* */

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Accounts;
```

```php
use App\Wallet;

use App\User;
class AccountsController extends Controller

{

        public function __construct() {

                $user = $this->middleware('auth');

        }

//Display user's account information
    public function index() {

        $accounts = Accounts::latest()->where('user_id','=', ['id' => auth()->id()])->get();

        $wallet = Wallet::where('user_id','=', ['id' => auth()->id()])->get();

// Admin area display //
        $allAccounts = Accounts::all();

        $usersAcc = \DB::table('wallets')
                            ->leftJoin('users','users.id','=','user_id')
                            ->select(\DB::raw('count(user_id) as cnt, sum(tot_wc) as tot_wc, any_value(username) as
username'))
                            ->groupBy('user_id')
                            ->get();

        return view('account.account', compact('accounts','wallet', 'allAccounts','usersAcc'));
    }

// show single argument from users dashboard //
        public function show($id) {

                $arg = Accounts::find($id);

                return view('account.show', compact('arg'));
        }

//Load deposit form view
    public function create() {

        return view('account.create');
    }

//Load Admin Personal Acc View

    public function personal() {

        $accounts = Accounts::latest()->where('user_id','=', ['id' => auth()->id()])->get();

        $wallet = Wallet::where('user_id','=', ['id' => auth()->id()])->get();

        return view('admin.personal', compact('accounts','wallet'));
    }
```

```php
}
```

```php
<?php
/***************************************/
/* Admin middleware class */
/* */

namespace App\Http\Middleware;

use Illuminate\Support\Facades\Auth;

use Closure;

class Admin
{
    /** * Handle an incoming request.

     * * @param \Illuminate\Http\Request $request
     * @param \Closure $next
     * @return mixed
     */
    public function handle($request, Closure $next)
    {
       if ( Auth::check() && Auth::user()->isAdmin() )
       {
            return $next($request);

       } return redirect()->home();
    }
}
```

```php
<?php
/***************************************/
/* Login Controller */
/* */

namespace App\Http\Controllers;

use Illuminate\Http\Request;

class LoginController extends Controller
{

    public function __construct() {

         $this->middleware('guest');

    } public function index() {

         return view('login');


    } public function create() {

         return view('about');
```

```php
        }

}


<?php
/***************************************/
/* Login Sessions controlle */
/* NOTE: Tells web-app if a user is */
/* logged in */

namespace App\Http\Controllers;

use Illuminate\Http\Request;

class SessionsController extends Controller
{

        public function store() {

            if (! auth()->attempt(request(['email', 'password'])) ) {

                    return back();

                }

            return redirect()->home();

        } public function destroy() {

                auth()->logout();

                return view('logout');

        }

}


<?php
/***************************************/
/* Register User controller */
/* NOTE: writes to and reads from */
/* database */

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\User;

class RegistrationController extends Controller
{


        public function store() {
```

```php
        //Validate --To be fixed--
        $this->validate(request(), ['username' => 'required|string',

                                    'email' => 'required|email',

                                    'password' => 'required|confirmed'

                                    ]);
        //Create and save user
        $user = User::create(['username' => request('username'),

                              'email' => request('email'),

                              'password' => bcrypt(request('password'))

                              ]);


        //Sign them in
        auth()->login($user);


        //Redirect user
        return redirect('/account');


    }


}


<?php
/**************************************/
/* Accounts Controller */
/* NOTE: Main accounts functionality */
/* loads user data into main dashboard */


namespace App\Http\Controllers;


use Illuminate\Http\Request;


use App\Accounts;


use App\Wallet;


use App\User;


class AccountsController extends Controller
{


        public function __construct() {
                $user = $this->middleware('auth');
        }

//Display user's account information
    public function index() {


        $accounts = Accounts::latest()->where('user_id','=', ['id' => auth()->id()])->get();


        $wallet = Wallet::where('user_id','=', ['id' => auth()->id()])->get();

// Admin area display //
        $allAccounts = Accounts::all();


        $usersAcc = \DB::table('wallets')
```

```
                    ->leftJoin('users','users.id','=','user_id')
                    ->select(\DB::raw('count(user_id) as cnt, sum(tot_wc) as tot_wc, any_value(username) as
username'))
                    ->groupBy('user_id')
                    ->get();


        return view('account.account', compact('accounts','wallet', 'allAccounts','usersAcc'));
    }

// show single argument from users dashboard //
        public function show($id) {

            $arg = Accounts::find($id);

            return view('account.show', compact('arg'));
        }

//Load deposit form view
    public function create() {

        return view('account.create');
    }

//Load Admin Personal Acc View

    public function personal() {

        $accounts = Accounts::latest()->where('user_id','=', ['id' => auth()->id()])->get();

        $wallet = Wallet::where('user_id','=', ['id' => auth()->id()])->get();

        return view('admin.personal', compact('accounts','wallet'));
    }

}


<?php
/***************************************/
/* Deposit Argument controller */
/* NOTE: Controls functionality of */
/* user deposit functionality */

namespace App\Http\Controllers;
use Illuminate\Http\Request;

use App\Deposits;

use App\Accounts;

use App\Wallet;

use App\User;

class DepositsController extends Controller
```

```php
{//user method
    public function store(Request $request) {

        $this->validate(request(), ['subject' => 'required',
                                    'key_points' => 'required',
                                    'argument' => 'required'
        ]);

        Deposits::create(['subject' => request('subject'),
                          'key_points' => request('key_points'),
                          'argument' => request('argument'),
                          'user_id' => auth()->id(),
                          'creator_id' => auth()->user()->username
        ]);

        return back();

    }

    /***
     * Administrational tools
     ***/

    //view pending deposits index
    public function pending() {

        $pendings = Deposits::latest()->where('value', '=', NULL)->get();

        return view('admin.pending', compact('pendings'));
    }

    //Show target deposit view
    public function show($id) {

        $deposit = Deposits::find($id);

        return view('admin.deposit', compact('deposit'));
    }

    //main method for creating account record and wallet record/update
    public function value($id, Request $request) {

        $this->validate(request(), ['value' => 'required']);

        $deposit = Deposits::find($id);

        Wallet::create(['tot_wc' => request('value'),
                        'user_id' => $deposit->user_id
        ]);

        $coins = request('value');

        for ($i=0; $i < $coins; $i++) {
            Accounts::create(['subject' => $deposit->subject,
                              'key_points' => $deposit->key_points,
```

```php
                                        'argument' => $deposit->argument,
                                        'user_id' => $deposit->user_id,
                                        'creator_id' => $deposit->creator_id,
                                        'value' => request('value')
                    ]);

                } $deposit->delete();


                return redirect('/account/pending');
            }

    }


<?php
/*****************************************/
/* User trade function controller */
/* NOTE: controls all functionality */
/* for players trading for WORDCOIN */


namespace App\Http\Controllers;


use Illuminate\Http\Request;


use App\Accounts;


use App\Trades;


class TradesController extends Controller
{

        public function __construct() {


                $user = $this->middleware('auth');

        } public function landscape1() {


                $selections = Accounts::all()->random(12);


                return view('trading_post.landscape1', compact('selections'));

        } public function landscape2() {


                $selections = Accounts::all()->shuffle();


                return view('trading_post.landscape2', compact('selections'));

        } public function show($id) {
                $arg = Accounts::find($id);


                $accounts = Accounts::where('user_id','=', ['id' => auth()->id()])->get();


                return view('trading_post.show', compact('arg','accounts'));

        } public function trade(Request $request) {


                $tradeFor_id = request('for_id');
                $tradeWith_id = request('with_id');
                $tradeWith = Accounts::find($tradeWith_id);
```

```
            $tradeFor = Accounts::find($tradeFor_id);

// Trade_with user_id change, i.e. id changes from active user to the passive user
            $tradeWith->user_id = $tradeFor->user_id;
            $tradeWith->exchanges = +1;
            $tradeWith->save();

// Trade_for user_id update, i.e. id changed for the user that is trading for it
            $tradeFor->user_id = auth()->id();
            $tradeFor->exchanges += 1;
            $tradeFor->save();

            return redirect('/account');
        }

}
```

Agorama MVC *Kubos Nero* and *Geltung [Validity]*

This is an older iteration of the framework.

Entry Point

```php
<?php
    require_once(__DIR__.'/private/connection.php');

    if (isset($_GET['controller']) && isset($_GET['action'])) {
        $controller = $_GET['controller'];
        $action = $_GET['action'];
    } else {
        $controller = 'pages';
        $action = 'home';

    } require_once(__DIR__.'/views/layout.php');
```

Frameworks main layout

```html
<html>

<head>
    <title>web application</title>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
    <meta name="viewport" content="width=device-width">
    <link href="public/CSS/normalize.css" rel="stylesheet" type="text/css">
    <link rel="stylesheet" type="text/css" href="./public/CSS/style.css">
    <link rel="shortcut icon" href="./public/media/images/favicon.png">
</head>

<body>
    <header class="headerLayout">
        <nav class="menu">
```

```html
<ul> <li class="linktext"><a href='?controller=pages&action=home'>Home</a>
    </li>
    <li class="brackets">|</li>
    <li class="linktext"><a href='?controller=pages&action=about'>About</a>
    </li>
    <li class="brackets">|</li>
    <li class="linktext"><a href='?controller=posts&action=index'>Screenings</a>
    </li>
  </ul>
 </nav>
</header>
<article class="articleLayout">


  <?php require_once(__DIR__.'/../routes.php'); ?>


</article>

<footer>
  <p class="footerLayout">Copyright &copy; Agorama <?php echo date('Y'); ?>.</p>
</footer>
<!-- JavaScript queuing -->
<?php if($_GET['action'] == 'show') { ?>
<script type="text/javascript" src="./public/JS/jquery-3.2.1.min.js"></script>
<script type="text/javascript" src="./public/JS/videoplayer-controls.js"></script>
<script type="text/javascript" src="./public/JS/fullscreen.js"></script>
<?php } ?>
<!-- /JavaScript queuing -->
</body>
</html>
```

Framework's routes - leads to which controller is used and view is rendered

```php
<?php
  function call($controller, $action) {
    require_once(__DIR__.'/controllers/' . $controller . '_controller.php');

    switch($controller) {
      case 'pages':
        $controller = new PagesController();
      break;
      case 'posts':
        // we need the model to query the database later in the controller
        require_once(__DIR__.'/models/post.php');
        $controller = new PostsController();
      break;

    } $controller->{ $action }();

  } // we're adding an entry for the new controller and its actions
  $controllers = array('pages' => ['home', 'error', 'about', 'screening'],
                               'posts' => ['index', 'show']

  ); if (array_key_exists($controller, $controllers)) {
```

```php
        if (in_array($action, $controllers[$controller])) {
            call($controller, $action);
        } else {
            call('pages', 'error');
        }
    } else {
        call('pages', 'error');
    }
```

Regular pages controller for rendering

```php
<?php
    class PagesController {

        public function home() {
            $title = 'Kubos Nero';
            require_once(__DIR__.'/../views/pages/home.php');

        } public function error() {
            require_once(__DIR__.'/../views/pages/error.php');

        } public function about() {
            $title = 'About Kubos Nero';
            require_once(__DIR__.'/../views/pages/about.php');

        } public function screening() {
            $title = 'Screening Index';
            require_once(__DIR__.'/../views/pages/screening.php');
        }

    }
```

Posts controller - renders the multiple different post pages, requires database for full functionality

```php
<?php
    class PostsController {
        public function index() {
            // we store all the posts in a variable
            $title = 'Screening Index';
            $posts = Post::all();
            require_once(__DIR__.'/../views/posts/index.php');

        } public function show() {
            // we expect a url of form ?controller=posts&action=show&id=x
            // without an id we just redirect to the error page as we need the post id to find it in the database
            if (!isset($_GET['id']))
                return call('pages', 'error');

            // we use the given id to get the right post
            $post = Post::find($_GET['id']);
            require_once(__DIR__.'/../views/posts/show.php');
        }
    }
```

Post model - essentially the class that will allow the controller to speak with the database

```php
<?php
```

```php
class Post {
    // we define 3 attributes
    // they are public so that we can access them using $post->author directly
    public $id;
    public $screening;
    public $path;
    public $thumb;
    public $blurb;
    public $title;
    public $text;

    public function __construct(
        $id,
        $screening,
        $path,
        $thumb,
        $blurb,
        $title,
        $text
    ) { $this->id = $id;
        $this->screening = $screening;
        $this->path = $path;
        $this->thumb = $thumb;
        $this->blurb = $blurb;
        $this->title = $title;
        $this->text = $text;
    } public static function all() {
        $list = [];
        $db = Db::getInstance();
        $req = $db->query(
            'SELECT * FROM
            screening

            JOIN

            info

            ON screening.id = info.screening_id'
        ); // we create a list of Post objects from the database results
        foreach($req->fetchAll() as $post) {
            $list[] = new Post(
                $post['id'],
                $post['screening'],
                $post['path'],
                $post['thumb'],
                $post['blurb'],
                $post['title'],
                $post['text']
            );
        } return $list;
    } public static function find($id) {
        $db = Db::getInstance();
        // we make sure $id is an integer
        $id = intval($id);
```

```
$req = $db->prepare(
    'SELECT * FROM
    screening
    JOIN
    content
    ON screening.id = content.screening_id
    WHE
    RE
    :id'
); // the query was prepared, now we replace :id with our actual $id value
$req->execute(array('id' => $id));
$post = $req->fetch();

return new Post(
    $post['id'],
    $post['screening'],
    $post['path'],
    $post['thumb'],
    $post['blurb'],
    $post['title'],
    $post['text']
);
}
// end of class //
}
```

The Complex or Closed-looped Web System:

The final web system presented in this Appendix section pertains to my research's practice-based output. Before moving on to unpack this project (Moses the Lonely Londoner) I will take the time to explain this final web system platform. The *Complex or Closed-looped system* is a highly distributive system which incorporates several different interlinked platforms in addition to underlying platforms unseen on the public interfaces. I drew comparisons in my research to two particular artworks that exhibited this behaviour - *It's Complicated* by Rostan Tavasiev and *Breath (BRH)* by Max Dovey (3.2;3.3;3.4) - and it was through this interaction that I began to devise more complex and closed arrangements of platform configurations within my own practice. However, it was also important to expand my ideas of a complex system beyond platforms I developed myself. Tavasiev's artwork used Facebook as its main vehicle for dissemination, but also as the architecture for supporting the artwork's organisational system of how users interacted with the artwork's human actors. This was a similar feature that I observed in Dovey's artwork, though this platform extension came in the form of third-party API support. Because of this process, the *complex or closed-looped system* is seen by me as having two significant layers: (1) the network of interconnecting platforms, e.g. project website, social media platform or exhibition site (such as an installation); (2) underlying architecture which affects Internet protocol, e.g. an API system or some other dynamic process. Another significant feature of these layers is that they not only form a distributive network between themselves, but also form network links with the wide Internet environment.

In the end, the *complex or closed-looped system* is seen by me as a true *distributed* platform spoken about by Marialaura Ghidini (2015), and interestingly also seen as an *unsitely* artwork (Miranda 2013) simultaneously.

Moses the Lonely Londoner

The project shown below comprises three front-facing platforms and two underlying systems (one of which is a highly complex open-source AI framework), with one of the platforms doubling up as an underlying and public-facing structure. The first layer, or the public interface, consists of an independent platform (developed by me in the Node.js framework called Choo.js) and the Facebook platform. Starting with the independent platform, this acts as the project information page (including privacy and data usage policies) and connection point to the AI bot *Moses*. Facebook on the other hand is used as a multi-purpose information page (project Facebook page) and main site of interaction with *Moses* the AI bot. Then there is the platform that comprises the aspect of the project called *Moses's Stream of Consciousness*; this platform acts as the aesthetic remains of Moses and the users' interactions, which randomly generates a moving image piece based on its media archive. On the second half of the system (the unseen one) we have the open-source

framework *AIVA* (Artificial Intelligent Virtual Assistant), which acts as the system that interfaces with Facebook (for user interaction), the AI chatbot, and finally the forwarding proxy for the component *Moses's Stream of Consciousness*. Finally, we have the internal API system that happens to be part of the same platform as *Moses's Stream of Consciousness* and acts as the receiver of media content from the Facebook platform, which in turn is archived and then used for the creation of the *Moses Stream of Consciousness* moving image.

Due to the size of this project the subsections below will correspond to the various platform systems that comprise *Moses the Lonely Londoner*, minus Facebook (though the interfacing script will be shown).

Moses Aloetta Front-end platform

```html
<!--Base HTML - used to load style sheets and main JS entry point-->
<!doctype html>
<html>
    <head>
        <meta charset="utf-8">
        <meta name="author" content="Agorama">
        <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
        <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
        <title>Moses Aloetta Info Page</title>
        <link rel="stylesheet" type="text/css" href="css/bootstrap.min.css">
        <link rel="stylesheet" type="text/css" href="css/additions.css">
        <link rel="stylesheet" type="text/css" href="css/style.css">
    </head>


    <body>
        <script type="text/javascript" src="bundle.js"></script>
    </body>
</html>
```

```css
/* * Style sheet for platform, mobile friendly.
 */
.container {
    max-width: 960px;
}/* * Custom translucent site header
 */

.site-header {
    background-color: rgba(0, 0, 0, .85);
    -webkit-backdrop-filter: saturate(180%) blur(20px);
    backdrop-filter: saturate(180%) blur(20px);
}.site-header a {
    color: #999;
    transition: ease-in-out color .15s;
}.site-header a:hover {
    color: #fff;
    text-decoration: none;
}/* * Dummy devices (replace them with your own or something else entirely!)
 */

.product-device {
    position: absolute;
    right: 10%;
```

```css
    bottom: -30%;

    width: 300px;

    height: 540px;

    background-color: #333;

    border-radius: 21px;

    -webkit-transform: rotate(30deg);

    transform: rotate(30deg);

}.product-device::before {

    position: absolute;

    top: 10%;

    right: 10px;

    bottom: 10%;

    left: 10px;

    content: "";

    background-color: rgba(255, 255, 255, .1);

    border-radius: 5px;

}.product-device-2 {

    top: -25%;

    right: auto;

    bottom: 0;

    left: 5%;

    background-color: #e5e5e5;

}/*
 * Extra utilities
 */

.flex-equal > * {

    -ms-flex: 1;

    flex: 1;

}@media (min-width: 768px) {

    .flex-md-equal > * {

        -ms-flex: 1;

        flex: 1;

    }

}.overflow-hidden { overflow: hidden; }
```

```javascript
/*****************************************/

/* Entry point for Choo.js framework. */

/* Establishes web routes and html view */

/* modules for rendering web site */


const choo = require('choo')

const html = require('choo/html')


const main = require('./views/main')


const app = choo()



app.route('/', main)

app.mount('body')
/*****************************************/
```

```
/* Main view module renders platform's */
/* aesthetic */

const html = require('choo/html')

const footer = require('./components/footer')

module.exports = (state) => {
    return html `

    <body> <div class="p-3 pr-md-5 pl-md-5 pb-md-5 pt-md-1 m-md-3 row bg-light">

            <div class="text-center col-lg-4 p-lg-5 mx-auto my-5">
                <img src="./imgs/profile-round.png" class="card-img-top" />
                <h2 class="display-6 font-weight-normal">Moses Aloetta</h2>
                <p class="lead font-weight-normal">This is Moses, an AI power chatbot built based on the main character
of Sam Selvon's novel <em>The Lonely Londoners</em>.</p>
                <br>
                <p class="font-weight-normal">To connect and chat with Moses it is require to have Facebook. Please
click on the botton below to connect with Moses on Facebook messenger.</p>
                <a class="btn btn-outline-dark" href="https://m.me/mosesthechatbot" target="_blank">Chat to Moses</a>
            </div>

            <div class="col-lg-8 p-lg-5 mx-auto my-5">
                <h2 class="display-7 font-weight-normal">Come take a journey with Moses.</h2>
                <!-- Implementation of iframe DOM for Journey with Moses... -->
                <iframe src="https://www.google.com/maps/d/embed?mid=1C7930ZHJs6XtL4HBfg3eoMBio3Eh1iVl"
style="position:relative;top:0;bottom:0;left:0;right:0;height:85%;width:100%;" frameborder="0"></iframe>
                <p class="font-weight-normal">For those in London - come experience a conversation with Moses through
the city streets of London.</p>
            </div>

        </div>

        ${footer(state)}

        <script src="./js/jquery-3.3.1.slim.min.js"></script>
        <script src="./js/popper.min.js"></script>
        <script src="./js/bootstrap.min.js"></script>
    </body>
    `

}/********************************************/
/* Main view module's footer extension. */
/* This is essentially the HTML architecture */
/* for all the popup components on the */
/* platform. */

const html = require('choo/html')

module.exports = (state) => {
    return html `
    <footer class="container py-3 my-5 text-center">
        <div class="row">
```

```html
<div class="col-lg-4">
    <!-- Button trigger modal -->
    <button type="button" class="btn btn-outline-dark" data-toggle="modal" data-target="#about">
        About
    </button>

    <!-- Modal -->
    <div class="modal fade" id="about" tabindex="-1" role="dialog" aria-labelledby="aboutTitle" aria-hidden="true">
        <div class="modal-dialog modal-dialog-scrollable" role="document">
            <div class="modal-content">
                <div class="modal-header">
                    <h5 class="modal-title" id="aboutTitle">About</h5>
                    <button type="button" class="close" data-dismiss="modal" aria-label="Close">
                        <span aria-hidden="true">Dismiss</span>
                    </button>
                </div>
                <div class="modal-body">
                    <p class="font-weight-normal text-left"><em>Moses the Lonely Londoner</em> is a project set on investigating the concept of intimate digital spaces, namely that of the telecocoon - first described in Japanese teen keitai culture as an invisible space linked to an individual's mobile device, where intimacy at a distance is possible through a person being connected to their inner circle of friends, family and contacts at all times.</p>

                    <p class="font-weight-normal text-left">This project takes inspiration from Moses Aloetta, the main character in Sam Selvon's novel <em>The Lonely Londoners</em>, which follows the lives of various Caribbean immigrants around the period of the Windrush generation in London. By drawing passages from the book and feeding them into an AI chatbot, developed using machine learning, Moses is reimagined in the 21st century.</p>

                    <p class="font-weight-normal text-left">Drawing parallels between the loneliness expressed in Selvon's 1950s London and the notions of isolation propelled by Social Media, users are invited to connect with Moses on their mobile device, share content with him and enter his telecocoon. A virtual mosaic featuring images, videos, and gifs shared with Moses online will be comprised and presented in the forthcoming exhibition and event:</p>

                    <ul class="font-weight-normal text-left">
                        <li>Raven Row Openday, Raven Row Gallery (4 to 5 May, 2019)</li>
                        <li>For the Time Being, The Photographers' Gallery (11 to 12 May, 2019)</li>
                    </ul>

                    <p class="font-weight-normal text-left"><em>Moses the Lonely Londoner</em> is a artistic project developed by <a href="https://home.Agorama.org.uk" target="_blank">Agorama</a></p>

                    <p class="font-weight-normal text-left">This project has been commissioned by the Royal College of Art in partnership with the Photographers' Gallery.</p>
                </div>
                <div class="modal-footer">
                    <button type="button" class="btn btn-secondary" data-dismiss="modal">Close</button>
                </div>
            </div>
        </div>
    </div>

    <div class="col-lg-4">
```

```
<!-- Button trigger modal -->
<button type="button" class="btn btn-outline-dark" data-toggle="modal" data-target="#privacy">
    Privacy Policy
</button>
<!-- Modal -->
<div class="modal fade" id="privacy" tabindex="-1" role="dialog" aria-labelledby="privacyTitle" aria-hidden="true">
    <div class="modal-dialog modal-dialog-scrollable" role="document">
        <div class="modal-content">
            <div class="modal-header">
                <h5 class="modal-title" id="privacyTitle">Privacy Policy</h5>
                <button type="button" class="close" data-dismiss="modal" aria-label="Close">
                    <span aria-hidden="true">Dismiss</span>
                </button>
            </div>
            <div class="modal-body">
                <h3 class="text-left">Introduction</h3>
                <p class="font-weight-normal text-left">Data privacy is a core ideal to Agorama. We take the
privacy of our users and audiences very seriously. The following notice will outline our data privacy policy for
users that participate in the artistic project <em>Moses the Lonely Londoner</em>. Please note by agreeing with
our terms of service, you are also agreeing with Agorama's data practice for this project.</p>

                <h3 class="text-left">Who we are?</h3>
                <p class="font-weight-normal text-left">Agorama is a creative collective of artists, curators,
designers and developers that operate in the field of art, research and design.</p>

                <h3 class="text-left">What information do we collect?</h3>
                <p class="font-weight-normal text-left">For the project <em>Moses the Lonely Londoner</em>, the
only portion of this project that collects data is Moses the chatbot. As part of Moses's operation, the chatbot
records all text content and media content sent by the user.</p>
                <p class="font-weight-normal text-left">All text content sent to Moses is recorded to a datebase.
This data is used for two purposes, for the chatbot to keep track of who it's conversing with and where to reply,
and for the purpose of obtaining further training data for machine learning purposes.</p>
                <p class="font-weight-normal text-left">Digital media (gifs, images and videos) collected by Moses
the chatbot is captured <em>anonymously</em>. The purpose for this collection is for the development of a creative
moving image piece. Thus, by participating in the project and sharing digital media with Moses the chatbot, you
are directly agreeing with the terms of service for this project and this privacy policy. Please do not share
<b>private, sexual, gratuitous, or sensitive material!!</b></p>

                <h3 class="text-left">How long do we keep your personal data for?</h3>
                <p class="font-weight-normal text-left">Due to the nature of the project and the text data
collected for machine learner purposes. This information is kept indefinitely for training purposes only.</p>
                <p class="font-weight-normal text-left">For all digital media collected, this data will be removed
every six months, or earlier if the repository that houses this data exceeds its limit. In the case of the
artistic moving image work(s), this content will be created at the time of collection thereby becoming an original
piece of creative work - thus again the emphasis on <b>not sharing private, sexual, gratuitous, or sensitive
material!!</b></p> <h3 class="text-left">Your rights in relation to personal data</h3>
                <p class="font-weight-normal text-left">By your consent. Consent for this project is given by the
user through agreeing with the terms of service for the project <em>Moses the Lonely Londoner</em>.</p>

                <h3 class="text-left">Use of automated decision-making and profiling</h3>
                <p class="font-weight-normal text-left">Agorama does not believe in auto decision and profiling of
any individual, whether by race, colour of skin, gender, sexuality, religious belief, political belief and so
forth. Any auto decision and or profiling happens on a language basis, meaning for a computer to understand
```

dialogue and respond to a user correctly.</p>

                        <h3 class="text-left">How to contact us?</h3>
                        <p class="font-weight-normal text-left">If you have any questions please feel free to contact
Agorama directly: admin@Agorama.org.uk.</p>

                        <h3 class="text-left">Use of cookies and other technologies</h3>
                        <p class="font-weight-normal text-left">Moses the Lonely Londoner does not use cookies,
tracking software or spyware.</p>

                        <h3 class="text-left">Linking to other websites / third party content</h3>
                        <p class="font-weight-normal text-left">Please note Moses the Lonely Londoner is not
sponsored or financed by Facebook or <a
href="https://www.snap.com/en-US/terms/">Snapchat. This project only uses these platforms for the purposes of
reaching audiences. Please see Facebook and Snapchat's terms of service for information of their uses of your
data.</p>
                    </div>
                    <div class="modal-footer">
                        <button type="button" class="btn btn-secondary" data-dismiss="modal">Close</button>
                    </div>
                </div>
            </div>
        </div>
    </div>

    <div class="col-lg-4">

        <!-- Button trigger modal -->
        <button type="button" class="btn btn-outline-dark" data-toggle="modal" data-target="#terms">
            Terms of Service
        </button>

        <!-- Modal -->
        <div class="modal fade" id="terms" tabindex="-1" role="dialog" aria-labelledby="termsTitle" aria-
hidden="true">
            <div class="modal-dialog modal-dialog-scrollable" role="document">
                <div class="modal-content">
                    <div class="modal-header">
                        <h5 class="modal-title" id="termsTitle">Terms of Service</h5>
                        <button type="button" class="close" data-dismiss="modal" aria-label="Close">
                            Dismiss
                        </button>
                    </div>
                    <div class="modal-body">
                        <p class="font-weight-normal text-left">The terms of service for the users willing or interested
in participating in the project Moses the Lonely Londoner.</p>
                        <p class="font-weight-normal text-left">By connecting to Moses the chatbot through Facebook
Messenger, a users is giving their direct consent for the participation in an artistic project.</p>
                        <p class="font-weight-normal text-left">As part of our terms of service, we ask users who do
participate to abstain from sharing private, sexual, gratuitous, or sensitive material.</p>
                        <p class="font-weight-normal text-left">In addition, by consenting to these terms of service, a
user also consents to our privacy policy. Please see our Privacy Policy tab for further information on our data
collection policy.</p>
                    </div>

```html
                    <div class="modal-footer">
                        <button type="button" class="btn btn-secondary" data-dismiss="modal">Close</button>
                    </div>
                </div>
            </div>
        </div>


    </div>
  </footer>
  `

}
```

AIVA (Moses AI Chat Bot, Facebook interface, and forwarding proxy)

NOTE: I did not design this framework, however the portions shown here were either modified, improved, or fixed by me for the project.

```javascript
// dependencies
// Interface script for convo engine
const _ = require('lomath')
const { Chatlog, User } = require('../db/models/index')
const {Response} = require('hubot')
const request = require('request')

/* istanbul ignore next */
module.exports = (robot) => {
  /* istanbul ignore next */
  robot.respond(/.*/, (res) => {
    if (process.env.CI) {
        return
    } const str = res.match[0].replace(`${robot.name} `, '')
    console.log(str)

    // Global pass to convo_classifier.py
    global.client.pass({
        input: str,
        to: 'convo_classifier.py',
        intent: 'classify',
    }).then((reply) => {

            const convo = reply.output
            global.log.info(`Convo Score ${convo.score}, Topic: ${convo.topic}`)
            if (convo.topic === 'exception') {
                res.send(convo.response)
                return
            } res.send(convo.response)

    }).catch(global.log.error)


  }) // // rich FB message handler
  // robot.on("fb_richMsg", (envelope) => {
  // res = new Response(robot, envelope, undefined)
```

```
// res.send("Aye Watson! Thank you for ")
// })

// Display FB rich msg for unpacking and api POST
robot.on("fb_richMsg_image", (unique_envelope) => {
    if (unique_envelope.attachment) {

        res = new Response(robot, unique_envelope, undefined)


        var data = JSON.stringify({ "url": unique_envelope.attachment.payload.url })
        global.log.info(`Packaged data:: ${data}`)

        if (data.match(/.gif/)) {
            res.send("Aye Watson! Thank you for the gif")
            request.post('http://moses-stream.Agorama.org.uk/api/v1/sharegif', {
                json:
                {
                    url: unique_envelope.attachment.payload.url
                }
            }, (error, res, body) => {
                if (error) {
                    global.log.error(error)
                    return
                } global.log.info(`statusCode: ${res.statusCode}`)
                global.log.info(body)
            })
        } else {
            res.send("Aye Watson! Thank you for the picture")
            request.post('http://moses-stream.Agorama.org.uk/api/v1/shareimg', {
                json:
                {
                    url: unique_envelope.attachment.payload.url
                }
            }, (error, res, body) => {
                if (error) {
                    global.log.error(error)
                    return
                } global.log.info(`statusCode: ${res.statusCode}`)
                global.log.info(body)
            })
        }

    }
}) robot.on("fb_richMsg_video", (unique_envelope) => {
    if (unique_envelope.attachment) {

        res = new Response(robot, unique_envelope, undefined)
        res.send("Aye Watson! Thank you for the video")

        var data = JSON.stringify({ "url": unique_envelope.attachment.payload.url })
        global.log.info(`Packaged data:: ${data}`)
```

```
        request.post('http://moses-stream.Agorama.org.uk/api/v1/sharevid', {
            json:
            {
                url: unique_envelope.attachment.payload.url
            }
        }, (error, res, body) => {
            if (error) {
                global.log.error(error)
                return
            } global.log.info(`statusCode: ${res.statusCode}`)
            global.log.info(body)
        })
    }
})
// catch all chatlogs
robot.hear(/.*/, () => {})

robot.receiveMiddleware((context, next, done) => {
    const envelope = context.response.envelope
    const adapter = process.env.ADAPTER
    const userid = _.toString(_.get(envelope, 'user.id'))
    const username = _.get(envelope, 'user.username') || _.get(envelope, 'user.name')

    const inlogs = [{
        adapter,
        userid,
        username,
        room: _.get(envelope, 'room'),
        incoming: true,
        method: 'receive',
        message: (
            _.get(envelope, 'message.text') ||
            _.join(_.keys(_.get(envelope, 'message.message')), ', ')),
    }] User.findOrCreate({
        where: { adapter, userid },
        defaults: { username, envelope: JSON.stringify(envelope) },

    }) _.each(inlogs, (inlog) => {
        Chatlog.create(inlog)
        global.log.debug(`[In log]: ${inlog.message}`)

    }) return next(done)

}) robot.responseMiddleware((context, next, done) => {
    const target = context.response.envelope

    // global.log.info(JSON.stringify(target, null, 2))
    const replies = context.strings
    const outlogs = _.map(replies, text => ({
        adapter: process.env.ADAPTER,
        userid: _.get(target, 'user.id'),
        username: _.get(target, 'user.username') || _.get(target, 'user.name'),
        room: _.get(target, 'room'),
        incoming: false,
        method: context.method,
```

```
      message: text,
    }))
    _.each(outlogs, (outlog) => {
      Chatlog.create(outlog)
      global.log.debug(`[Out log]: ${outlog.message}`)

    }) return next(done)
  })
}
```

Python NPL Script

```python
import glob
import json
import re
import spacy
import numpy as np
from autocorrect import spell
from copy import copy
from copy import deepcopy
from os import path
from os.path import basename

# the ioid of this script for JSON payload 'from'
ioid = basename(__file__) # 'hello.py'
# Load the spacy english model
# nlp = spacy.load('en_core_web_sm')
# nlp = spacy.load('en_core_web_md')
nlp = spacy.load('en_core_web_lg')

# Custom model developed with pruned wd_vectors at 10000
# nlp = spacy.load('./nlp-models/en-10000') # Didn't work...
# nlp = spacy.load('./nlp-models/en-5000') # Didn't work...
# nlp = spacy.load('./nlp-models/en-2500') # Didn't work...
# nlp = spacy.load('./nlp-models/en-2500') # Didn't work...

# Iteration loop - discover *.json from data dir. From location list
# iterate through each list item, for each list item json.load(open(file))
# identify topics within each open data set and add to convo_classes[topic]
# benefits of this means that multiple .json file with convo topics can be loaded
# without having to specify .json file name directly, as path to files is already
# determined.
CONVO_CLASSES = {}
CONVO_CLASSES_PATH = path.join(
    path.dirname(__file__), '..','..','data')

CONVO_CLASSES_MULTI = glob.glob(CONVO_CLASSES_PATH + '/*.json')
for f in CONVO_CLASSES_MULTI:
    data = json.load(open(f))
    for topic in data:
        CONVO_CLASSES[topic] = data[topic]


MIN_SIM_THRESHOLD = 0.7

def vectorize_queries(convo_classes):
    for topic in convo_classes:
```

```python
            topic_convo = convo_classes[topic]
            topic_convo['queries_wordvecs'] = []
            for q in topic_convo['queries']:
                q_vector = nlp(q)
                topic_convo['queries_wordvecs'].append(q_vector)
    return convo_classes


vectorize_queries(CONVO_CLASSES)


# helper to clean all text before operation
def clean_input(text):
    # first clean out symbols
    text = re.sub(r'[^\w]', ' ', text)
    # then tokenize
    text = text.split()
    # then correct all spellings
    text = map(spell, text)
    text = " ".join(text)
    return text


# classify a conversation (topic) using wordvec
# return a convo copy,
# i.e. an object in convo_classes
def wordvec_classify(input_str):
    input_str = clean_input(input_str)
    input_v = nlp(input_str)
    high_score = 0
    high_topic = 'exception'
    org_convo = CONVO_CLASSES['exception'] # default
    for topic in CONVO_CLASSES:
        topic_convo = CONVO_CLASSES[topic]
        local_high_score = max([
            input_v.similarity(q_v) for q_v in topic_convo['queries_wordvecs']
        ]) if topic_convo['queries_wordvecs'] else 0
        if (local_high_score > high_score and
                local_high_score > MIN_SIM_THRESHOLD):
            high_score = local_high_score
            high_topic = topic
            org_convo = topic_convo
    convo = copy(org_convo)
    convo['score'] = high_score
    convo['topic'] = high_topic
    return convo


def compose_response(convo):
    options = convo['responses']
    response = np.random.choice(options)
    return {
        'score': convo['score'],
        'topic': convo['topic'],
        'response': response
    }


# basic way to classify convo topic
```

```python
# then reply by predefined responses in data/convo_classes.json
def classify_convo(input_str):
    convo = wordvec_classify(input_str)
    response_payload = compose_response(convo)
    return response_payload


# module method for socketIO
def classify(msg):
    # the reply JSON payload.
    reply = {
        'output': classify_convo(msg.get('input')),
        'to': msg.get('from'),
        'from': ioid,
        'hash': msg.get('hash')

    } # the py client will send this to target <to>
    return reply
```

```coffeescript
// Facebook Interface Module


try
    {Robot,Adapter,TextMessage,User} = require 'hubot'

catch prequire = require('parent-require')
    {Robot,Adapter,TextMessage,User} = prequire 'hubot'
Mime = require 'mime'
crypto = require 'crypto'
inspect = require('util').inspect


class FBMessenger extends Adapter

    constructor: ->
        super

        @page_id = process.env['FB_PAGE_ID']
        @app_id = process.env['FB_APP_ID']
        @app_secret = process.env['FB_APP_SECRET']

        @token =
        process.env['FB_
        PAGE_TOKEN']
        @vtoken = process.env['FB_VERIFY_TOKEN'] # or
crypto.randomBytes(16).toString('hex')

        @routeURL = process.env['FB_ROUTE_URL'] or '/hubot/fb'
        @webhookURL = process.env['FB_WEBHOOK_BASE'] + @routeURL

        _sendImages = process.env['FB_SEND_IMAGES']
        if _sendImages is undefined
            @sendImages = true

        else @sendImages = _sendImages is 'true'

        @autoHear = process.env['FB_AUTOHEAR'] is 'true'
```

```
            @apiURL = 'https://graph.facebook.com/v3.2'

            @pageURL = @apiURL + '/'+ @page_id

            @messageEndpoint = @pageURL + '/messages?access_token=' + @token

            # @subscriptionEndpoint = @pageURL + '/subscribed_apps?access_token=' + @token

            @appAccessTokenEndpoint = 'https://graph.facebook.com/oauth/access_token?client_id=' + @app_id +
'&client_secret=' + @app_secret + '&grant_type=client_credentials'


            @setWebhookEndpoint = @pageURL + '/subscriptions'


            @msg_maxlength = 320


            @_dataQueue = []


    send: (envelope, strings...) ->
            @_sendText envelope.user.id, msg for msg in strings
            if envelope.fb?.richMsg?
                    @_sendRich envelope.user.id, envelope.fb.richMsg


    _sendText: (user, msg) ->
            data = {
                    recipient: {id: user},
                    message: {}

            } if @sendImages
                    mime = Mime.lookup(msg)

                    if mime is "image/jpeg" or mime is "image/png" or mime is "image/gif"
                            data.message.attachment = { type: "image", payload: { url: msg }}

                    else data.message.text = msg.substring(0,@msg_maxlength)

            else data.message.text = msg


            @_sendAPI data


    _sendRich: (user, richMsg) ->
            data = {
                    recipient: {id: user},
                    message: richMsg

            } @_sendAPI
            data


    _sendAPI: (data) ->
        @_dataQueue.push data
        if @_dataQueue.length == 1
            # Nothing else is queued up, so initiate the API request
            @_sendData()


    _sendData: () ->
            self = @
            data = @_dataQueue[0]
            return unless data

            @robot.http(@messageEndpoint)
                    .query({access_token:self.token})
                    .header('Content-Type', 'application/json')
```

```
                    .post(JSON.stringify(data)) (error, response, body) ->
                        self._dataQueue.shift()
                        # If there are other items in the queue, send them
                        if self._dataQueue.length > 0
                            self._sendData()
                        if error
                            self.robot.logger.error 'Error sending message: #{error}'
                            return
                        unless response.statusCode in [200, 201]
                            self.robot.logger.error "Send request returned status " +
                            "#{response.statusCode}. data='#{data}'"
                            self.robot.logger.error body
                            return

reply: (envelope, strings...) ->
        @send envelope, strings...

_receiveAPI: (event) ->
        self = @

        user = @robot.brain.data.users[event.sender.id]
        unless user?
            self.robot.logger.debug "User doesn't exist, creating"
            @_getUser event.sender.id, event.recipient.id, (user) ->
                    self._dispatch event, user

        else self.robot.logger.debug "User exists"
            self._dispatch event, user


_dispatch: (event, user) ->
        envelope = {
            event: event,
            user: user,
            room: event.recipient.id

        } if event.message?
            @_processMessage event, envelope
        else if event.postback?
            @_processPostback event, envelope
        else if event.delivery?
            @_processDelivery event, envelope
        else if event.optin?
            @_processOptin event, envelope


_processMessage: (event, envelope) ->
        @robot.logger.debug inspect event.message
        if event.message.attachments?
            envelope.attachments = event.message.attachments
            @robot.emit "fb_richMsg", envelope
            @_processAttachment event, envelope, attachment for attachment in envelope.attachments
        if event.message.text?
            text = if @autoHear then @_autoHear event.message.text, envelope.room else event.message.text
            msg = new TextMessage envelope.user, text, event.message.mid
            @receive msg
            @robot.logger.info "Reply message to room/message: " + envelope.user.name + "/" + event.message.mid
```

```
_autoHear: (text, chat_id) ->
      # If it is a private chat, automatically prepend the bot name if it does not exist already.
      if (chat_id > 0)
            # Strip out the stuff we don't need.
            text = text.replace(new RegExp('^@?' + @robot.name.toLowerCase(), 'gi'), '');
            text = text.replace(new RegExp('^@?' + @robot.alias.toLowerCase(), 'gi'), '') if @robot.alias
            text = @robot.name + ' ' + text

      return text

_processAttachment: (event, envelope, attachment) ->
      unique_envelope = {
            event: event,
            user: envelope.user,
            room: envelope.room,
            attachment: attachment

      } @robot.emit "fb_richMsg_#{attachment.type}", unique_envelope

_processPostback: (event, envelope) ->
      envelope.payload = event.postback.payload
      @robot.emit "fb_postback", envelope

_processDelivery: (event, envelope) ->
      @robot.emit "fb_delivery", envelope

_processOptin: (event, envelope) ->
      envelope.ref = event.optin.ref
      @robot.emit "fb_optin", envelope
      @robot.emit "fb_authentication", envelope

_getUser: (userId, page, callback) ->
      self = @
      @robot.http(@apiURL + '/' + userId)
            .query({fields:"first_name,last_name,profile_pic",access_token:self.token})
            .get() (error, response, body) ->
                  if error
                        self.robot.logger.error 'Error getting user profile: #{error}'
                        return
                  unless response.statusCode is 200
                        self.robot.logger.error "Get user profile request returned status " +
                        "#{response.statusCode}. data='#{body}'"
                        self.robot.logger.error body
                        return
                  userData = JSON.parse body

                  userData.name = userData.first_name
                  userData.room = page

                  user = new User userId, userData
                  self.robot.brain.data.users[userId] = user

                  callback user
```

```
    run: ->
        self = @

        unless @token
            @emit 'error', new Error 'The environment variable "FB_PAGE_TOKEN" is required. See
https://github.com/chen-ye/hubot-fb/blob/master/README.md for details.'

        unless @page_id
            @emit 'error', new Error 'The environment variable "FB_PAGE_ID" is required. See
https://github.com/chen-ye/hubot-fb/blob/master/README.md for details.'

        unless @app_id
            @emit 'error', new Error 'The environment variable "FB_APP_ID" is required. See
https://github.com/chen-ye/hubot-fb/blob/master/README.md for details.'

        unless @app_secret
            @emit 'error', new Error 'The environment variable "FB_APP_SECRET" is required. See
https://github.com/chen-ye/hubot-fb/blob/master/README.md for details.'

        unless process.env['FB_WEBHOOK_BASE']
            @emit 'error', new Error 'The environment variable "FB_WEBHOOK_BASE" is required. See
https://github.com/chen-ye/hubot-fb/blob/master/README.md for details.'

        # @robot.http(@subscriptionEndpoint)
        # .query({access_token:self.token})
        # .post() (error, response, body) ->
        # self.robot.logger.info "subscribed app to page: " + body

        @robot.router.get [@routeURL], (req, res) ->
            self.robot.logger.info JSON.stringify(self.vtoken)
            self.robot.logger.info JSON.stringify(self.token)
            self.robot.logger.info JSON.stringify(self.app_id)
            self.robot.logger.info JSON.stringify(self.app_secret)
            if req.query['hub.mode'] == 'subscribe' and req.query['hub.verify_token'] == self.vtoken
                self.robot.logger.info "successful webhook verification"
                res.send req.query['hub.challenge']

            else
                res.sendStatus 400
                self.robot.logger.info "Error: 400 Status sent. " + JSON.stringify(req.query)

        @robot.router.post [@routeURL], (req, res) ->
            # self.robot.logger.info "Received payload: " + JSON.stringify(req.body)
            messaging_events = req.body.entry[0].messaging
            self._receiveAPI event for event in messaging_events
            res.sendStatus 200

        # @robot.http(@appAccessTokenEndpoint)
        # .get() (error, response, body) ->
        # self.app_access_token = body.split("=").pop()
        # self.robot.http(self.setWebhookEndpoint)
        # .query(
        # object: 'page',
        # callback_url: self.webhookURL
        # fields: 'messaging_optins, messages, message_deliveries, messaging_postbacks'
```

```
                    # verify_token: self.vtoken

                    # access_token: self.app_access_token

                    # )

                    # .post() (error2, response2, body2) ->

                    # self.robot.logger.info "FB webhook set/updated: " + body2

                    # @robot.logger.info "FB-adapter initialized"

                    @emit "connected"




exports.use = (robot) -> new FBMessenger robot
```

This last piece shown is the actually script data that was used. The version show is an early test version.

```
{
    "greeting": {
        "queries": [
            "Hi",
            "Hi yah",
            "Hello",
            "Hello there"

        ], "responses": [
            "You alright?",
            "and?"

        ], "weighted_keywords": []

    }, "weather": {
        "queries": [
            "How is the weather?",
            "The weather please",
            "What's the weather like?"

        ], "responses": [
            "Boy, leave me alone. I am cold too bad."

        ], "weighted_keywords": ["weather"]

    }, "info": {
        "queries": [
            "Who are you?",
            "What are you?"

        ], "responses": [
            "Me? Moses",

            "Moses",

            "Here be Moses",

            "Moses Aloetta"

        ], "weighted_keywords": []

    }, "creator": {
        "queries": [
            "Who created you?",

            "Who is your creator?"

        ], "responses": [
            "Sam Selvon wrote me"
```

```
        ], "weighted_keywords": []

    }, "negative": {
        "queries": [
            "You're shit",
            "this sucks",
            "right",
            "your wrong",
            "wrong"
        ], "responses": [
            "Why you so prejudice?",
            "Take it easy!"
        ], "weighted_keywords": []

    }, "beginning": {
        "queries": [
            "How are you today?",
            "how are you feeling?"
        ], "responses": [
            "What I do is my business, Get your luggage and we will go. Tonight you could stay by me, but tomorrow I
might shift from my room and go upstairs, and I will see if I could fix up with the landlord for you to take my

room.", "Ask London Transport, Get your luggage and we will go. Tonight you could stay by me, but tomorrow I might

shift from my room and go upstairs, and I will see if I could fix up with the landlord for you to take my room."

        ], "weighted_keywords": []

    }, "beginningTwo": {
        "queries": [
            "I don't have luggage",
            "what luggage?",
            "luggage?",
            "whats"
        ], "responses": [
            "Where your luggage? You does smoke?",
            "You mean you come with nothing? You does smoke?"
        ], "weighted_keywords": []
    }, "beginningThree": {
        "queries": [
            "Luggage? Smoke? What are you talking about?",
            "I don't smoke",
            "Nope don't need any of that",
            "what",
            "Yes"
        ], "responses": [
            "You mean to say you come off the ship with no cigarettes? You don't know they does allow you to land with
two hundred, and that it have fellars who manage to come with five-six hundred? You don't know how cigarettes
expensive like hell in this country? Nobody tell you anything at all about London? Frank ain't give you some tips
before you leave?",
            "You mean to say you come off the ship with no cigarettes? Nobody tell you anything at all about London?
Frank ain't give you some tips before you leave?",
            "Frank ain't give you some tips before you leave?"
        ], "weighted_keywords": []
```

```
          }, "beginningFour": {
              "queries": [
                  "Frank?",
                  "Who's Frank?",
                  "What are you going on about",
                  "What are you talking about?",
                  "I didn't come off a boat",
                  "I know cigarettes are expensive"
              ], "responses": [
                  "All right Sir Galahad, London will do for you before long. Come, we will catch the tube as you ain't have
any luggage.",
                  "Take it easy, London will do for you before long. Come, we will catch the tube as you ain't have any
luggage.",
                  "London will do for you before long. Come, we will catch the tube as you ain't have any luggage."
              ], "weighted_keywords": [
                  "Frank",
                  "cigarettes"
              ]
          }, "exception": {
              "queries": [],
              "responses": [
                  "Sorry, my capability is still quite limited.",
                  "Sorry this is too advanced for me, I'm a dum dum :P"
              ], "weighted_keywords": []
              }}
```

Moses's Stream of Consciousness and API system

Components part of API system

```php
<?php
abstract class API
{
    /**
     * Property: method
     * The HTTP method this request was made in, either GET, POST, PUT or DELETE
     */
    protected $method = '';

    /** * Property: endpoint
     * The Model requested in the URI. eg: /files
     */
    protected $endpoint = '';

    /** * Property: verb
     * An optional additional descriptor about the endpoint, used for things that can
     * not be handled by the basic methods. eg: /files/process
     */
    protected $verb = '';

    /** * Property: args
     * Any additional URI components after the endpoint and verb have been removed, in our
     * case, an integer ID for the resource. eg: /<endpoint>/<verb>/<arg0>/<arg1>
     * or /<endpoint>/<arg0>
```

```php
     */
    protected $args = Array();

    /** * Property: file
      * Stores the input of the PUT request

      */ protected $file = Null;


    /** * Constructor: __construct
      * Allow for CORS, assemble and pre-process the data
      */
    public function __construct($request) {
        header("Access-Control-Allow-Orgin: *");
        header("Access-Control-Allow-Methods: *");
        header("Content-Type: application/json");

        $this->args = explode('/', rtrim($request, '/'));
        $this->endpoint = array_shift($this->args);
        if (array_key_exists(0, $this->args) && !is_numeric($this->args[0])) {
            $this->verb = array_shift($this->args);

        } $this->method =
        $_SERVER['REQUEST_METHOD'];
        if ($this->method == 'POST' && array_key_exists('HTTP_X_HTTP_METHOD', $_SERVER)) {
            if ($_SERVER['HTTP_X_HTTP_METHOD'] == 'DELETE') {
                $this->method = 'DELETE';
            } else if ($_SERVER['HTTP_X_HTTP_METHOD'] == 'PUT') {
                $this->method = 'PUT';
            } else {
                throw new Exception("Unexpected Header");
            }

        } switch($this->method) {
        case 'DELETE':
        case 'POST':
            $this->request = $this->_cleanInputs($_POST);
            break;
        case 'GET':
            $this->request = $this->_cleanInputs($_GET);
            break;
        case 'PUT':
            $this->request = $this->_cleanInputs($_GET);
            $this->file = file_get_contents("php://input");
            break;
        default:
            $this->_response('Invalid Method', 405);
            break;
        }

    } public function processAPI() {
        if (method_exists($this, $this->endpoint)) {
            return $this->_response($this->{$this->endpoint}($this->args));

        } return $this->_response("No Endpoint: $this->endpoint", 404);

    } private function _response($data, $status = 200) {
        header("HTTP/1.1 " . $status . " " . $this->_requestStatus($status));
        return json_encode($data);
```

```php
    } private function _cleanInputs($data) {
        $clean_input = Array();
        if (is_array($data)) {
            foreach ($data as $k => $v) {
                $clean_input[$k] = $this->_cleanInputs($v);
            }
        } else {
            $clean_input = trim(strip_tags($data));
        } return $clean_input;
    } private function _requestStatus($code) {
        $status = array(
            200 => 'OK',
            404 => 'Not Found',
            405 => 'Method Not Allowed',
            500 => 'Internal Server Error',
        ); return ($status[$code])?$status[$code]:$status[500];
    }
}
```

```php
<?php

require_once 'API.php';
class MyAPI extends API
{
    protected $User;

    public function __construct($request, $origin) {
        parent::__construct($request);

        // // Abstracted out for example
        // $APIKey = new Models\APIKey();
        // $User = new Models\User();

        // // if (!array_key_exists('apiKey', $this->request)) {
        // throw new Exception('No API Key provided');
        // } else if (!$APIKey->verifyKey($this->request['apiKey'], $origin)) {
        // throw new Exception('Invalid API Key');
        // } else if (array_key_exists('token', $this->request) &&
        // !$User->get('token', $this->request['token'])) {

        // // throw new Exception('Invalid User Token');
        // }

        // // $this->User = $User;
    } /** * GET end points for determining base number of
    * imgs and vids contained in stream - to be used
    * in calculation of random number of slides
    */ protected function example() {
        if ($this->method == 'GET') {
            $directory = $_SERVER['DOCUMENT_ROOT'] . "/media";
            $images = glob($directory . '/*.jpg');
            $imgObjs = array();
            $gifs = glob($directory . '/*.gif');
            $gifObjs = array();
```

```php
                foreach ($images as $i) {
                    array_push($imgObjs, $i);

                } foreach ($gifs as $g) {
                    array_push($gifObjs, $g);

                } $data = {
                    img : count($imgObjs),
                    gif : count($gifObjs)

                }; return json_encode($data);
        } else {
                return "Only accepts GET requests";

        }

} // protected function setVids() {
// if ($this->method == 'GET') {
// $directory = $_SERVER['DOCUMENT_ROOT'] . "/media";
// $media = glob($directory . '/*.mp4');
// $urlObjs = array();

// // foreach ($media as $m) {
// array_push($urlObjs, $m);
// }
// $data = count($urlObjs);
// return json_encode($data);
// } else {
// return "Only accepts GET requests";
// }
// }
/** * POST endpoints for sharing imgs and vids
  */
protected function shareimg() {
    if ($this->method == 'POST') {
            $data = json_decode(file_get_contents("php://input"));
            if ($data->url) {
                if (!copy($data->url, './media/'.hash('sha256', $data->url).'.jpg')) {
                    return 'Image failed to copy';
                } else {
                    // return "media item shared and copied: " . $data->url;
                    return 'Image successfully copied to:: ./media/'.hash('sha256', $data->url).'.jpg';
                }
            }
    } else {
            return "Only accepts POST requests";

    }

} protected function sharegif() {
    if ($this->method == 'POST') {
            $data = json_decode(file_get_contents("php://input"));
            if ($data->url) {
                if (!copy($data->url, './media/'.hash('sha256', $data->url).'.gif')) {
                    return 'GIF failed to copy';
                } else {
                    // return "media item shared and copied: " . $data->url;
                    return 'GIF successfully copied to:: ./media/'.hash('sha256', $data->url).'.gif';
                }
```

```php
                }
        } else {
                return "Only accepts POST requests";
        }
    } protected function sharevid() {
        if ($this->method == 'POST') {
                $data = json_decode(file_get_contents("php://input"));
                if ($data->url) {
                    if (!copy($data->url, './media/'.hash('sha256', $data->url).'.mp4')) {
                        return 'Video failed to copy';
                    } else {
                        // return "media item shared and copied: " . $data->url;
                        return 'Video successfully copied to:: ./media/'.hash('sha256', $data->url).'.mp4';
                    }
                }
        } else {
                return "Only accepts POST requests";
        }
        } }
```

The components below correspond to the frontend moving piece Moses's Stream of Consciousness

```php
<?php
require 'findjpg.php';
require 'findgif.php';


?><html> <head> <meta
charset="UTF-8">
        <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
        <title>Moses the Lonely Londoner - Stream of Consciousness</title>
        <link rel="Shortcut Icon" href="favicon.ico" />
        <meta name="description" content="Émilie Brout & Maxime Marion, Clichés, 2014, collection of Jonathon Carroll">

        <meta name="viewport" content="width=device-width, maximum-scale=1, user-scalable=no" />
        <meta name="author" content="Agorama">
        <meta property="og:title" content="Moses the Lonely Londoner - Stream of Consciousness" />
        <meta property="og:type" content="website" />
        <meta property="og:image" content="telecocoon.jpg" />
        <meta property="og:site_name" content="Stream of Consciousness" />
        <meta property="og:description" content="Agorama, Moses the Lonely Londoner (2019)" />
        <script language="javascript" src="lib/p5.min.js"></script>
        <script language="javascript" src="lib/p5.dom.js"></script>
        <!-- <script language="javascript" src="lib/p5.gif.js"></script> -->
        <script language="javascript" src="slideShow.js"></script>
        <style>
                body {margin:0; background:#000; overflow:hidden; }
                img.gif-1 {width:25%;position:absolute;left:5%;top:6%;}
                img.gif-2 {width:25%;position:absolute;left:68%;top:58%;}
                img.gif-3 {width:25%;position:absolute;left:19%;top:24%;}
                img.gif-4 {width:25%;position:absolute;left:59%;top: 10%;}
                img.gif-5 {width:25%;position:absolute;left:10%;top:56%;}
        </style>
    </head>
```

```
    <body>
    </body>
</html>


<?php
$cover = $_SERVER['DOCUMENT_ROOT'] . "/cover.jpg";
header("Content-Type:image/jpg");
readfile($cover);

<?php

    $directory = $_SERVER['DOCUMENT_ROOT'] . "/media";
    $media = glob($directory . '/*.jpg');
    $urlObjs = array();

    foreach ($media as $m) {
        array_push($urlObjs, $m);

    } $slide_id = isset($_GET['slide_id']);
    if ($slide_id) {
        if (is_file($file = $urlObjs[htmlspecialchars($_GET['slide_id'])])) {
            header("Content-Type:image/jpg");
            readfile($file);
        }
    }


<?php

    $directory = $_SERVER['DOCUMENT_ROOT'] . "/media";
    $media = glob($directory . '/*.gif');
    $urlObjs = array();

    foreach ($media as $m) {
        array_push($urlObjs, $m);

    } $slide_id = isset($_GET['slide_id']);
    if ($slide_id) {
        if (is_file($file = $urlObjs[htmlspecialchars($_GET['slide_id'])])) {
            header("Content-Type:image/gif");
            readfile($file);
        }
    }



// Animation script... Uses P5 JS Library



var lengthes = [2625, 2478, 2189, 2341, 2540, 2337, 2875, 2445, 2990, 2887, 2332, 2728, 2518, 2737, 2654, 2800,
2995, 2324, 2956, 2821, 2891, 3356, 2859, 2230, 2316, 2242, 2561, 2061, 2619, 2219, 2653, 2904, 2357, 2473, 3407,
3750, 2934, 2832, 2276, 2689, 2993, 2894, 2027, 2022, 2985, 2967, 2815, 3233, 2363, 2521, 2562, 2875, 3117, 2854,
2169, 2487, 3651, 2119, 2731, 2539, 2621, 2838, 3051, 2220, 3739, 2971, 2823, 2920, 2499, 2377, 2119, 2230, 2834,
3656, 2963, 2414, 2138, 2966, 2445, 2761, 2612, 2499, 2342, 2733, 3544, 2265, 3037, 2917, 2260, 2285, 2871, 2810];
```

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```
var variations = [16, 12, 11, 11, 11, 13, 21, 11, 12, 10, 13, 11, 11, 13, 11, 13, 12, 11, 11, 12, 11, 11, 11, 10,
13, 8, 8, 10, 9, 10, 11, 10, 10, 8, 7, 10, 7, 11, 6, 6, 6, 6, 6, 5, 9, 9, 11, 10, 12, 10, 10, 8, 12, 11, 12, 6,
11, 11, 11, 10, 11, 11, 8, 9, 16, 11, 13, 12, 8, 11, 8, 14, 13, 9, 7, 13, 15, 9, 11, 12, 14, 12, 12, 6, 9, 20, 8,
16, 18, 13, 11, 10];
var c;
var keywordsLength = lengthes.length;
var images = [];
var gifs = [];
var urls = [];
var gifUrls = [];
var loads = [];
var font;
var coverImage;
var finalImage;
var initialTime = 0;
var introTime = 6795;
var cityTime = 3906;
var titleTime = 3000;
var endTimz = 27e4;
var logoTimz = endTimz + 0;
var fs;
var ready = false;
var start = true;
var outro = false;
var zoom = 1;
var zoomSpeed = 23e-5;
var counter = -2;
var loadTimer = 0;
var backupMode = [];
var audio1;
var totalSlides;
var ch = 0;
var chapterFile;
var x = 0;

console.log(lengthes.length)
for (var i = 0; i < lengthes.length; i++) {

    x += lengthes[i]
    console.log(x)
}window.onresize = function() {
    c.size(window.innerWidth, window.innerHeight)

}function preload() {
    finalImage = loadImage("background.jpg");
    font = loadFont('lib/AmericanTypewriterStd-Med.otf');
    // chapterFile = loadJSON("subtitles.php?text_id=" + String(ch));

}function setup() {
    loadTimer = millis();
    frameRate(50);
    fs = fullscreen();
    c = createCanvas(window.innerWidth, window.innerHeight);
    tr = 0;
    // setTimeout(() => {
```

```
        for (i = 0; i < keywordsLength; i++) {
                // console.log(Math.round(totalSlides));

                if(i == 18 || i == 34 || i == 58 || i == 70 || i == 90) {
                        url = "findgif.php?slide_id=" + String(tr) + "&n=" + random(1e3);

                        console.log(url)

                        gifUrls.push(url);

                        // loads.push(false);

                        // console.log(gifUrls[tr]);

                        tr++;

                } url = "findjpg.php?slide_id=" + String(i) + "&n=" + random(1e3);

                console.log(url)

                urls.push(url);

                loads.push(false);


        } coverImage = loadImage("coverimg.php?n=" + random(1e3));
        chapterFile = loadJSON("subtitles.php?text_id=" + String(ch));

        // console.log(chapterFile['chapter'].lines[0])

        textAlign(CENTER);

        font = loadFont('./lib/AmericanTypewriterStd-Med.otf');

        textFont(font);

        for (i = 0; i < urls.length; i++) {
                var e = loadImage(urls[i]);

                images.push(e)

        } for (i = 0; i < gifUrls.length; i++) {
                var e = createImg(gifUrls[i]);

                gifs.push(e)

        }


    // }, 500)
}function draw() {
        if (fs) {
                noCursor()

        } else {
                cursor(0, 0, 0)

        } if (start) {
                if (!ready) {
                        var e = 0;

                        for (i = 0; i < urls.length; i++) {
                                if (images[i].width > 5 && images[i] != null) {
                                        e++;

                                        loads[i] = true

                                } // else {
                                // if (millis() - loadTimer > 16e3 && !backupMode[i]) {
                                // images[i] = loadImage("img/" + String(i) + ".jpg");
                                // backupMode[i] = true
                                // // + "_" + String(parseInt(random(variations[i]))) => Access
                                // }
                                // }

                        } if (e == urls.length) {
                                ready = true;

                                initialTime = millis();
```

```
    } else {
        breakerz();
        var t = parseFloat(e / urls.length);
        var n = window.innerWidth / 6;
        var r = n / 90;
        var s = (window.innerWidth - n) / 2;
        var o = (window.innerHeight - r) / 2 + 50;
        fill(127);
        rect(s, o, n, r);
        console.log(t);
        if (t > .9) {
            for (i = 0; i < urls.length; i++) {
                if (loads[i] == false) {
                    console.log(urls[i])
                }
            }
        } fill(210, 255, 0);
        rect(s, o, n * t, r)
    }
} else {
    if (counter < -1) {
        background(0);
        var u = millis() - initialTime;
        if (u > introTime) {
            // Animation for Cover images
            var a = 0;
            var f = 0;
            var l = 0;
            var c = 0;
            var h = parseFloat(coverImage.width / coverImage.height);
            var p = parseFloat(window.innerWidth / window.innerHeight);
            if (h < p) {
                l = window.innerWidth * zoom;
                c = coverImage.height * (window.innerWidth / coverImage.width) * zoom;
                f = -((c - window.innerHeight) / 2);
                a = -((l - window.innerWidth) / 2)
            } else {
                c = window.innerHeight * zoom;
                l = coverImage.width * (window.innerHeight / coverImage.height) * zoom;
                a = -((l - window.innerWidth) / 2);
                f = -((c - window.innerHeight) / 2)
            } image(coverImage, a, f, l, c);
            zoom += zoomSpeed
            // End
        } if (u >= introTime + cityTime) {
            counter++;
            zoom = 1
        }
    } else if (counter < 0) {
        background(0);
        var u = millis() - initialTime;
        var a = 0;
        var f = 0;
```

```
var l = 0;

var c = 0;

var h = parseFloat(finalImage.width / finalImage.height);

var p = parseFloat(window.innerWidth / window.innerHeight);

var tx = 700;

var ty = 380;

if (h < p) {

    l = window.innerWidth * zoom;

    c = finalImage.height * (window.innerWidth / finalImage.width) * zoom;

    f = -((c - window.innerHeight) / 2);

    a = -((l - window.innerWidth) / 2)

} else {

    c = window.innerHeight * zoom;

    l = finalImage.width * (window.innerHeight / finalImage.height) * zoom;

    a = -((l - window.innerWidth) / 2);

    f = -((c - window.innerHeight) / 2)

} image(finalImage, a, f, l, c);

textSize(40);

// textAlign(CENTER, CENTER);

text(chapterFile['chapter'].title, tx, ty)

// End of finalimage load and rendition
zoom += zoomSpeed

// End

if (u >= introTime + cityTime + titleTime) {

    counter++;

    zoom = 1

}

} else if (counter < urls.length) {

    var u = millis() - initialTime;

    var d = introTime + cityTime;

    for (i = 0; i < counter; i++) {

        d += lengthes[i]

    } d += lengthes[counter];

    if (u >= d) {

        counter++;

        background(0);

        zoom = 1

        console.log(u)

        console.log(d)

    } if (counter < urls.length) {


        // Animation for image slides

        // var a and f = img top left corner position

        var a = 0;

        var f = 0;

        // var l and c = img width and height

        var l = 0;

        var c = 0;

        var tx = 700;

        var ty = 700;

        var tx1 = 701;

        var ty1 = 701;

        // obtain img's natural height and width
```

```
                    var h = parseFloat(images[counter].width / images[counter].height);
                    // find global window client's (browser display) height and width
                    var p = parseFloat(window.innerWidth / window.innerHeight);
                    // if img is smaller than global window, match img to window dimenasions
                    if (h < p) {
                        l = images[counter].width * (window.innerHeight / images[counter].height) * zoom;
                        c = images[counter].height * (window.innerWidth / images[counter].width) * zoom;
                        f = -((c - window.innerHeight) / 2);
                        a = -((l - window.innerWidth) / 2)

                    } // else do the same, i.e. img should render to cover entire global client

                    else { c = window.innerHeight * zoom;
                        l = images[counter].width * (window.innerHeight / images[counter].height) * zoom;
                        a = -((l - window.innerWidth) / 2);
                        f = -((c - window.innerHeight) / 2)

                    } // initiate gif drawing..
                    if (counter == 18 || counter == 34 || counter == 58 || counter == 70 || counter == 90) {
                        if (counter == 18) {
                            gifs[2].addClass('gif-1')
                        } else if (counter == 34) {
                            gifs[0].addClass('gif-2')
                        } else if (counter == 58) {
                            gifs[3].addClass('gif-3')
                        } else if (counter == 70) {
                            gifs[1].addClass('gif-4')
                        } else if (counter == 90) {
                            gifs[4].addClass('gif-5')
                        }
                    } else {
                        // draw image slideshow animation
                        image(images[counter], a, f, l, c);
                    } textSize(25)
                    fill(0,0,0)
                    text(chapterFile['chapter'].lines[counter], tx1, ty1)
                    textSize(25);
                    fill(255,255,51)
                    text(chapterFile['chapter'].lines[counter], tx, ty)

                    // add 1 to the zoom var
                    zoom += zoomSpeed
                    // End
                }
            } else {
                for (i = 0; i < gifs.length; i++) {
                    gifs[i].remove()
                } background(0)
            }
        }
    } var v = millis() - initialTime;
    if (v > endTimz && ready == true) {
        background(0);
        breakerz()
```

```
    } if (v > logoTimz && ready == true) {
        background(0);
        resetter()
    }
}function resetter() {
    console.log("reset!");
    // totalSlides = null;
    coverImage = null;
    ready = false;
    start = true;
    counter = -2;
    outro = false;
    loadTimer = millis();
    zoom = 1;
    initialTime = millis();
    urls = null;
    urls = [];
    images = null;
    images = [];
    gifUrls = null;
    gifUrls = [];
    gifs = null;
    gifs = [];
    loads = null;
    loads = [];
    tr = 0;
    chapterFile = null;
    if (ch >= 2) {
        ch = 0
    } else {
        ch++;
    } for (i = 0; i < keywordsLength; i++) {
        // console.log(Math.round(totalSlides));
        if(i == 18 || i == 34 || i == 58 || i == 70 || i == 90) {
            url = "findgif.php?slide_id=" + String(tr) + "&n=" + random(1e3);
            console.log(url)
            gifUrls.push(url);
            // loads.push(false);
            // console.log(gifUrls[tr]);
            tr++;
        } url = "findjpg.php?slide_id=" + String(i) + "&n=" + random(1e3);
        console.log(url)
        urls.push(url);
        loads.push(false);

    } coverImage = loadImage("coverimg.php?n=" + random(1e3));
    chapterFile = loadJSON("subtitles.php?text_id=" + String(ch));
    for (i = 0; i < urls.length; i++) {
        var e = loadImage(urls[i]);
        images.push(e)

    } for (i = 0; i < gifUrls.length; i++) {
```

```javascript
        var e = createImg(gifUrls[i]);
        gifs.push(e)
    }
}function breakerz() {
    background(0);

    // Animation for final image - which happens to be the first image... does not
    // work with implemented fetch command...
    var e = 0;
    var t = 0;
    var n = 0;
    var r = 0;
    var i = parseFloat(finalImage.width / finalImage.height);
    var s = parseFloat(window.innerWidth / window.innerHeight);

    if (i < s) {
        n = window.innerWidth * zoom;
        r = finalImage.height * (window.innerWidth / finalImage.width) * zoom;
        t = -((r - window.innerHeight) / 2);
        e = -((n - window.innerWidth) / 2)
    } else {
        r = window.innerHeight * zoom;
        n = finalImage.width * (window.innerHeight / finalImage.height) * zoom;
        e = -((n - window.innerWidth) / 2);
        t = -((r - window.innerHeight) / 2)
    } image(finalImage, e, t, n, r)
    // End of finalimage load and rendition
}function mousePressed() {
    fs = !fs;
        fullscreen(fs) }
```

These last two documents relate to Moses's Stream of Consciousness, but pertain to the moving images' subtitle texts

```php
<?php

$directory = $_SERVER['DOCUMENT_ROOT'] . "/subtitles";
$text = glob($directory . '/*.json');
$urlObjs = array();

foreach ($text as $t) {
    array_push($urlObjs, $t);
}$text_id = isset($_GET['text_id']);
if ($text_id) {
    if (is_file($file = $urlObjs[HTMLspecialchars($_GET['text_id'])])) {
        header("Content-Type:application/json");
        readfile($file);

    }
}
{
    "chapter": {
        "title": "Chapter 1.",
```

```
"lines": [
        "*",
        "One grim winter evening, when it had a kind of unrealness about London, with a fog sleeping",
        "restlessly over the city and the lights showing in the blur as if is not London at all but some",
        "strange place on another planet, I hopped on a number 46 bus at the corner of",
        "Chepstow Road and Westbourne Grove to go to Waterloo to meet a fellar who was coming from",
        "Trinidad on the boat-train.",
        "I remember sitting down and pay the fare take out a white handkerchief and blow my nose.",
        "The handkerchief turn black and I watch it and curse the fog. I wasn't in a good mood and",
        "the fog wasn't doing anything to help the situation. I had was to get up from a nice warm bed",
        "and dress and come out in this nasty weather to go and meet a fellar that I didn't even know.",
        "That was the hurtful part of it – is not as if this fellar is my brother or cousin or even friend;",
        "I don't know the man from Adam. But I get a letter from a friend in Trinidad who say that this",
        "fellar coming by the SS Hildebrand, and if I could please meet him at the station in London,",
        "and help him until he get settled. The fellar name Henry Oliver, but the friend tell ol' Moses not to",
        "worry that he describe me to Henry, and all I have to do is to be in the station when the",
        "boat-train pull in and this fellar Henry would find me. So for old time sake I find myself on",
        "the bus going to Waterloo, vex with myself that my heart so soft that I always doing something",
        "for somebody and nobody ever doing anything for me.",
        "*",
        "'Jesus Christ,' I told Harris, a friend I have, 'I never see thing so. I don't know these",
        "people at all, yet they coming to me as if I is some liaison officer, and I catching my arse as it
is,",
        "how I could help them out?'",
        "And so like a welfare officer I be scattering the boys around London, for I don't want no",
        "concentrated area in the Water - as it is, things bad enough already. And one or two that I do take",
        "a fancy to, I take them around by houses I knows would be all right to go to, for at this stage",
        "This test know which part they will slam door in your face and which part they will take in spades.",
        "And is the same soft heart that have me now on the bus going to Waterloo to meet a fellar",
        "name Henry Oliver. I don't know how I always getting in position like this, helping people",
        "out. *sigh* The damn bus crawling in the fog, and the evening so melancholy that.",
        "I wished I was back in bed.",
        "When I got to Waterloo I hop off and went in the station, and right away in that big station I",
        "had a feeling of homesickness that I never felt in the nine-ten years I in this country. For the",
        "old Waterloo is a place of arrival and departure, is a place where you see people crying",
        "goodbye and kissing welcome, and I hardly had time to sit down on a bench before this",
        "feeling of nostalgia hit me and I was surprise. It have some fellars who in Brit'n long, and yet",
        "they can't get away from the habit of going Waterloo whenever a boat-train coming in with",
        "passengers from the West Indies. They like to see the familiar faces, they like to watch",
        "their countrymen coming off the train, and sometimes they might spot somebody they know.",
        "And they would start big oldtalk with the travellers, finding out what happening in Trinidad, in",
        "Grenada, in Barbados, in Jamaica and Antigua, what is the latest calypso number, if anybody",
        "dead, and so on, and even asking strangers question they can't answer, like if they know Tant",
        "Simmons who living Labasse in Port of Spain, or a fellar name Harrison working in the Red",
        "House.",
        "But me, I never in this sort of slackness: the thought never occur to me to go to Waterloo",
        "just to see who coming up from the West Indies. Still, the station is that sort of place where you",
        "have a soft feeling. It was here that I did land when I come to London, and I have no",
        "doubt that when the time come, if it ever come, it would be here I would say goodbye to the",
        "big city. Perhaps I felt it is time to go back to the tropics, that's why I feeling sort of",
        "lonely and miserable.",
        "Back to the story as all the people begin to go away and I can't see this Henry Oliver - ",
        "at least nobody ain't broach me yet.. I was just making up my mind to go home when I spot a test",
        "straggling up from the bottom of the train as if he did fall asleep and not know the train reach",
```

"Waterloo. And in truth is that what happen to Henry, and though he tell some fellars in the carriage to wake",

"him up when they reach London, in the hustlement of getting off the train nobody remember",

"Henry and a guard had was to wake him up.",

"I watch Henry coming up the platform, and I have a feeling that this couldn't be the fellar",

"that I'd come to meet, for the test have on a old grey tropical suit and a pair of watchekong and",

"no overcoat or muffler or gloves or anything for the cold, so I was sure is some test who living",

"in London a long, long time and accustom to the beast winter. Even so, he really had to feel the",

"fellar, for as the evening advancing it getting colder and colder and I was stamping me foot as",

"I stand up there.",

"The fellar, as soon as he see me, walk straight up and say, 'Ah, I bet you is Moses!'",

"I said, 'Yes.'",

"'Ah,' Henry say, and he looking about the desolate station as if he in an exhibition hall on",

"a pleasant summer evening. 'Frank did say you would come to meet me in Waterloo.",

"My name Henry Oliver.'",

"'You not feeling cold, old man?' I say, eyeing the specimen with amazement, for me myself",

"had on long wool underwear and a heavy fireman coat that I pick up in Portobello Road.",

"No,' Henry say, looking surprise. 'This is the way the weather does be in the winter? It not so",

"bad, man. In fact I feeling a little warm.'",

"'Jesus Christ', I say. 'What happen to you, you sick or something?",

"'Who, me? Sick? Ha-ha, you making joke!' Moses watch the specimen again suspiciously.",

"You must be have on bags of wool under that suit,' Henry say. 'You can't fool a old test like me.'",

"What you making so much fuss about?' Henry say, opening his shirt to show bare skin",

"underneath.'",

"'Take it easy,' I say, deciding to wait and see how things would develop with this strange",

"character. 'Get your luggage and we will go. Tonight you could stay by me, but tomorrow I might",

"shift from my room and go upstairs, and I will see if I could fix up with the landlord",

"for you to take my room.'",

"'Whenever you ready,' Henry say. And I say 'Where your luggage?'",

"'What luggage? I ain't have any. I figure is no sense to load up myself with a set of things. When",

"I start a work I will buy some things.'",

"Now I is a veteran, who living in this country for a long time, and I meet all sorts of",

"people and do all sorts of things, but I never thought the day would come when a fellar would",

"land up from the sunny tropics on a powerful winter evening wearing a tropical suit and saying",
"that he ain't have no luggage.",

"'All right Sir Galahad,' I say. 'Take it easy. London will do for you before long. Come, we",

"will catch the tube as you ain't have any luggage.'",

"Thus it was that Henry Oliver Esquire, alias Sir Galahad, descend on London to swell the",

"population by one, and eight and a half months later it had a Galahad junior in Ladbroke Grove",

"and all them English people stopping in the road and admiring the baby curly hair when the",

"mother pushing it in the pram as she go shopping for rations. Can you believe it?"

        ]
    }
}