Space Dramaturgy:
Exploring the performativity of space in interactive art.

Carla Capeto

Thesis submitted in partial fulfilment of the requirements for the
Degree of Doctor of Philosophy (PhD)

University of the Arts London
Central Saint Martins College of Art and Design

October 2016

Abstract

This thesis proposes the reframing of dramaturgy into interactive art with a focus on spatial relationships rather than textual. The thesis original contribution to knowledge is the creation of a new type of dramaturgy – *space dramaturgy* – as an artistic methodology that examines the performativity of interactive art installations, taking as key the compositional elements of space, body, and technology.

The thesis investigates the relationship of these compositional elements through a combination of theoretical and practice-based methods in order to explore the performativity of interactive installations and participatory spectatorships.

The theoretical investigation provides a critical historical and contemporary analysis of dramaturgy, contextualising *space dramaturgy* within a non-textual dramaturgical practice. It is supported by theories of *postdramatic theatre* (Lehmann, 2006), and *new dramaturgy* (Van Kerkhoven, 2009a). The theory also develops the compositional element for a *space dramaturgy*. The elements of body and space are conceptually connected through the phenomenological theories of Gaston Bachelard (1969), and Maurice Merleau-Ponty (1962). Additionally, the research includes the concept of site-specificity (Kwon, 2002), and theories related to social and collective space (Lefebvre, 1991). The third element, technology, is defined according to the concept of *machine aesthetics*, emphasising the aesthetic value of technological components. The thesis aims to integrate technology in an artwork as both a functional and aesthetic element.

The transition from theory to practice is supported by observational work, generating a database of interactive art projects. The database establishes the bridge between theory and practice-based investigation, informing the research on spatial narratives, sensory perception, interactivity, and the public's participation.

The practice-based investigation's point of departure is the narrative of the maze as a method, to develop a performative interactive installation that inhabits a shared space, thus emphasising both collective and individual experience. The final result is an interactive installation titled *Space machine.* The installation combines the materiality of space through haptic interaction and visibility of the technological elements, and juxtaposes the individual with collective experience of space by staging playful, provocative and performative situations with the public.

This thesis presents the main stages of development of the concept *space dramaturgy,* culminating with the establishment of dramaturgical principles. These principles evolve according to stages of divergence and convergence that build up the connection between theory and practice, and the creation of a performative interactive installation. During the stages of divergence, the research broadens its theoretical and conceptual scope; whilst the stages of convergence narrow down concept and establishes connections between the elements space, body, and technology.

Acknowledgments

I would like to thank, firstly, to my family for their support and encouragement, especially to my sister, Rute Capeto, who provided the financial support during the first year of my PhD.

I would like to thank my supervisors, James Swinson and Dr. Matt Malpass for enduring in this journey with me, generously sharing their knowledge, and continuously offering advice and guidance.

A very special thanks to fellow PhD students for their support, help, friendship and laughs throughout my research, in particular to Dr. Hena Ali, Dr. Pat Naldi, Alastair Steele, Adriana Cobo and Fahad Dhawi. Thank you for your help, support and kindness, which I shall remember and treasure forever.

Finally, I also want to thank Prof. Helen Thomas and to show my gratitude for the scholarship awarded by FCT – Fundação para a Ciência e Tecnologia.

Table of Contents.

List of figures.

Introduction

Why propose a *space dramaturgy*?

During the six years prior to embarking on my doctoral research, I worked with Medialab-Prado[1] in Madrid on collaborative art projects. My role was either to propose projects as an author or to help other artists in the development of their own projects. This collaborative work allowed me to get involved with different types of interactive art projects, and witness how complex the production process can be.

Whilst collaborating with other artists I was able to observe that they were frequently interested in performance, and concerned with the balance between the concepts of the artworks and the demands made by the technical requirements. Having a background in theatre, I found this to be an opportunity to investigate the performative potential of interactive installations by focusing on the creative process. I, therefore, decided to convert my perspective as a practitioner into an academic research project that aims to generate a new type of dramaturgy for interactive art. Moreover, as the concerns of the research have turned towards interactive installations, it now focuses on the exploration of the spatial properties of these types of artworks. Thus, a dramaturgy for interactive installation needs to instead be a *space dramaturgy.*

The crossover between performance and technology is not a novel concern, and has increased gradually since the second half of the 20th century, especially with the development of computer technologies. Some of the earliest examples are the works

---

[1] Medialab-Prado is a citizen laboratory that is part of the Department of Culture and Sports of Madrid City Council. One of its main goals is the creation of platforms for collaborative production of art projects, aiming to develop social and digital communities. Some of Medialab-Prado's collaborative platforms are production workshops such as *interactivos?, Visualizar* or *Inclusiva*, which are based on two open calls for participation. The first call is for artists, designers or engineers to propose a project involving digital media, and the second call is for collaborators of various backgrounds who volunteer to help artists in the development of their projects.

of Myron Krueger's *Videoplace* (1969), Peter Vogel's *Tanzeperformance* (1979-80), and David Rokeby's *Very nervous system* (1986-90). These artists used performance to break the boundaries between human and computer, and create new types of interface that required the use of the body.

These types of artistic works are still to be found in interactive arts in the 21st century. Often artworks are even presented in two formats: installation, and performance. The *Rain room* (2014) by rAndom International, and *Messa di voce* (2003) by Golan Levin and Zachary Lieberman, are two interactive installations that follow this pattern. These artworks are presented in two versions: as an interactive installation and as a performance. However, as a performance, the artworks appear more akin to interactive scenography than a performative installation. Whilst participating in the collaborative workshops promoted by Medialab-Prado, I was able to observe that some artists also collaborated with professionally trained performers, mostly dancers, in order to transform an interactive installation into a performance. This has led me to question whether it is necessary to include a professionally trained performer to add performativity to an interactive installation.

This research has developed out of the idea that the investigation into the performativity of interactive art should concentrate on creating a performance with the public. Despite the intersection of interactive art and the performing arts instigating rich and interesting works of art, the performativity of interactive art should not be limited to collaborating with professionally trained performers. Breaking the boundaries between the public and the artwork has been one of the main goals of interactive art since its origins back in the 1960s. One of its pioneering artists Roy Ascott applied cybernetic theories to his artistic practice to enable the participation of the public in the artwork. This research recognises the performative potential in this type of participatory artistic practices, thus paving the way for an investigation into a new dramaturgical model for interactive art. In the words of writer and performance

curator Adrian Heathfield: "Wherever there is a performance taking shape, there is a set of dramaturgical principles being tested" (2011, p. 116).

The research's proposal for a *space dramaturgy* emerges from the interest to explore the performative potential of interactive art. The aim is to use dramaturgy to a create a deeper understanding of the relationship between interactivity and performativity, and to what extent spatial perception determines the performativity of the public's behaviour whilst experiencing an interactive artwork.

Research questions, aims, objectives and methods.

The contribution to knowledge of this research is the creation of a new dramaturgical model for interactive art based on the concept of space, called *space dramaturgy*. This research proposes an investigation based on two research questions that constitute the foundation for the development of a *space dramaturgy*: How might the articulation of the concepts space, body, and technology create a *space dramaturgy* for interactive art installation? And, what is the link between interactivity and performativity?

Dramaturgy is a disciplinary branch of the performing arts that concentrates on the composition and structure of performance. This research aims to reframe dramaturgy for interactive art, taking space as the core element, and investigate the performativity of interactive installations. Additionally, this research also aims to understand the role of the public in interactive art, and define participatory spectatorship.

In order to reframe dramaturgy into the realm of interactive art, the research integrates theory in a practice-based investigation to explore strategies and methods that interweave the concept of space, body, and technology, and apply them in the creation of a performative and interactive installation. The objectives of the research are to examine the concept of space from two perspectives, the individual and collective; to apply the concept *machine aesthetics* to the research's practice, and transform technology into an aesthetic element, and to create an interactive installation that can be adaptable to different locations and spatial contexts.

The research methodology consists in a reflexive practice that combines four complementary methods:

- **Theoretical research:** The theoretical research focuses on the analysis of the main subject fields in order to determine the interdisciplinary nature of *space dramaturgy.* The method for the theoretical research is developed according to two parallel strands: the first strand is specifically dedicated to the analysis of dramaturgy as a disciplinary practice within the field of performing arts. The second strand focuses on building the conceptual framework for the compositional element of a dramaturgical enquiry, defining the conceptual framework of space, body, and technology for the research practice.

- **Observational work:** This method focuses on the collection and analysis of artistic practice to develop a database of projects in the field of interactive art. The database gathers a wide number of interactive artworks from the year 2000 until 2014. The observational work also applies qualitative categories as a first step to connect theory and practice that support the examination of the relationship of space, body, and technology in interactive art installations.

- **Generative practice:** As part of the reframing of dramaturgy within the field of interactive art installation, the research proposes the development of a *space dramaturgy* that evolves alongside the creative process. This is defined through the building of an interactive installation. The generative practice is focused on generating visual methods to create a plot for the installation without text and to transform prototyping into a method of investigation, enquiry and discovery. In addition to the creation of these artistic methods, the practice aims to transform the theoretical framework into a tool for reflexive practice and guide for experimental work.

- **Retrospective analysis:** The retrospective analysis reapplies the qualitative methods used in the observational work to my practice. The results of the practice are also analysed in order to understand the performativity of the interactive installation, *Space machine*, and the types of participative spectatorship it generates.

These methods establish a cyclical relationship between theory and practice articulating different types of analytical methods that feed back into the practice. This is also part of a reflexive practice that studies and analyses the creative process involved in the making of an interactive installation, reflecting on the establishment of a dramaturgical model for interactive art termed *space dramaturgy.*

The theoretical research and observational work evolve closely to each other. These methods are designed to generate criteria for the practice-based research. The observational work gathers projects that are, for the most part, interactive installations that focus on spatiality, performance, or both. In order to examine and to proceed with a selection of artworks, it creates categories with the support of the theoretical investigation: *spatiality*, *narrative*, *visual perception*, *multi-sensory perception*, *interactivity,* and *participation*. The projects included in the database have undergone qualitative and analytical categorisation in order to understand how spatiality and performance are generally applied to interactive art.

The theoretical research also supports the development of the practice, influencing the initial narrative of the practice and the overall creative process; creating a feedback cycle between theory and practice. This cyclical feedback between methods also characterises the retrospective analysis when the methods of the observational work are applied to practice. The reapplication of methods tested during the observational work enables an understanding of the connection between space and the public's engagement with the interactive installation. This process also aims to deduce the value of space and technology for the performativity of the artwork.

Thesis Synopsis

Interactive art is still a new territory for dramaturgy. However, dramaturgy is currently expanding into other disciplines, thus creating a territory for this research to contribute a *space dramaturgy* for interactive installations. Marianne Van Kerkhoven (2009a) called these emergent fields *new dramaturgies*, and describes them as an open area for dramaturgical practices and investigations. Through the articulation of theory and practice, this thesis describes the interdisciplinary process of expanding and reframing dramaturgy into the field of interactive art installation.

This thesis evolves in four chapters that represent the stages that reframe dramaturgy for an interactive installation. It begins with the study of the basic concepts and contemporary dramaturgy, and investigates the theoretical field in order to establish the compositional elements for the development of a *space dramaturgy*.

Chapter 1 looks at the context of dramaturgy in order to establish a ground for the research within the territory of dramaturgical practice. This chapter begins with the study of the concepts that define dramaturgy, asserting that structure, composition, and analysis are the foundational principles of any dramaturgical practice. These concepts are demonstrated through three brief case studies: Aristotle's *Poetics* (1951)*,* representing the classic dramaturgical canon; G. E. Lessing's *Hamburg dramaturgy* (1962), a collection of critical essays that acknowledges for the first time dramaturgy as a practice; and Gordon Pask's *Proposals for a cybernetic theatre* (1964)*,* an interdisciplinary proposal for a new type of drama. Aristotle's *Poetics* underpins the making and composition of drama, and explains the role of structure; whereas Lessing, who in fact coined the term dramaturgy, produces a critical body of work on the repertoire of the Hamburg National Theatre. Gordon Pask puts forward a new type of drama, speculating on the intersection between cybernetics, technology, and theatre.

These three examples provide the research with information on the function and methods of dramaturgy.

Following this analysis, the research scopes the contemporary field. Hans Thies-Lehmann's *Postdramatic Theatre* (2006), visions on *new dramaturgy* introduced by Marianne Van Kerkhoven (2009a), and researched by Katalin Trencsényi (2015), describe the current state of emergent dramaturgies, underlining the non-textual dramaturgies, and the importance of technology for the development of interdisciplinary artistic practices. These theories contextualise the development of a *space dramaturgy* in this research.

Whilst Chapter 1 contextualises the position of this research within the contemporary field of dramaturgy, Chapter 2 focuses on the development of compositional elements for *space dramaturgy*: space, body, and technology. The relationship between body and space is defined by the phenomenological theories of Gaston Bachelard's *The Poetics of space* (1969), and Merleau-Ponty *Phenomenology of perception* (1962). The theoretical investigation also looks into site-specificity, and the collectiveness of space, in order to create an inclusive perspective on the concept of space. The expertise of Miwon Kwon (2002), and the philosophical views of Augé (1995) and Lefebvre (1991) on social space and place-making, provide a balance to the phenomenological perspective. This prepares the practice for the individual perspective of spatial experience, and the concepts related to the collectiveness of space into the practice. This informs the building of an interactive installation that is also an artistic intervention for communal spaces. The third element, technology, aims to enhance the relationship between body and space. Technology is the element that brings to this relationship the potentiality of movement and rhythm to emphasise the sensory experience of space. However, in this chapter technology is contextualised through *machine aesthetics*, conceptually inspired early 20th century avant-garde movements.

This research aims to transform the concept *machine aesthetics* within the premise developed by the theoretical articulation of body and space.

The second part of this chapter analyses the relationship between performance and performativity with the aim of identifying a common field between these two concepts. The concepts of performance and performativity are analysed through J.L. Austin (1975), Richard Schechner (2002), and Mieke Bal (2002), who scrutinise the relationship between performance and performativity. These academic experts highlight the behavioural and timely dimension of performativity – for instance, the role of memory in the effectiveness of learned behaviour that echoes in the ontology of interactivity. Erkki Huhtamo (2004) critiques Mark Hansen and Ben Rubin's work *Listening post* (2001)*, whilst reflecting on the nature of interactivity as an aesthetic experience as opposed to an effect (visual or sound) triggered by human action. Huhtamo's criticism of the installation *Listening Post* unfolds an analysis of the cross-disciplinary debate on interactivity – from media communication to interactive design – that exposes the interlacing between performativity and interactivity in interactive art.

Chapter 3 describes the developmental process of the methods employed to build an interactive installation. This process is defined as a generative practice, and represents a particular stage of the research that aims to transform the theoretical framework into visual methods of plotting and prototyping. Firstly, it describes the implementation of phenomenological theories that, supported by the concept of *memory,* allows exploring shared narratives related with the maze. *Memory* in this research is a concept that helps to explore ideas associated to mazes and make interpretations. This is transformed into visual methods used to create a narrative for an interactive installation. This is also a visual plotting[2] method that does away with the need for a text-based plot. It establishes a narrative thread of ideas of spatial fragmentation,

---

[2] Since the research proposes a non-text based dramaturgy, the methods to plot a narrative for the installation were visual instead. The visual methods consisted in a collage of images that represent ideas and concepts associated to mazes and labyrinths. *Memory* is a useful concept in this process allowing the production of meaning by association and to find shared narratives related to mazes.

disruption, and discontinuity. Secondly, it reflects on the materialisation of theories of phenomenology and *machine aesthetics* into the design process. This is achieved through a method of prototyping, where prototyping is used more than just a method for testing technical feasibility. It is applied as a method of discovery and analysis of the value of materials and the aesthetics of the installation's mechanical components. Thirdly, this chapter introduces the first analysis of the spatial context for the final staging of the installation. It uses visual strategies to speculate how the installation will disrupt the linearity of the communal spaces of the building where Central Saint Martins is located in. Chapter 3 mostly reflects on a stage of the practice; it focuses on the method employed in the creative process, highlighting each step of the construction of the interactive installation titled *Space machine*.

Chapter 4 concludes the developmental process of a *space dramaturgy.* It analyses the outcomes of the installation as presented to the public, the staging of the installation within the building of Central Saint Martins, and types of spectatorship. The staging of the installation creates a spatial situation for the public based on the narratives associated with the maze; these include fragmentation, disruption, and the division and isolation of space. The chapter begins with a critical analysis of the architectural design of the Granary Building that houses the creative community of Central Saint Martins. This reflection is integrated into the narrative of the installation, which proposes three different stagings: an immersive environment, a fragmented arrangement in the central area of *the Street,* and one of the corridors in the college building.

The presentation of the installation to the public generates different reactions. The research draws on the analytical methods outlined in Chapter 2, and creates definitions for each of the public's reactions: *spectator*, *interactive spectator*, *participant*, and *performative participant*. Defining the types of spectatorship enables a reflection on the effectiveness of the strategies used throughout the research to define the compositional elements and their relationship. The public's reaction and behaviour to

each of the different stagings reveal to what extent the spatial context and arrangement determine the narrative and the performativity of the installation.

The entire process described throughout the thesis concludes with the establishment of principles for a new dramaturgical model. These principles are presented as generic dramaturgical guidelines in order to articulate theory and practice towards an interactive installation that has a performative potential.

Chapter 1. Finding dramaturgical contexts.

1.1. Introduction.

Chapter 1 departs from the question *what is dramaturgy?* The enquiry of what defines, or characterises dramaturgy as a practice, is of vital importance for this research, which aims to take the concept from the realm of the performing arts, and apply it to interactive art installation. This chapter develops according to two purposes. Firstly, it isolates the defining lines of dramaturgical practice. The research strives to make a new dramaturgical proposition as a system of artistic methods and principles for the development of the performativity of interactive art. Secondly, the chapter exposes the foreground of contemporary dramaturgical practice. It contextualises the investigation into *space dramaturgy* and establishes a connection with current artistic and theoretical views upon emergent dramaturgies.

Dramaturgy is a discipline that evolved in response to artistic creativity in the field of performing arts. This chapter presents a critical study of the transformation and adaptation of dramaturgy, and how it began to remove literary text and playwriting as the main element for performance. From the moment that performance broke with the traditional canon of dramatic theatre, dramaturgy adopted a different *modus operandi* wherein it no longer focused on the *mise-en-scène* of a text embodied and voiced by actors, but instead adjusted to new artistic languages.

The chapter begins with a brief exploration of the meaning of dramaturgy within artistic practice. It looks at the perspectives of theorists like Marianne Van Kerkhoven (2009a; 2009b), Hans-Thies Lehmann (2006) or Eugenio Barba (2010) in order to identify the common threads within dramaturgy. The chapter discusses the central concepts intrinsic to dramaturgical practice, and searches for the individual approach of dramaturgs and theatre directors in order to assess the multiplicities of dramaturgy as a discipline. These experts' reflections on their individual take on dramaturgy

provide signs of the existence of a common ground in dramaturgical practice that transgress differences within artistic contexts.

Dramaturgy is a system of methods that interweaves elements of a performative composition. Furthermore, it is a method of continuous critical analysis through research and contextualisation. The first section of Chapter 1 considers the views of Eugenio Barba (2010), Marco de Marinis (1987) and Marianne Van Kerkhoven (2009a; 2009b), who put forward dramaturgy as a practice that creates connections between disciplines such as directing with scenography or acting, for instance. In addition, the dramaturgical work also shifts between theory and practice.

Dramaturgy conveys an exercise of critical analysis that often stays close to creative and artistic processes of building a performance, which also implies that dramaturgical practice frequently needs to adapt to different artistic views. Thus, the functions of structure, critical analysis and composition that characterise dramaturgy are not always executed or applied to artistic practice according to the same rules or principles. As artistic practice in the performing arts changed, especially throughout the 20th century, dramaturgy adapted to emergent artistic work in the performing arts.

This chapter also presents three case studies that exemplify the concepts of structure, compositional elements and analysis. The two first cases studies consist of two historical representatives of dramaturgy and theatre: Aristotle's *Poetics* (1951) and Gotthold Ephraim Lessing's *Hamburg dramaturgy* (1962)*.* Both defend a dramatic model that stand on more defined principles such as unity of plot or the emotional function of tragedy, *pity* and *fear*. However, they illustrate the basic understanding of what structure and critical analysis means within dramaturgical work. The third dramaturgical model, *Proposal for a cybernetic theatre* (1964), is an experimental and speculative dramaturgical proposal created by Gordon Pask that remained untested. It attempts to marry cybernetics, technology, and drama. Although the project never

came to fruition, Gordon Pask developed an interdisciplinary proposal for a new type of theatre.

This chapter also considers the theories of *postdramatic theatre*, a theory developed by Hans-Thies Lehmann (2006), giving particular attention to Lehmann's analysis of the impact of interdisciplinarity and technological development within performing arts. In addition, the study turns to Marianne Van Kerkhoven's term, *new dramaturgy*. The term *new dramaturgy* refers to current experimental dramaturgical practices. *New dramaturgy* and *postdramatic* are two concepts that highlight the emergent artistic practices in performance that explore other types of artistic language beyond the literary text.

Hans-Thies Lehmann (2006), who coined the concept *postdramatic,* points out that dramaturgy expanded not only into other fields, generating hybrid forms of performing arts, but also integrated new types of artistic languages and compositional elements such as sound, moving image, and movement. The theories behind the concept *postdramatic* and new *dramaturgy* provide a contextual ground for the research, thus supporting an investigation into a non-textual dramaturgy that instead, takes on spatial language.

Chapter 1 also addresses spectatorship, which is also an essential aspect of dramaturgical practice. This research proposes a dramaturgy that seeks a performance between an artwork and its public. To clarify, it proposes a dramaturgy that aims to explore the possibilities a participatory public. The chapter completes its overview of dramaturgy by tackling aspects of active spectatorship that recognises the intellectual ability and the subjectivity of the public, which is taken as the initial point to begin a reflection on participatory performance.

This study into the different aspects of dramaturgy, from the basic definitions, to historical and contemporary context, provide the research with an insight of what dramaturgical practice requires as a support for the creation of performance.

1.2. What is dramaturgy?

This section presents dramaturgy's foundational guidelines as a critical practice for the performing arts field. This study demonstrates that dramaturgical practice, although flexible and adaptable, exists on solid basic principles. The aim is to look at core ideas such as structure, analysis and composition, in order to understand the role of dramaturgy as a disciplinary practice for performing arts.

Today, dramaturgy relates to several artistic branches of the performing arts, which include dance, theatre, performance art, and the interdisciplinary combination of these artistic fields. Contemporary experts like Marianne Van Kerkhoven (2009a; 2009b), Eugenio Barba (2010), or Cathy Turner and Synne Behrndt (2008) highlight dramaturgy's relevance to artistic processes. These experts have developed particular approaches in dramaturgical structure, technique and methods, which have brought to visibility the core ideas that define dramaturgy. The views of these experts also prepare the ground that defines dramaturgy in this research.

Both Marianne Van Kerkhoven (2009a) and Eugenio Barba (2010) describe dramaturgy as a vague practice. This however, does not imply that dramaturgy lacks meaning, basic, and shared understanding amongst experts in this field. Dramaturgy is not a vague discipline in the sense that its function is not clear. Dramaturgy organises the elements in order to build a structure for performance, which could involve an adaptation of a text, the movement and body language of the performers, even scenography or the inclusion of film projections. The methods and strategies of dramaturgical practice vary according to artistic views or styles, and genres. Hence, dramaturgy frequently appears to be vague and inexact due to the multiplicity of approaches and types of artistic work.

On the one hand, there is Eugenio Barba's brief description of dramaturgy as vague and

imprecise:

> Dramaturgy became vague as soon as I tried to define it. I had the impression of alluding to an invisible structure, which had to blend the heterogeneous elements and the different parts of a performance in a fascinating, unusual and effective manner (Barba, 2010, p. 9).

Whereas, through a set of questions, Van Kerkhoven refers to dramaturgy as a dispersed practice:

> Is it only possible to think of dramaturgy in terms of spoken theatre, or is there a dramaturgy for movement, sound, light and so on, as well? Is dramaturgy the thing that connects all the various elements of a play together? Or is it, rather, the ceaseless dialogue between people who are working on a play together? Or is it about the soul, the internal structure, of a production? Or does dramaturgy determine the way space and time are handled in a performance, and so the context and the audience too? We can probably answer all these questions with *Yes, but…* (in Turner & Behrndt, 2008, p. 17).

Barba and Van Kerkhoven emphasise the complexity of dramaturgy as a discipline that multiplies itself into numerous approaches. This is the result dramaturgy's flexibility and adaptability to different artistic perspectives. Nevertheless, the idea of structure and analysis are implicit in both descriptions. Barba refers to dramaturgy as an invisible structure to be discovered, whereas Van Kerkhoven highlights the inquisitive nature of dramaturgy. De Marinis also refers to dramaturgy as "the set of techniques/theories governing the composition of the theatrical text" (1987, p. 100). Hence, there is a common ground that defines the basic features of dramaturgy: structure, analysis and composition.

Finding this common ground helps to understand the nature of dramaturgical practice and how it functions. Structuring, analysing, and composing a performative artwork requires a complex combination of methods and techniques from different disciplinary areas, such as combining literary analysis with scenography, or directing actors. This is

why, even though dramaturgy generally concentrates on the principles of structure, analysis and composition, the methods and techniques used vary according to the artistic or cultural context. As a multidisciplinary practice that deals with different artistic fields, dramaturgy cannot be understood under a single and universal perspective. On the contrary, dramaturgy needs to be looked at as a pluralistic practice that embraces different artistic views about performance.

There are different scenarios where dramaturgical practice can be found. The first scenario we need to consider is common in institutional theatre where a professional dramaturg is responsible for dramaturgical practice. Major theatre companies like the Royal Shakespeare Company (UK), or the Schaubühne Theatre (Germany)[3] often include a dramaturg in the creative team of theatrical productions. The dramaturg has a number of roles, which vary according to the project in question. Katalin Trencsényi (2015, pp. 31-49) presents an interesting analogy of the role of the dramaturg with that of the curator, in which the main function of the dramaturg is to bring the public closer to the theatre. The dramaturg makes a theoretical study of a repertoire that would appeal to a particular type of public. The dramaturg aims, therefore, to contextualise a performance, targeting a particular public. This analogy highlights an important function of dramaturgy, which is to provide a context for a play – in the case of theatre – in order to build a relationship with the public. Other functions of the dramaturg are the critical analysis of the creative process, and to assist in the various stages of that process, for instance, scenography, or directing actors.

However, dramaturgy does not always require a dramaturg. The presence of someone with specific expertise in dramaturgical work is at times discarded, and often another person involved in the creative process replaces the dramaturg. Eugenio Barba (2010), theatre director and founder of the Odin Teatret, speaks of a director's dramaturgy that

---

[3] Both *Schaubühne Berlin* and *The Royal Shakespeare* Company employ experts in dramaturgy who are also included in the theatre's permanent artistic team.

interweaves all the other dramaturgies: the actor, music, text, and the scenic space. In this case, dramaturgy is developed without a dramaturg, and the responsibility falls onto the theatre director. He describes these other dramaturgies as the different levels of the creative process that are put together according to the vision of the director. Barba reiterates the function of dramaturgy as a discipline concerned with the structuring of the elements of a performance. Moreover, Eugenio Barba also refers to dramaturgy as a way of developing a specific analytical thinking:

> Dramaturgy, in this case, meant the creation of a complex web of threads instead of simple links. It was also a particular way of thinking. It implied a propensity to freely release a process of associations and to blend, wittingly or incidentally, pre-established facts and components in order to overturn them, make them appear strange to me and difficult to identify (2010, pp. 11-12).

With or without a dramaturg, dramaturgy is a dynamic discipline that has a close relationship with the creative process, therefore, adaptable to different approaches and artistic contexts. Van Kerkhoven corroborates this view of dramaturgy as a dynamic process: "If there is one thing we can say about dramaturgy, is that is a movement itself, a process" (2009a, p. 7).

Trencsényi (2015) describes two scenarios of dramaturgical practice includes product-led and process-led dramaturgy. Product-led dramaturgy follows the traditional cannons of theatre, in which the entire dramaturgical work is oriented towards a specific mise-en-scène of a play, for example. The process follows a traditional route: " the text is analysed, and a concept is created that then gains life in the performance" (2015, p. 129). Process-led dramaturgy, on the other hand, is more process conscious and evolves alongside the creative process. In this case, the role of the dramaturg sometimes disappears, and dramaturgy is instead developed by someone involved in the creative process of a performance such as the theatre director. In addition, this type of dramaturgy tends to embrace a more experimental approach to performance. This

research draws on a process conscious type of dramaturgy, which develops alongside the building process of an interactive installation: developing an experimental dramaturgy that focuses on the performativity of interactive installation art, and critically analyse the process behind it. In other words, the research pursues the development of a speculative dramaturgy that overlaps with the creative process, adding a critical layer to the making of a performative artwork.

Dramaturgy is a methodology that explores ideas and concepts and solves the complexity of creating a performance. Furthermore, it searches for the missing pieces and plays a fundamental role in the materialisation of concepts and ideas into a specific artistic and performative outcome. This reveals an inquisitive nature inherent to dramaturgical work, involving a feedback between different disciplinary areas, from theoretical to artistic areas or even just technical. Dramaturgical practice responds to the needs of the creative process of a performance whether it involves theoretical research to create a context, or providing solutions for the production. It adds a second layer to the creative process that bridges the *thinking* with the *making*, following the different stages of the work, from the preparation stage, through the development, and final outcome. Australian dramaturg Melanie Beddie suggests: "Dramaturgy can be thought of as the midwife between theory and practice" (Beddie et all 2006, p. 4). She emphasises the complexity of dramaturgy as a discipline that lies in between two worlds; theory and practice: firstly, it is concerned with the examination of concepts; secondly, it supports the practical execution of ideas by interweaving all the elements to create a performative event. However, the most important idea to retain from the discourse on dramaturgical practice, is that dramaturgy tries to anticipate of what the public will perceive. Hence, dramaturgy is also a practice that aims reception, as stated by De Marinis in the *Dramaturgy of the spectator:*

> On the basis of this definition, there clearly exits a dramaturgy of the director and a dramaturgy of the performer. However, surprisingly it may seem at first, we also can and should speak – not just metaphorically – of a

dramaturgy of the spectator (1987, 100).

To summarise, structure, critical analysis, composition, and anticipation the of public's reception are ideas that are underlined in dramaturgical practice. The means and strategies of development vary depending on its context. Every type of dramaturgy is based on these ideas but is specified by artistic and creative processes. It is a pluralistic and creative practice that materialises within the specificity of performance and artistic purposes. Dramaturgy reinvents and re-adapts itself in order to provide a performing arts' project with a relevant context, which can be cultural, social or historical. Dramaturgy is a complex discipline and, therefore, difficult to encapsulate into a single definition.

The following section focuses on dramaturgical practice in three different cultural, artistic, and historical contexts, in order to explore dramaturgy as a means of making, criticism, and speculation. The three case studies Aristotle's *Poetics* (1951)*, G. E. Lessing's *Hamburg dramaturgy* (1962), and Gordon Pask's *Proposals for a cybernetic theatre* (1964) illustrate methods of putting into practice the foundational dramaturgical principles of structure, analysis and composition.

1.3. Dramaturgical models: Three past examples of dramaturgical practice.

The historical landscape of dramaturgy evolved throughout the centuries since the classical Greek period, establishing a close relationship with theatre and playwriting. This section explores this relationship through a brief analysis of different historical periods alongside with an analysis of dramaturgical models. It presents three case studies that represent specific periods in theatre and dramaturgy history, rather than proceeding with a comprehensive historical overview of dramaturgy. These case studies exemplify and illustrate how structure, analysis and compositional elements are established in dramaturgical practice.

The three case studies include two landmarks in the history of theatre and dramaturgy: *Poetics* by Aristotle (1951)*, Hamburg dramaturgy* by G.E. Lessing (1962), and a speculative proposal for the creation of a new type of drama: *Proposals for a cybernetic theatre* by Gordon Pask (1964)*.

The first case study, Aristotle's *Poetics,* is a philosophical treatise written in the 4th century BC. This case study addresses the importance of structure in drama composition, and isolates the fundamental ideas of dramaturgy as applied to the development of a creative artwork. In other words, it analyses the process of making. *Poetics* is a thorough scrutiny of the anatomy of tragedy that explains and analyses all the elements that are part of the composition of tragedy. In addition, it describes the relationships between every element of the composition of tragedy and their function towards the creation of a dramatic action.

The Aristotelian principles have survived over the centuries, and continue to be a model for western European theatre. Nonetheless, these principles have not remained

entirely intact, and have been subject to adaptation and modification, namely during the 17th century French classical period. The manner in which French classical authors applied the Aristotelian principles in their tragic plays was a target for criticism by Gotthold Ephraim Lessing a century later. He critiqued the formalism of French classical authors for misunderstanding the principles described in *Poetics.* This critique was developed in his compendium of essays titled *Hamburg dramaturgy,* which was written in order to inform and educate the public about the repertoire of the Hamburg National Theatre. *Hamburg dramaturgy* is the second dramaturgical model. It considers dramaturgy's approach as a form of criticism in order to reinforce the analytical aspects and the importance of art reception in dramaturgical practice.

The third case study diverts from the previous two in that it looks to a relatively unknown, and speculative example. In 1964 Gordon Pask was in charge of Joan Littlewood and Cedric Price's *Fun palace* project programme. He created a proposal for a new type of drama based on cybernetic principles, calling it *Proposals for a cybernetic theatre,* however, he was unable to test it as the *Fun Palace* project was never executed. The document was never published, but a digital copy still circulates amongst cybernetics experts such as Paul Pangaro who has the document available on his website (Pangaro, 2016). Pask's proposal for a new model for theatre is of great interest for this research. Firstly, it is an interdisciplinary dramaturgical model that intersects performance with technology and cybernetics. Secondly, Pask translates principles of drama into cybernetics creating a dramaturgical structure for theatre that is not based on text.

In summary, Aristotle describes the dramaturgical exercise of interweaving the compositional elements as a means of achieving a performative effect[4]. Lessing, who coined the term dramaturgy, develops a type of criticism that analyses the cultural and social function of drama, and Pask proposes a new interdisciplinary model for a

---

[4] In the particular case of Greek tragedy, which is the main topic of the *Poetics*, this effect is an emotional reaction of *pity* and *terror*.

cybernetic theatre. Despite the differences, the three case studies highlight that dramaturgy requires a particular type of thinking that requires the ability of predicting and anticipating the final result of the creative process and what the public will perceive. The methods for the achievement of a performance, whether theatrical or dance, for instance, can vary, but every type of dramaturgical work requires this exercise of anticipating the public's perception.

1.3.1. Aristotle and the *Poetics*.

Poetics (1951) is one of the pillars of theatre history and dramatic theory. It is impossible to develop a discourse around dramaturgy without the inclusion of this seminal theatrical work. The term dramaturgy did not exist in the 4th century BC, and it was not used until the 18th century when G. E. Lessing coined the term in the *Hamburg dramaturgy.* Nonetheless, Aristotle's critical analysis on drama survived and became one of the biggest influences for Western European theatre. The principles of composition described in *Poetics* have underpinned theatre production over the centuries.

Aristotle's *Poetics* is composed of two books: the first is dedicated to tragedy, and the second to comedy. However, only the first book has survived to the present day. The work begins with an introduction to different poetic genres: poetry, tragedy, comedy, and dithyrambs. These genres are described as forms of *mimesis* [5] which differ according to their subject, and methods. As one of the forms of *mimesis*, tragedy imitates a type of action that represents *subjects* of a serious and virtuous nature, as opposed to comedy, which usually focuses on popular, and laughable types of character and story. In Aristotle's words:

---

[5] Mimesis, according to classic philosophy, is a mode of imitation. It is a commonly used term to describe the arts, in which are included poetry, music or theatre, and all of them imitate particular aspects of life.

Tragedy, then, is an imitation of an action that is serious, complete, and of certain magnitude; in language embellishment with each kind of artistic ornament, the several kinds being found in separate parts of the play; in the form of action, not of narrative; through pity and fear effecting the proper purgation of these emotions (1951, p. 23).

This particular type of imitation follows certain strategies in order to develop a dramatic action that fulfils the established tragic effects of *pity* and *terror* in the spectator. Here Aristotle creates a dramaturgical boundary: distinguishing dramatic genre according to type of action, effect, and function. In ancient Greece, tragedy was performed in annual festivals and generated great enthusiasm amongst the Greek people (Rabinowitz, 2008). The enthusiastic public support for dramatic representations also gave tragedy an important social role. Aristotle finds an aesthetic, educational, and emotional function in tragedy, which fits in with a particular notion of dramaturgy highlighted in the previous section – dramaturgy as an exercise of prediction. Aristotle underpins the function of reception of dramaturgical composition, which is to guide the public's reaction and interpretation of a play. Marco De Marinis reflects on this dramaturgical function in his essay *Dramaturgy of the spectator* (1987) and asserts that dramaturgy implies a degree of manipulation of the public's attention and interpretations:

Through its actions, by putting to work a range of definite semiotic strategies, the performance seeks to induce in each spectator a range of definite transformations, both intellectual [cognitive] and affective (1987, p. 101).

Therefore, *Poetics* is also a reflection on theatrical reception. Aristotelian principles also convey strategies for guiding the public's perception. Whilst assisting to the representation of a tragedy, the public not only enjoys the aesthetic embellishments of music, writing, and representation, but is also confronted with their emotions. Aristotle defends that tragedy has the function of emotional purgation by inflicting the feelings

of *pity* and *terror*. In addition, the tragic subject frequently focuses on topics about the confrontation between the laws of man, or city, and the divine laws of the gods. Hence in ancient Greek society, tragedy also had a moral function.

Tragedy's dramatic action is a combination of aesthetic and pragmatic purposes that produces certain effects on people, influencing their emotional reaction. Tragedy also possesses structural elements that are bound together to become a whole. In *Poetics* these structural elements consist of six foundational elements that shape the structure of the action in the tragedy: plot, character, thought, diction, spectacle, and music. Aristotle explains in detail what defines each element and its function. Moreover, these elements are hierarchically organised. "The plot, then, is the first principle, and, as it were, the soul of tragedy: character holds the second place" (1951, p. 29). The *plot* is presented as the most important element, since it contains the essential dramatic elements for the development of action in tragedy. *Peripeteia* (reversal of events), and *anagnorisis* (recognition) are indispensable events for the development of the plot's action. Second comes *character*, which defines the qualities of the fictional characters in the play; for example, the hero should be good, appropriate and consistent. *Thought* comes third, and consists in the reasoning of the character. This element is supposed to add coherence to the tragedy's characters, which must act and speak in a certain way allowing the public to understand the course of action of the play. *Thought* is followed by *diction* – the metrical composition of the play – and *music*. *Spectacle* comes last as Aristotle considered it the least important element. *Spectacle* refers to the theatrical apparatus or stage effects, for instance, the *deus ex machina*.

These are the compositional elements that should be included in tragic plays. Having explained each element, Aristotle begins a deeper analysis, and concentrates on the main element, the plot. The most important characteristic of a good plot should be *unity*; without unity, the spectator is not able to perceive the play as a whole. In other words, the play needs to be well organised: firstly, it needs a beginning that establishes

the narrative; secondly, the plot must present a story development in which is include the narrative climax; and lastly, the end, which presents the resolution of the plot. In order to fit the development of play in this sequence, it needs a consistent formal and inner structure. The formal structure is the division of the play into quantitative parts: *prologue*, *parode*, *episodes*, *stasimon*, *epilogue*, and *exodus. Prologue* marks the beginning of the play with a dialogue between two characters discussing a calamity or an unfortunate event. This introduces to the spectator the initial circumstances of the play. *Parode* is the first chorus intervention. From this point, the action is divided by *episodes* and *stasimons* (choric songs). The *episode* is when the play's characters intervene, which is interluded by *stasimons. Epilogue* is situated almost at the end of the play, the moment a *messenger*[6] enters usually with bad news. *Exodus* is the last chorus intervention, usually making the final moral statement of the play.

The development of the dramatic action also possesses an inner structure based on the unity of action. This inner structure is composed of events that shape the course of the action throughout the play. The first event is the *peripeteia*, or the reversal of events that changes the course of action, when the main character goes from a state of happiness to unhappiness or from a good to a bad situation. Tragedy always implies decay and the fall of the protagonist. This event is succeeded by *anagnorisis,* or recognition, the moment the main character acknowledges his or her tragic situation. This moment is when the emotional effect tragedy arises, inflicting in the public the feelings of *pity* and *terror*. The third event is suffering, *pathos*, which leads to an act of destruction, such as death or physical pain.

These are the main guidelines that characterise the dramatic composition of tragedy, dissecting the body of a dramatic play and exposing all the interrelations between its elements. Aristotle provides an overview of tragedy where is possible to see the connections and links between the different elements, and to understand how a tragic

---

[6] The *messenger* is a character that, towards the end of the play, brings a message or news that determine how the play ends.

play can come to life.

Aristotle uncovers the vital requirements for theatre-making or production that apply to both playwriting and staging. Whilst analysing the inner, and formal structure of the plot, he demonstrates how a good narrative should evolve, how to generate interest, and how to emotionally impact the public. These are principles that need to be acknowledged by playwrights, theatre directors, and even performers. Aristotle clearly identifies the play different parts, including the intervention of musical arrangement performed by the chorus.

The *Poetics* reveals the quintessence of dramaturgy; a practice that implies a particular type of thinking that is both creative and logical. It is a display of the methods for the creation of a solid narrative and the development of action of drama. Nancy Rabinowitz (2008, pp. 14-15) emphasises the fact that Greek tragedies were not mere pieces of literature, and were primarily meant as performances. Hence, she criticises the fact that Aristotle considers *spectacle* as the least important element in tragedy. Rabinowitz misinterprets Aristotle on this matter. When referring to *spectacle,* Aristotle refers to what in the 21st century is called the use of special effects. *Spectacle* is understood as the stage technical apparatus to simulate divine apparitions, and it should be used only when necessary, otherwise it could distract the spectator from the story and prevent the play from achieving its desired effect. However, Aristotle never disregards the performative aspects of tragic plays. Indeed, he repeatedly emphasises that tragedy is a form of imitation by action and not textual composition. The coherence and unity of action are chief concerns for Aristotle, claiming that action "should thus resemble a living organism in all its unity, and produce the pleasure proper to it" (Aristotle, 1951, p. 89). The written text, in the composition of tragedy and any theatrical play, is a vehicle for the creation of a performative action, which aims to be voiced and embodied by actors.

The Aristotelian principles are rigid and constrictive, and were defined for a specific type of theatrical play. These principles were certainly pertinent for the classical Greek theatre, but had to be reframed in other historical contexts in order to satisfy different artistic purposes and effects on the public. The social relationship between theatre and the public is dynamic and prone to change through historical and cultural transformation. Aristotelian principles were reframed in order to suit contemporaneous theatrical production. This will be a dominant topic in the next section with an analysis of G. E. Lessing's critical work the *Hamburg dramaturgy*. Aristotle's *Poetics* offers an example of a structure for drama and how the relationship between compositional elements for a performance can be created, aiming to cause an impact on the public. These are general ideas included in most dramaturgical practices.

Dramaturgy is the means of dealing with complexity, the means of interweaving completely different elements, such as the physical expression of the performer, music or scenography. Aristotelian dramatic principles also deal with the complex structure of tragedy, and organise all the different components such as the *plot*, *character* or *thought*, into a unified action.

To conclude, Aristotle's legacy with the *Poetics* has been handed down through the centuries, and its principles of drama were later found in different contexts with new interpretations, namely during the period of French classicism and with G. E. Lessing with the *Hamburg dramaturgy*.

1.3.2. G. E. Lessing and the *Hamburg dramaturgy.*

This section continues to analyse dramaturgical practice, examining another side of dramaturgy that is concerned with contextual criticism. Gotthold Ephraim Lessing used for the first time the term dramaturgy in the *Hamburg dramaturgy* (1962), a collection

of critical essays that analysed different aspects of theatre, including playwriting and acting, and aimed to create a context of drama for the German public. This section focuses on Lessing's criticism of French classicism in order to demonstrate that dramaturgy is also a practice concerned with critical analysis and the creation of contexts for performance.

G. E. Lessing, the author of the *Hamburg dramaturgy,* was one of the most prominent personalities of the German Enlightenment. Since the *Hamburg dramaturgy* presents a deep and comprehensive critical analysis of the art of theatre, it gained a status of national importance. This work was the first to introduce the term dramaturgy, and therefore became an establishment for theatre theory dramaturgical practice, as well as for German literary tradition[7]. Whilst Aristotle's critical analysis turned towards the establishment of structural principles for drama, Lessing analysed a theatrical repertoire whereby he is able to reflect on the essence of Aristotelian principles and to develop his theatrical theory. Commissioned by the National Theatre of Hamburg, the *Hamburg dramaturgy* consists of a collection of essays aimed at informing the public of the theatre repertoire. This work is a comprehensive critical work of drama theory covering topics as diverse as acting, playwriting or staging. Lessing shares with readers his reflections on comedy, and tragedy, as well as what he believes to be the function, and the role of each genre.

It is not the aim of this section to discuss the fairness of Lessing's criticism of French classic repertoire, but instead to analyse the motives behind such criticism. The definition of dramaturgy introduced in this chapter is grounded on the notion that

---

[7] Before Lessing, Johann Gottsched tried to recover the Aristotelian principles and introduce them into German theatre, and break with 'Harlequinesque' comedies and popular dramatic figures like Hans Wurst (Carlson, 1993, pp.163-167). Nonetheless, the new German theatre that Gottsched idealised was almost a replica of French classicism, namely from authors like Corneille or Racine. For this reason, Gottsched was not able to produce a fruitful and influential dramatic theory as solid as Lessing's *Hamburg Dramaturgy*. Gertrud Mander summarises Lessing's vision on Gottsched Frenchified theatre as unfit for German public: "What Gottsched tried to do, according to Lessing, was not to improve the existing German theatre, but to create a completely new theatre, a French styled theatre, without ever bothering to find out whether this fitted the German mentality" (Mander, 1975, p. 16).

dramaturgy deals with the compositional elements of drama, and creates a structure that organises those elements. Nonetheless, Lessing's detailed criticism of French classicism makes a crucial point for this research: the excessive care for formal structure.

Aristotelian principles are the main benchmark for Lessing, and he frequently includes them in his discussion, especially when criticising French classicism's extreme care with formal structure. Lessing's critique of French classicism was that dramaturgical structure should not undermine dramatic or performative effect, which needs critical analysis and contextualisation of the performance. According to Lessing, the misuse of Aristotelian structure compromises dramatic coherence. Aristotle also refers to dramatic action as something that should be organic. Hence, the combination of the different elements needs to come together naturally, forming a coherent whole. Although dramatic structure is a fundamental aspect, it should not take over the main purpose of drama, which is to generate a specific dramatic effect for an audience. This justifies why dramaturgical works require a detailed look at its contexts in order to create a structure that supports the dramatic effects for an audience.

Throughout the *Hamburg dramaturgy*, Lessing scrutinises the methods of several playwrights, through which he develops a dialectical criticism. On the one hand, he is positive about Molière, and Shakespeare[8], whose plays, he suggests, fulfil the dramatic effect of inflicting a certain emotional reaction or, with particular reference to Molière, to produce a social critique. Yet, on the other hand, he is critical of the authors of French classicism for their misuse of Aristotelian principles. The focus of Lessing's criticism for sacrificing the tragic effects of *pity* and *terror*, are mostly Racine, Corneille,

---

[8] The references to Shakespeare, and Molière appear whenever Lessing attempts to demonstrate that dramatic effect is more important than following a set of rules. Tragedy and comedy are not simply defined by the existence of dramaturgical structure. Lessing's point is the fact that a play presenting a structure is simply not enough if it does not fulfil a purpose: to generate an effect in the audience. In tragedy this effect is an emotional reaction of *pity* and *terror*; in comedy the effect is based on social critique.

and Voltaire.

According to Lessing, if artistic norms are borrowed from other cultures, it is essential to make them coherent and pertinent: "At least the Greeks never based either their comedies or their tragedies on any customs but their own" (Lessing, 1962, p. 257). Carlson also corroborates my interpretation of Lessing's perspective on the misuse of Aristotelian principles by French authors:

> In the final essay of the Hamburg Dramaturgy, Lessing acknowledges Aristotle's Poetics as his major critical touchstone, a work as 'infallible as the elements of Euclid'. The works of the classic French stage, he says, presumably based on Aristotle, is in fact often founded on misapprehensions and distortions of Aristotle's ideas, severely restricting the artist's potential. The English, unaffected in general by the pedantic French misreading, have produced works both more vital and truer to the real spirit of the Greek (1993, p. 168).

Aristotelian principles were established in the 4th century BC for a Greek audience, and not for an 18th century German public. Overall, Lessing is concerned with making sense of drama. He creates a type of dramaturgy that is not defined by rules and rigid structures, but instead a permanent critical and analytical exercise of which rules and principles should apply to drama within a specific cultural context. Thus, the *Hamburg dramaturgy* is also a search for a national identity in the sense that it looks for a new type of drama to which the German public can relate.

Katalin Trencsényi (2015, pp. 3-14) claims that dramaturgy had routes in theatre criticism to which Lessing greatly contributed. She importantly makes the point that the legacy of Lessing's *Hamburg dramaturgy* impacted on the professionalisation of dramaturgy, and the emergence of the dramaturg. As a discipline, dramaturgy is very close to theatre-making practice, and for a long period of time has also merged with playwriting and staging. Lessing showed himself to be deeply knowledgeable of theatre, literature, and philosophy of his era, and this knowledge is apparent in the comprehensive and inclusive work the *Hamburg dramaturgy.* Apart from playwriting,

he was able to cover in his seminal work the most diverse aspects of theatre-making such as acting and staging. The result was the emergence within the theatre field of a new autonomous disciplinary practice.

Aristotle produced the first analysis and description of the process of playwriting towards theatrical performance. However, Lessing complements Aristotle's legacy. Firstly, he expands the analysis beyond the text, and includes critical reflections on the way the text is performed. Secondly, he focuses on the cultural and social contextualisation of theatre in its written form and staging. He defends the cultural and social function of drama, and the emotional impact on the audience. Thirdly, he transforms the method of drama analysis into artistic criticism that aims to inform the public about theatre. Lessing created a manner of thinking that has allowed dramaturgy to flourish as a discipline. He has done so by marrying analytical thinking with criticism, always aiming to offer the audience a significant artwork.

Both Aristotle and Lessing's reflections on drama tackle some of the issues of dramaturgy that correspond to the aims of this research: to approach dramaturgy as a set of techniques and methods in order to create a performative artwork, and to make visible the creative process to allow for critical analysis. These two case studies demonstrate the requirements of performance in the organisation of ideas and concepts, - which can be called the performance elements – and the means and techniques to develop an artwork. Lessing instigates some new functions of dramaturgy: criticism and contextualisation.

Criticism draws on the importance of effects generated on the audience by the performance. Again, the link between artistic reception and dramaturgy becomes clear: dramaturgy is an exercise of anticipating the public's perception and reaction. Moreover, the criticism on the application of structural principles conveys strategies for guiding the public's perception. These strategies are what De Marinis (1987) describes

as the manipulation of the public's interpretation and understanding of performance. Nonetheless, this research takes on these strategies as a means of establishing an artistic goal, and influencing the public to perceive the performance in a certain way. In other words, to provide the public with signs, for example, the visual aesthetics of an artwork, that enables the overall reading of the artwork. Hence, Aristotle and Lessing give a solid insight on the balanced relationship between the structure of the performance and the effect on the public. Both are equally important, but the first must not undermine the latter.

The idea of generating a context for drama inherent in G. E. Lessing's arguments about drama representation, provide the research with a deeper understanding of the practice of dramaturgy. It also gives a better sense of the means by which to achieve coherence in the creative process. Contextualising practice within a specific field allows creating a balance between the structure of the compositional elements, and artistic outcome. In this research, a conceptual and theoretical framework is used as a method to contextualise practice. This supports the creation of a narrative thread for the final practice outcome, and an observational work[9] that situates the research practice within the artistic territory.

1.3.3. Gordon Pask and the *Proposals for a Cybernetic Theatre.*

Following the study of two of the most important theoretical works on dramaturgy, this section introduces a completely different approach to the practice of dramaturgy: a speculative dramaturgical model that aims to find new paths for drama. The model in question is Gordon Pask's *Proposals for a cybernetic theatre* (1964), the third case

---

[9] The observational work refers to one the research methods, which consisted in creating a database of other practitioners' artwork. The information provided by this database will have further analysis in this thesis, specifically on chapter 2 and 4, to support the arguments about the link between performativity and interactivity.

study for this analysis of dramaturgy.

Gordon Pask was a leading figure in cybernetics with an eclectic knowledge on science, architecture and art. Hence, he was able to apply his expertise of cybernetics to these disciplinary fields. This section, however, focuses specifically on Pask's dramaturgical abilities[10]. It aims to demonstrate that *Proposals for a Cybernetic Theatre* presents common dramaturgical patterns. The analysis of Gordon Pask's proposal searches for three main features: the identification of compositional elements and structures; the proposed methods for a new type of drama; and the proposal's context. In addition, it also analyses how traditional theatrical concepts are reframed under cybernetic principles.

Pask's *Proposals for a cybernetic theatre* is an example of speculative dramaturgy, which shows that dramaturgical principles are flexible and adaptable to other formats. Pask envisions a hypothetical[11] and interdisciplinary type of drama that intersects cybernetics, technology and performance. He produced this proposal as part of an ambitious interdisciplinary architectural project that attempted to merge technology with performance. The project in question was *Fun Palace,* conceived by Joan Littlewood and Cedric Price. *Fun palace* was a *quasi-utopian*[12] project which aimed to

---

[10] Paul Pangaro (1993) holds the opinion that Gordon Pask should be considered a dramaturg based on Pask's action-based approach on cybernetics. The etymological origin of drama (*dran* in Greek) is related to action and the verbs *to do* or *to act* and, in fact, Pask's cybernetic theories revolve around action. Pask theories involved interaction between agents, which he designates as *actors,* within interaction feedbacks or loops in systems (social, biological or mechanical), and the analyses of human behaviour and its environments. Pask's thinking on cybernetics finds parallelism in dramaturgical practice that also aims to design interaction between different elements based on human action and behaviour.

[11] Pask's proposal remains to this day untested and unpublished. The document has been circulating through unofficial sources, for example Paul Pangaro's website (pangaro.com), but it has not entered contemporary performance practice nor theory. Nonetheless, the document puts forward a theory of performance that conjugates different disciplinary fields such as cybernetics, technology and theatre. Hence, in this research Pask's proposal is considered to be offering a good model for emergent types of dramaturgy.

[12] The use of the term *quasi-utopian* is due to the fact that both Joan Littlewood and Cedric Price made an extraordinary effort to realise the *Fun Palace*. However, they never managed to transform a highly idealist and ambitious project into an achievable and believable plan of action. The concept was somehow ambiguous and unclear amid political and social scepticism. Indeed, the project comes across

bring to life Joan Littlewood's dream[13] of a space that combined *learning* and *leisure*, which proposed new education models where people could learn while exploring their creativity skills[14] (Mathews, 2007). Littlewood and Price realised that, in order to bring the project to life, they would need someone with expertise in cybernetics to join the project. In 1963 Joan Littlewood invited Gordon Pask to join the team. They decided to create a cybernetics committee to generate an activity programme for *Fun palace.* Whilst in charge of this committee, Pask wrote *Proposals for a cybernetic theatre,* a detailed proposal for participatory theatre.
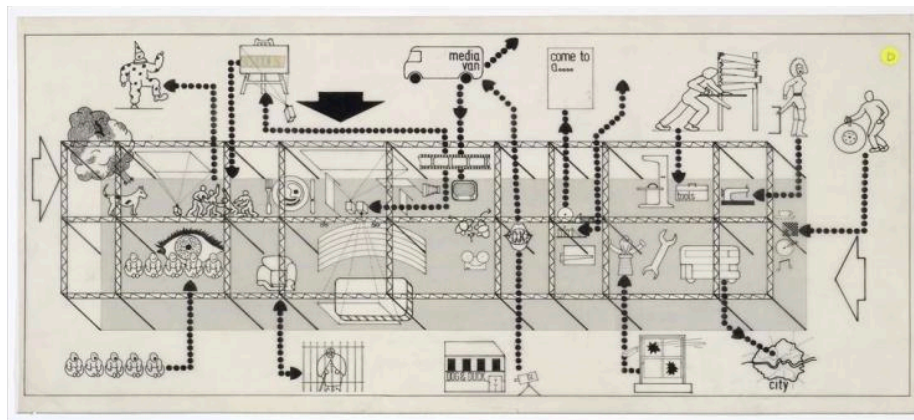
Figure 1. Plan for *The Fun Palace,* Cedric Price, 1963.

The first thing to consider is how Pask defines the compositional elements, and builds basic the dramatic structure. *Proposals for a cybernetic theatre* begins with the presentation of two theatrical innovations in which Pask summarises the main features

---

as utopian, but the use of such word undermines, in my view, Littlewood and Price's effective work and effort to actually build *Fun Palace.* Hence, the term "quasi-utopian" is here considered more appropriated.

[13] Joan Littlewood was an agit-prop theatre director and producer, whose activity is commonly associated with the *Theatre Workshop*. Her productions while at the *Theatre Workshop* were often left-wing leaning, targeting the working classes as the main public, and using theatre as a means of social activism (Leach, 2006).

[14] Around 1962, Littlewood and Price met and both started to sketch a ground-breaking architectural building that would adapt and respond to people's actions. Price thought of creating a building that would be a huge interactive and participatory space of ever changing architecture. The sources of inspiration were inclusive and eclectic: from 18th century historical architecture of fun, for instance Thomas Bowles's *Ranelagh Gardens* (1794), to Situationism, John von Neumann's *Game Theory*, computer science, and cybernetics.

of a Cybernetic Theatre:

> (1) A physical communication system, which is fairly inexpensive and capable of installation in any conventional theatre.

> (2) A special procedure, for programming a dramatic performance which involves a number of techniques entailed in plotting and scripting any play that is performed in the Cybernetic Theatre. Thus existing plays that could not be performed in the theatre, though some of them could be modified and adapted for this purpose (1964, p. 2).

These two points describe the proposal's main goals that are concerned with the financial and artistic feasibility of the project. The proposal follows some standard procedures of cybernetics, beginning with the establishment of 12 axioms (Pask, 1964, pp 4-5). Briefly, the axioms are:

1)   A dramatic presentation is built from thoughts that come to life through the voice and actions of characters played by actors placed in plotted situations.

2)   Dramatic presentations involve interaction between characters and situations, and between characters and characters. Some of these situations are independent of character's actions, which are called *structural situations.*

3)   The *soliloquy* contains useful information about characters thoughts and is now designated as *meta-information*.

4)   Theatrical audiences are not entirely receptive.

5)   Theatrical audiences are not completely passive. There is a feedback relationship between audience and actors.

6)   Actors are not automatons and their performance can vary.

7)   Dialogues must be invariant and flexible, as is of vital importance for the structure of the dramatic presentation.

8)   The sequence of structural situations must depend upon actual choices made by characters.

9)   The dramatic presentation is only successful if the audience participates in the performance.

10)   Members of the audience should aim to control characters' thoughts and actions with whom they identify themselves. Hence, is necessary that the members of the audience access the *meta-information* of each character.

11)   Each dramatic situation should be given attributes, which would permit the participants from the audience to make choices.

12)   A dramatic presentation is a control system.

These axioms constitute the dramaturgical foundation for Pask's hypothetical cybernetic theatre. They explain requirements such as plot flexibility, audience participation, elements, structural situations, and meta-information. These are the *compositional elements* that shape organisational structure for a performance. Pask reframes basic notions of theatre into a cybernetic logic: common playwriting concepts such as *climax* and *resolution* are re-named *structural situations*; and the *aside comment* or *soliloquy* dramatic strategies are re-defined as *meta-information*.

The vital point in these axioms is the introduction of the audience's participation in a theatrical performance based on a cybernetic system. Pask reinterprets playwriting which "may come to involve writing a programme akin to a computer programme" (1964, p. 6). However, the achievability of a participatory theatre also requires the bridging of missing channels of communication inherent to the previously described axioms. Pask recognises that it is necessary to design an inclusive system that would satisfy the requirements of all 12 axioms. Hence, he proceeds with a diagrammatic development of the proposal as a means of reflecting, and organising the dramatic elements for a cybernetic theatre.

The second aspect to be analysed in this section is the methods and strategies developed in Pask's proposal which merges theatre and cybernetics. Pask creates an unconventional dramaturgical language through visual and diagrammatic planning. Due to the extraordinary detail of the proposal, this section addresses a selection of diagrams that best represent Pask's methods to develop his *Proposals for a cybernetic*

theatre.

The first example, *technical specifications* (figure 2 and 3), shows the first attempt to interweave the 12 axioms, which are Pask's definition for compositional elements. The diagram in figure 2 describes a control system, which makes reference to axiom 12, to that enables the audience to identify with characters *A* or *B* by providing them with a pair of buttons. When a member of the audience chooses a character they receive information on the character's thoughts. This is what Pask calls *meta-information* (axiom 3). Through technical planning, he attempts to visualise how these dramatic elements can be linked.

- 8 -

1,2,3,4 -- Representative Members of the Audience
IMOS - Identification Memory Output Selector
IMIS - Idnetification Memory Input Selector
IM   - Identification Memory
PMA   - Preference Memory A
PMB   - Preference Memory B
MC   - Memory Control and Cueing Programme

- Identification Input from Audience
- Preference Input from Audience
- Audio Metachannel
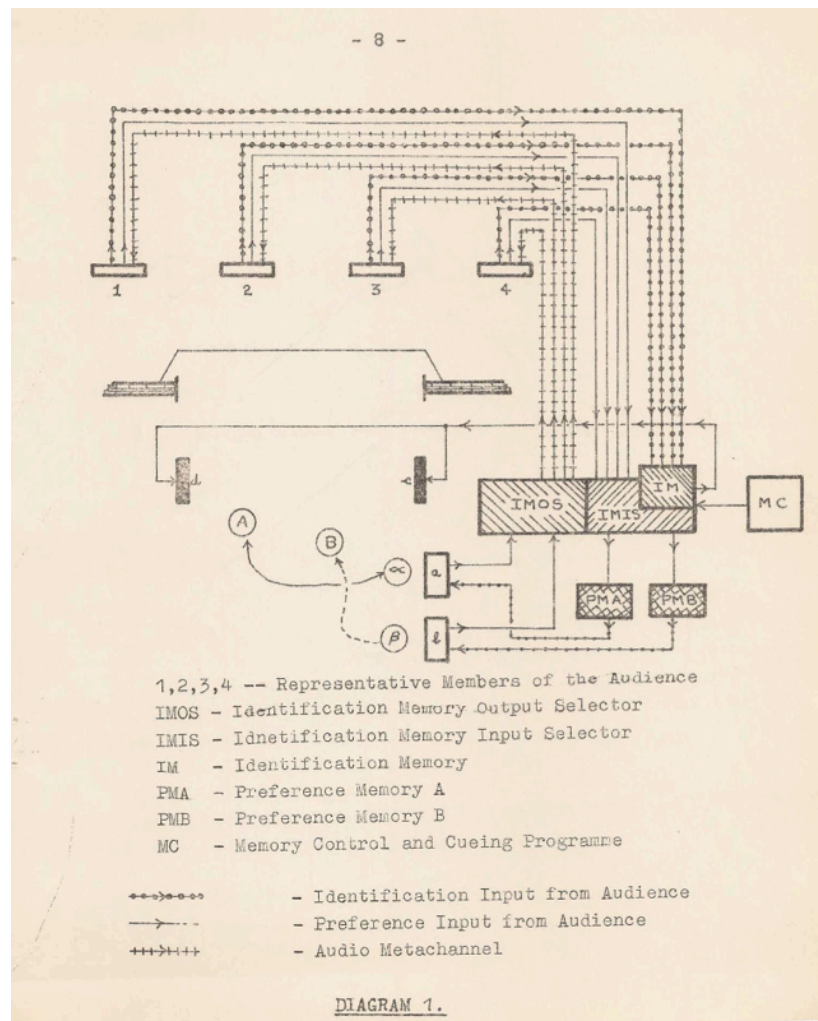
DIAGRAM 1.

Figure 2. Gordon Pask diagram 1:Technical Specifications.
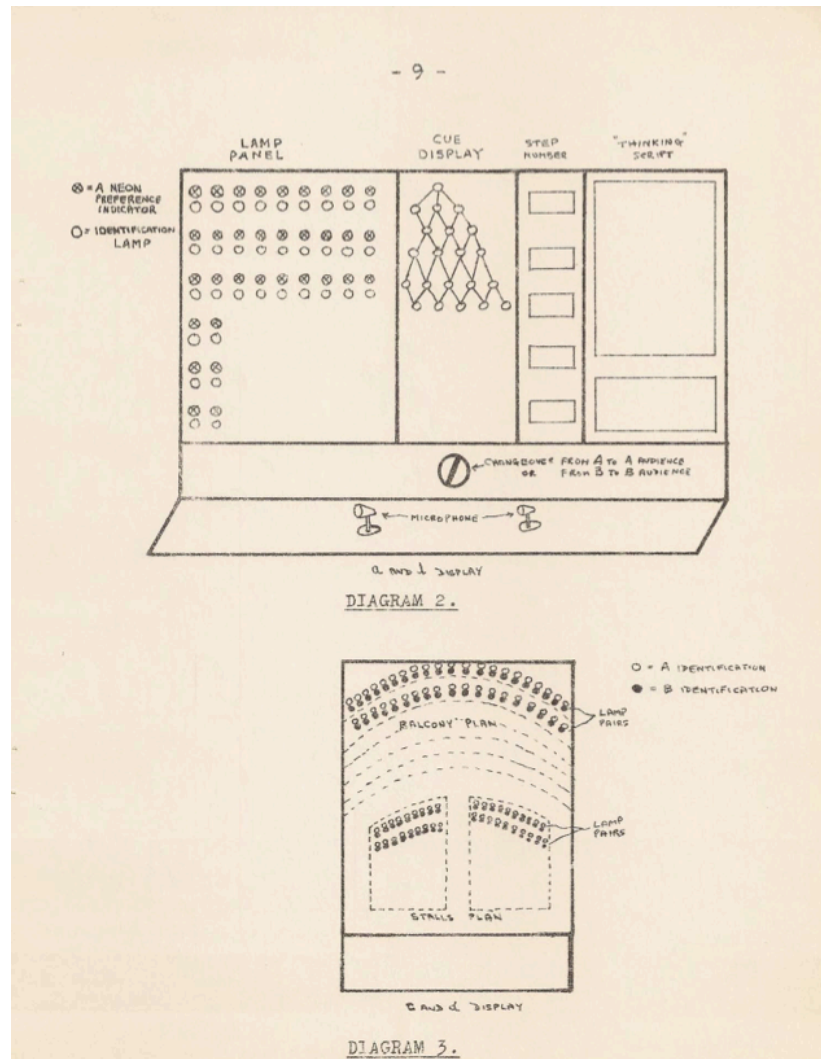
Figure 3. Gordon Pask's diagram 2 and 3: technical specifications.

The system configuration shows elements like *Identification Memory Output Selector*, which connects members of the audience to the meta-information source of the chosen characters. *Identification memory* stores the choices made by members of the audience. To summarise, Gordon Pask's diagram defines strategies of engagement on how to allow the audience to access information about the play characters, how to manifest their choices, and how the information on the choices of the audience is processed.

Another example of the diagrammatic methods is the *organisational structure* of the performance (figure 4), which contains the arrangements of the *structural situations* – the pre-determined events within a dramatic presentation. *Structural situations* are organised according to sequences that determine the development of the performance. It is possible to identify these sequences in the diagram through the paths created by the pointing arrows, which also shows how the different elements are connected.
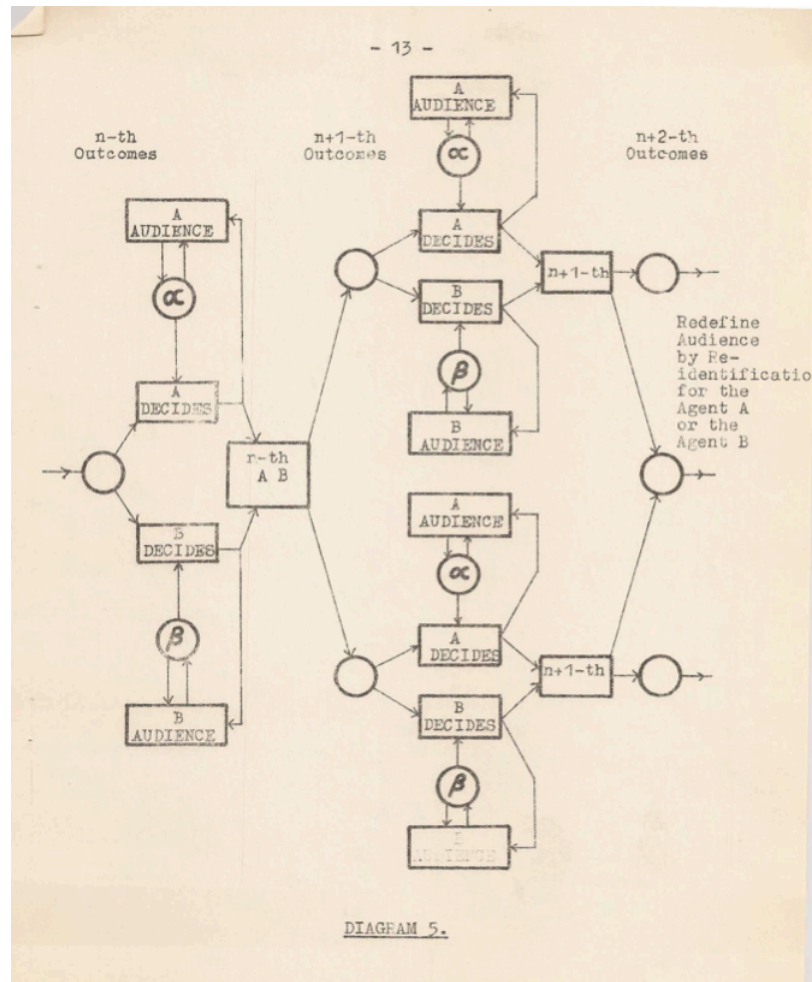
Figure 4. Gordon Pask's diagram 5: structural situations.

Pask compares *organisational structure* to a learning machine. Thus, he devises a system of communication channels that is able to learn and produce outputs according to the choices of the audience. Diagrams 9 (I) and (II) in figure 5, show how the system

processes the data generated by audience's choices and interactions, as they contemplate two different scenarios. In *diagram (I)* the audience provides instructions to the actors without access to *meta-information* (character's thoughts). Otherwise, those instructions are given on the basis of the audience's access to the *meta-information* (symbols α and β), as described in *diagram (II)*.
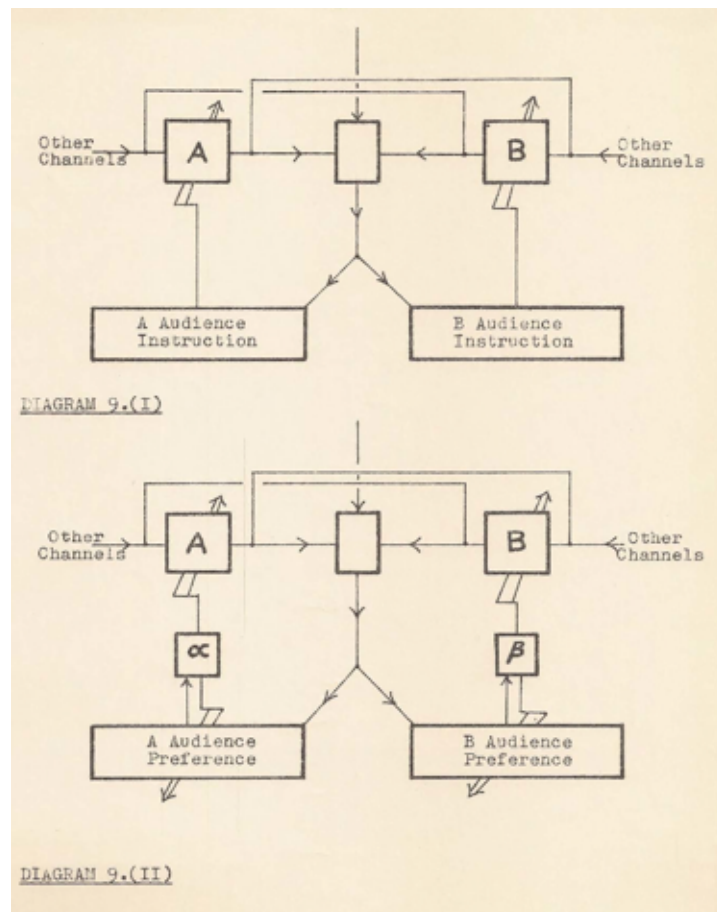
Figure 5. Gordon Pask's diagram 9 (I) and (II).

Pask attempts to reconcile the previous two scenarios in *diagram 10*, which includes sub-systems within the main system. This scheme allows the re-identification of the public with the characters, with the introduction of the interchanging of information or chattering amongst the audience as represented by the dotted lines. This scenario is far more complex, and has a bigger flux of data in the overall communication system, especially if we also take into account the interaction between the members of the

audience.
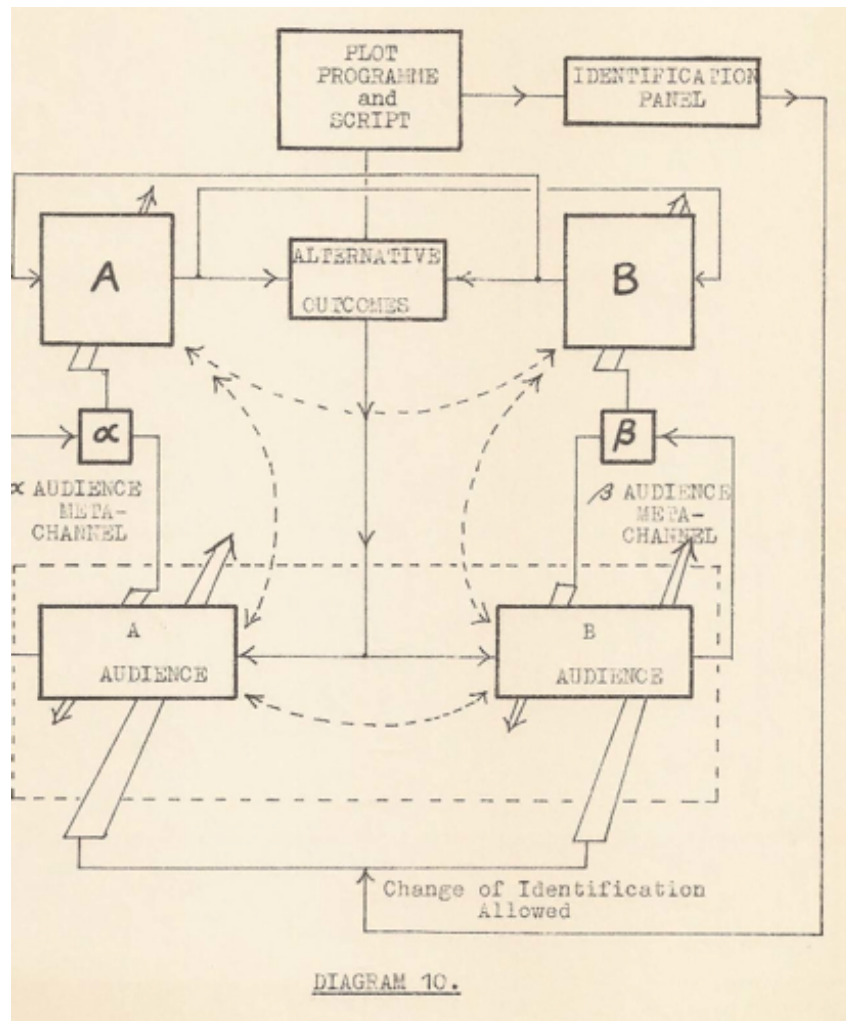
Figure 6. Gordon Pask's diagram 10.

Altogether, *diagrams 9* and *10* are dramaturgical exercises that envision the possible outcomes of the performance translated into cybernetic language. Pask designs strategies to anticipate and control the interaction between public and actors. This reinforces the idea of dramaturgy previously explored in this thesis: that dramaturgy always attempts to anticipate what the public will perceive.

The methods and strategies of these diagrams describe a system that enables the public's participation, and should be flexible enough to be applied to various storylines

or plot. Nonetheless, the cybernetic plot is sustained by structural events, which generate situational outcomes. These outcomes would change according to the audience's choices during the play[15].

The third aspect to be examined in this section is the context of *Proposal for a cybernetic theatre.* Pask's proposal draws some parallels with the dramaturgical function of contextualisation, which aimed to provide the *Fun Palace* project with a programme of cultural activities that reflected the spirit of the 1960s. Despite the utopian traits of Littlewood and Price's idea, the project also reflected emergent ideologies of the 1960s. It aimed to build a democratic and participatory space for self-expression through what was also a celebration of technology for social development. *Fun palace* mirrored the optimism and enthusiasm of left-wing ideologies, technology, and cybernetics felt during that decade. *Fun palace* could have been the epitome of the 1960s intellectual and cultural spirit.

> London in 1966 was a place and a time when everything was changing and anything seemed possible, when radically new architectural ideas burst onto the scene, with vitality, energy, and originality equalling that of the Beatles, Mary Quant's Miniskirts, and the visual spectacle of Swinging London. Price's architecture reflected the changing character of British society in those heady times, but it also acted as a catalyst to expedite social transformation (Mathews 2006, p. 39).

As *Fun palace* developed conceptually, and the architectural plans advanced, the negotiations with local communities and authorities became more intricate, posing serious obstacles to the project's realisation. Winning public opinion was an important

---

[15] Apparently, Pask does not include the possibility for improvisation. He hypothesises a type of performance created during rehearsals, allowing little freedom for actors to react spontaneously to unpredictable events within the plotted situations. A control system applied to performance may open interesting possibilities of interaction between the public and the performers; however, a control system, in this case, only provides a technical structure. In addition, Pask does not clearly express a concern with emotional reaction or behaviour. His hypothetical system is more oriented towards functioning. This raises questions over what participatory theatre should be, and to what extent it should ponder unpredictable behaviours and reactions from the audience, which could be reciprocated into the actors' performance.

step towards the realisation of *Fun palace*, and it became clear that the project required greater clarification of its final outcome. This was Gordon Pask,'s task; to use his knowledge of cybernetics to create a proposal for a participatory theatre. He was responsible for creating a cultural programme that would engage the public with the *Fun palace* project, especially aiming to capture the interest of the working class. Pask's proposal, therefore, relates to what Trencsényi (2015, pp. 31-49) describes as a curatorial dramaturgy: a type of dramaturgy that aims to create a programme of public engagement with a particular institution or artistic project.

In spite of Pask's attempt to intersect cybernetics with drama in order to create an innovative type of theatre, the proposal remained as a concept since *Fun palace* never came to fruition. The project was unable to survive the political, and bureaucratic constraints. Nevertheless, *Proposals for a cybernetic theatre* is a good attempt to intersect performance with interactivity, and technology, showing the importance of planning and predicting behaviours of both artwork and public.

To summarise, *Proposals for a cybernetic theatre* creates a model for the research on how to reframe concepts from the performing arts into other fields. Firstly, it demonstrates the flexibility of dramaturgy as a discipline, and how to translate basic concepts of drama into another field. Pask reconfigures the dramatic concepts like *soliloquy,* and *aside comment* into a cybernetic term *meta-information*. Hence, *Proposals for a cybernetic theatre* proves that it is possible to re-configure dramaturgy into interactive art. Secondly, he builds non-textual dramaturgy, taking cybernetics as a main dramaturgical language. Finally, the intersection of technology and performance requires some reflection and planning on technical incorporation and functioning in order to obtain coherence in the artwork. Pask's diagrams show an alternative way to develop a dramaturgical structure for performance without having to write a plot or a theatrical play.

1.4. Contemporary context of dramaturgy.

This section continues to explore the concept of dramaturgy and concentrates on its contemporary context. It underpins the theories of *postdramatic theatre* by Hans-Thies Lehmann (2006), and *new dramaturgies* coined by Marianne Van Kerkhoven (2009a) in order to contextualise the approach of this research on dramaturgy within the non-textual, and interdisciplinary artistic practices.

In the previous sections, this thesis has asserted the fundamental concepts that form the basis of any practice of dramaturgy. Structure, critical analysis, composition, and the ability of anticipating outcomes are crucial for the research reframing of dramaturgy within the field of interactive art. These case studies provide models to demonstrate that the basic concepts can be adapted to different dramaturgical models. In particular, G. E. Lessing and Gordon Pask highlight the value of contextualisation in the process of adapting those basic notions for a new dramaturgical model. Therefore, this section aims to complete the scope of dramaturgical study with an examination of the contemporary context of dramaturgy, and thus contextualise the research's approach to *space dramaturgy*.

The contemporary panorama of dramaturgy is a heterogeneous landscape coloured by the entwining of distinct artistic practices that include theatre, dance, performance art, and installation. Moreover, the integration of technologies in art has created a prolific interdisciplinary field in which we can find all sorts of collaborations between artists, programmers, and other professionals with technological expertise. Therefore, the creative elements of performance have changed and diversified, making the performative composition yet more complex. For example, the theatre company The Wooster Group created an artwork that reconfigured the conventional theatrical and cinematic setup and narrative. The work *There is still time… Brother* (2007) is a

combination of installation art, performance, and expanded cinema. It inverts the relationship between performance and audience by putting the public in a position of control. Artworks like this usually emerge from collaborative processes, and benefit from the grey areas in-between disciplinary fields. This type of experimental and interdisciplinary artworks has contributed to the emergence of new forms of dramaturgy.

Figure 7. *There is still time…Brother,* The Wooster Group, 2007.

As dramaturgy expanded into other artistic fields, the main language for performance was no longer necessarily textual. Hans-Thies Lehmann in his seminal book *Postdramatic theatre* (2006), suggests that there has been a process of de-hierarchisation of the compositional elements within contemporary performing arts practice. Hence, text has begun to gain equal relevance to other compositional elements. The use of electronic sounds, film images, or the Internet has become as important as the literary text. However, that has by no means resulted in the absolute rejection of the spoken word, or the exclusion of text. Contemporary performances, especially those using new media technology, employ fragmentation, non-linearity, and simultaneity of information in scenic composition. This is a symptomatic aspect of the

application of technology, which has caused shifts in perception. The act of perceiving thus became faster, multi-sensory, and scattered (Lehmann, 2006, p. 17).

Marianne Van Kerkhoven (2009a; 2009b), and Hans-Thies Lehmann (2006), who respectively created the concepts *new dramaturgy* and *postdramatic theatre,* theorised contemporary dramaturgical practice. On the one hand, Van Kerkhoven claims that *new dramaturgies* are no longer attached to the function of building a structure of a play. Instead, these types of *new dramaturgies* are more concerned with solving the chaos of creative processes, and to produce a heterogeneous amalgamation of compositional elements:

> Dramaturgy is no longer a means of bringing out the structure of the meaning of the world in a play, but (a quest for) a provisional or possible arrangement, which the artist imposes on those elements he gathers from a reality that appears to him chaotic (1994, p. 18).

On the other hand, Lehmann defines *postdramatic theatre* as a type of theatre that overcomes the dramatic conventions of plot unity and synthesis. Both theorists agree that the performing arts have entered an ambiguous field.

From the moment that performance began to step outside its conventional realm, it has shaped dramaturgy by leaving behind its subordination to text. Dramaturgy deals with readable signs for the public, and now these signs do not evolve around the staging of literally text, but instead build from images, sound or movement that appeal to a multi-sensory and synesthetic perception. Lehmann also describes performance as an interweaving of signifying elements. Thus, *postdramatic theatre* is "not simply a new kind of text of staging and even less a new type of theatre text, but rather a type of sign usage" (Lehmann, 2006, p. 85).

Theorists Cathy Turner and Synne Berhdnt (2008) dispute the ideas associated with *postdramatic theatre* that new theatre and performance practice emerge from the lack

of synthesis. Contemporary performance practice can be frequently found in grey areas of disciplinary fields, but the multiplicity of artistic exploration raises doubts about the end of synthesis in dramaturgical practice. The discourse appears, therefore, to be imprecise for not distinguishing notions of synthesis according to traditional theatrical genres from contemporary or avant-garde theatre and performance. In the case of the intersection of performance and new technologies, dramaturgy needs to respond to new artistic paradigms. Hence, structure and synthesis cannot be understood, in this sense, within the logic of traditional dramatic theatre. Despite the fragmentation, simultaneity and multi-sensory language, dramaturgy is still needed to interweave and arrange the performative elements. Paradoxically, Lehmann (2006, p. 85), mentions the *performative text*, which does not literary refer to the written text, but to a type of text that is more like the fabric of performance created from the weave of different components. The exercise of weaving and arranging performative elements can still require dramaturgical work to provide a synthesis to performance, and even when in the midst of chaos, performance can still strive for aesthetic or conceptual coherence and synthesis.

Since the second half of the 20th century, the exploration of new artistic languages involving technology, within the performing arts, intensified. A landmark in the historical relationship between performance and technology is Josef Svoboda's *Laterna Magika,* which was firstly introduced to the public in 1958 at the Brussels world exhibition. The project established grounds for interdisciplinary artistic practice with blurred frontiers, mixing a great variety of media such as cinema, dance, and music that made it difficult to classify the genre of such a project. Josef Svoboda's *Laterna magika* is one of the first examples of hybrid artworks that mixed dance, theatre, music and moving image. Performance art, media installation, public art, and interactive art explored disciplinary crossovers, strengthening the establishment of new types of artworks, and permitting dramaturgical practice to expand to other unexplored fields.

Adrian Heathfield also upholds this view on the impact of interdisciplinarity in dramaturgy:

> Dramaturgy no longer belongs to the theatre, nor dance-theatre, it is a practice spanning diverse disciplines and cultural sites. Wherever there is a performance taking shape there is a set of dramaturgical questions being asked and dramaturgical principles being tested (2011, p. 115).

Interdisciplinarity propelled the expansion of performance into other artistic fields. This phenomenon can not only be attributed to the inclusion of technology in the performing arts, but also to the increasing interest by new media artists of bringing performance into their practice. Myron Krueger for instance, a pioneer of interactive media art, used performance to explore and create methods of interactivity and participation in his ground-breaking project *Videoplace* (1969). As discussed previously, Gordon Pask merged cybernetics and theatre in order to create a participatory system. As performance expands into other disciplinary fields, dramaturgical practice needs to adapt to new formats and reinvent methods and strategies to put together diverse artistic elements. In the new artistic paradigms of performance that makes use of technology, it aims to find ways to interweave technical elements with performance, and envision the emotional effect on, and response from, the public.

Theatre scholar, dramaturg Peter Eckersall's *Towards a dramaturgy of robots and object-figures* (2015), and Spanish artist Marcel-Lí Antúnez, *Sistematurgy* (2016), propose models of dramaturgy that illustrate the emergent dramaturgical paradigm involving technology. Peter Eckersall proposes a dramaturgy of robots in order to raise questions of the increasing introduction of robots and virtual objects in performative environments. He states that robots, as dramaturgical elements, should be regarded as objects within the relational economic, cultural, and social realm of the performance. In other words, Eckersall conceives an artistic approach for robots as object-figures that possess a performative expressivity capable of projecting an emotional dimension on

the public. Therefore, robots are not simple adornments of a performance, but major performance signifiers.

Marcel-Lí Antúnez creates the neologism *Systematurgy* that translates his individual approach to the intersection of technology and performance. *Systematurgy* is an agglutination of the terms *system* and *dramaturgy*. It portrays Antúnez's artistic pursuit of the integration of the logic of computational systems in the narrative structure of his mechatronic performances.

These are examples of the reframing of dramaturgy that respond to the emergent interdisciplinarity of performance involving technology. Moreover, the ideas of Peter Eckersall, and Marcel-Lí Antúnez about performance are a sign of an on-going expansion of dramaturgy into other fields. Eckersall and Antúnez depict pertinent dramaturgical approaches on the intersection between performance and technology. Nevertheless, dramaturgy is reaching out to areas such as site intervention and architecture. Cathy Turner (2015) takes on a dramaturgical approach to site-specific art, and architecture.

This expansion of dramaturgy is part of a growing and wide academic field that categorises the effervescent interdisciplinary performing arts as *new dramaturgies*. Unlike Lehmann, who conceptualises this emergent artistic practice as *postdramatic*, this area of research embraces the open dialogues and experimentation with a particular focus on dramaturgy. It establishes a demarcation from the old traditional models (Trencsényi & Cochrane, 2014) and incorporates a heterogeneous collective investigation about emergent and expanded dramaturgies without closing its frontiers. The research finds in this new and expanded dramaturgical practice, an opportunity to situate itself within an academic field.

As mentioned above, the *new dramaturgy* was coined by Marianne Van Kerkhoven (2009a), but continues to be a territory for the investigation of new models of dramaturgy. Katalin Trencsényi and Bernadette Cochrane (2014), who have researched this emergent dramaturgical territory, point out three main characteristics: *post-mimetic, intercultural* and *process-counscious.* The *post-mimetic* refers to the decline of the representational and mimetic tradition of theatre, which relate to the Aristotelian paradigms. *Intercultural* is the embracing of the multiplicity of cultural values, which according to the authors also involves the intersection of different disciplines. Hence, interculturalism also involves interdisciplinarity. Finally, *process-counscious*, in which dramaturgy becomes concerned with the evolution, stages and with elements of the performance production process.

These three characteristics are currently found in several dramaturgical explorations, and, in order to give an insight of how vast the disciplinary field of *new dramaturgies* is, it includes the dramaturgical proposal of Peter Eckersall *Towards a dramaturgy of robots and object-figures* (2015), Cathy Turner's dramaturgical study of architecture and the built environment in *Dramaturgy architecture* (2015), and Alex Mermikides (2014) who reflects on a dramaturgy of medical science performances.

The core concept of this research, *space dramaturgy*, does not aim to circumscribe space to scenography, but to explore space as a performative language generated by spatial interactions between people and their environments. The objective is not to build a *space dramaturgy* focused on digital or interactive scenography as a scenic support for professionally trained performers. *Space dramaturgy* focuses, instead, on the relationship of the public with an interactive installation artwork. Thus, the approach of this research on dramaturgy concentrates on the public's participation in the artwork. The following section completes the contemporary overview of dramaturgy through the analysis of theories on spectatorship in order to provide a dramaturgical investigation of participatory spectatorships.

1.4.1. Dramaturgy towards spectatorship.

This section singles out an aspect that has been recurrent throughout this chapter: spectatorship. It analyses theoretical views of active and participatory audiences, which is one of the crucial aspects for developing the research of *space dramaturgy*.

Dramaturgical practice always involves spectatorship. Chapter 1 has highlighted this crucial concern of dramaturgical practice through the study of authors Marian Van Kerkhoven (2009a), Eugenio Barba (2010), and Marco De Marinis (1987). The views of these authors included reflection about dramaturgy as a method to anticipate and lead the performative effects towards gaining a public reaction. In particular, De Marinis draws on a dramaturgy of the spectator, upholding that dramaturgy is a "manipulative strategy aimed precisely at this structuring of the spectator's attention" (1987, p. 106). He divides the dramaturgy of the spectator into two types that complement each other: passive and active, which he also describes as objective and subjective. The objective dramaturgy takes the public as a target for all the decisions of the *mise-en-scène*. In contrast, the type of dramaturgy focused on the spectator as a subject instead of an object, takes aspects such as perception, interpretation, and emotional and intellectual response into the dramaturgical work. De Marinis describes a style of dramaturgical work that approaches the overall performance as a form of communication with the audience. This type of dramaturgy, according to De Marinis, aims the production of 'open performances', which give the spectator more freedom to make different interpretations. He also profiles a dramaturgy of reception that manipulates the spectator's attention. However, he recognises the changes that spectatorship was subjected to in the last decades. Audiences are today more participatory, aware and emancipated.

Jacques Rancière advances the idea of *The emancipated spectator* (2009), deliberating about the dichotomy of passive and active spectator. He emphasises the pejorative sense that is often given to passivity in spectatorship as opposed to a favoured active

participation of the public. Participation was frequently used for the purpose of inducing a critical response, to create socio-political awareness, or to reduce the gap that separates the performance from the public. Interactive media artists frequently contemplate the public's participation in their artwork, which is often understood as physical engagement. In participatory spectatorships, the members of the public are invited to take part in the artwork. For instance, returning to Gordon Pask's *Proposal for a cybernetic theatre* (1964), the practice of participation is translated as an effective and actual physical action carried out by the public. However, Rancière takes the concept of participation beyond physical engagement.

Rancière puts forward an interesting analysis of the two poles of passive and active spectator. He asserts that the spectator's emancipation happens at an intellectual level, and each carries sufficient knowledge and experience to feel, interpret and transform information while watching a performance. Emancipation "begins when we understand that viewing is also an action that confirms or transforms this distribution of position" (2009, p. 13). Briefly, Rancière stresses the idea that, even when just watching a play, for example, each spectator contributes by making interpretations. According to him, the act of seeing is also a non-passive act in spectatorship. Thus, there is a refusal of the conventional contradiction of passive and active spectatorship in contemporary art.

This section has aimed to contextualise the approach of this research on dramaturgy, emphasising emergent ideas on new types of spectatorship. As text is no longer (necessarily) the leading element in performance, dramaturgy encounters today new exploratory fields and emergent types of audiences. Lehmann (2006) believes this transformation in dramaturgical practice to be a consequence of technological development and its significant impact on modern society. He also claims that the technological development has transformed ways of perceiving, which now assimilates information at a much faster rhythm. However, it is not only a change of perception that needs to be accounted for in this research, but also the fundamental changes in social dynamics. New technologies have been able to re-shape social inter-relationships

and the sense of collectiveness, engendering types of audiences more willing to participate. Nicolas Bourriaud (2002) also corroborates this view in his theory of relational aesthetics. He points out that the increasing desire of the social collective to be more participative in the cultural and artistic sphere is also a consequence of the emergent technologies.

This context is essential for the approach of this research to the dramaturgical function towards spectatorship. Applying dramaturgy to interactive art installation immediately places the research within the realm of participatory audiences. Nonetheless, the notion of participation and interactivity is still an open academic debate, in spite of the rich artistic work developed in the past decades focused on the public's participation. Rancière sheds light on the concept of active and passive spectatorship that highlights the idea of participation. His theories feed into this research a broader understanding of participation that is not only defined by physical engagement, but also through intellectual appreciation of art. This establishes the first bridge between dramaturgy and interactive art installation, since participation is a vital idea to define the role of the public in this area.

To conclude, dramaturgy is a strategy of perception and reception. Artistic reception is the driving force of many of the aesthetic explorations of new performance languages, which can result in the changes of modes of perception and communication that Lehmann referred to in his *Postdramatic theatre* (2006). De Marinis and Rancière uphold the position that the public is able to contribute with their subjectivity and intellectual abilities. In other words, it is the intellectual abilities like the interpretation of information that complements the artwork, by producing a synthesis of the aesthetic experience. When it comes to participation, it is fundamental to account for the public's subjectivity, involving the public in a unique experience, as the starting point for a participatory engagement. The dramaturgical enquiry of this research investigates these aspects of participation, acknowledging the public's subjectivity.

1.5. Conclusion.

This chapter has drawn on a comprehensive explanation of dramaturgy, exploring the concept from a range of perspectives: from generic overview to historical and contemporary analysis. The first step towards the examination of the concept was to identify the general lines of dramaturgy, uncovering the ideas of structure, analysis, and composition regardless of artistic and historical context.

A line-up of experts, including Marianne Van Kerkhoven (2009a; 2009b), Cathy Turner (2008; 2015), and Katalin Trencsényi (2014; 2015) to name but a few, supported the arguments by defining dramaturgy as a practice that aims to weave performative composition. Dramaturgy is, therefore, a practice dedicated to building a structure for performance, to set up enquiry, and analyse the means of building that structure. Despite the lineage that is common to most artistic approaches, dramaturgy is today a hybrid discipline that spans a range of artistic practices.

Briefly, the discussion in this chapter identified the application of dramaturgy within particular artistic scenarios: product-led dramaturgy, which is usually found in institutional theatre and works towards a particular play; and process-led dramaturgy, a dramaturgy that positions itself close to the creative process. Moreover, according to dramaturgist Katalin Trencsényi (2015), dramaturgy relates to curation, art criticism, and supports the development of performance that, depending on the requirements of the art project, can be more or less close to the creative process. This multiplicity makes dramaturgy a complex discipline, and it can be challenging when it comes to find a clear and universal definition. Its artistic diversity and historical evolution lead to the conclusion that a universal definition of dramaturgy is likely to be unreliable, especially when referring to contemporary performing arts. However, the overview of the historical and contemporary landscape of dramaturgy identifies common areas that

allow the research to find the core ideas that define dramaturgical work. Dramaturgy in its simplest clarification is *to put things together* in order to create a performance. The differences are the chosen methods that respond to specific artistic views.

Hans-Thies Lehmann's *postdramatic* theory (2006) provides this research with a reflection on the impact of technology in the performing arts, and the type of relationship that is established between these two fields. Lehmann attempts to convey the artistic diversity in performing arts through the concept of *postdramatic* theatre; however, the reflection remains in many ways unsatisfactory. Firstly, Lehmann claims theatre has overcome dramatic tradition, and he attempts to develop a broad term that could embrace a vast diversity, and types of artistic practices. His arguments possess a good foundation as the traditional or classic dramatic models are too rigid to be fully adaptable to contemporary artistic experimentation. Nonetheless, drama has not disappeared from theatre; on the contrary, and as Joseph Danan (2014, p.3) pertinently points out, new dramatic forms are still emerging. Thus, there is a question mark around the notion *postdramatic* - whether this concept can indeed serve as an umbrella to a vast and increasing variety of artistic experimentation within the realm of performing arts. Secondly, Lehmann characterises *postdramatic* theatre as a type of performance that no longer possess synthesis or a plot. This is also an unresolved statement, implying that contemporary performance no longer makes use of plot and synthesis. However, does the apparent irrelevance of plot and, in particular, synthesis apply to all contemporary performance practice?

In traditional dramatic theatre plot and synthesis are determined by rigid structures aiming at a coherent narrative, which can constrain artistic exploration. This chapter included an analysis of two pillars of traditional dramatic plot structure, which are constructed towards a specific dramatic effect. Although *Poetics* and the *Hamburg dramaturgy* are two straightforward depictions of a dramatic structure, the classical dramaturgical principles could hardly be applied to an experimental dramaturgy that focuses on the spectator as a subject, allowing the possibility of subjective

interpretations of a performance. This is also a model that does not satisfy the requirements of other fields within the performing arts, such as performance art, dance or, as in this research, interactive art installations. In Aristotle, and Lessing's theories it is possible to verify the objectification of the audience, not including the possibility of the audience's subjective interpretation. The dramatic effects are an outcome of the dramatic structure of the plot. However, contemporary practice produced a shift in the effect of drama and performance, by acknowledging the role of the public's subjectivity. De Marinis distinguishes passive spectatorship from active, affirming that: "in a passive or, more precisely, objective sense in which we conceive the audience as a dramaturgical object, a mark or target for the actions/operations of the director, the performer, and, if there is one, the writer"(1987, p. 101).

Experimental or emerging dramaturgies can even adopt openness in the production of meaning, allowing each spectator to contribute to the artwork with his or her own interpretation. Lehmann suggests that the fragmentation of contemporary performance, the simultaneous types of communication, and synesthetic perception, resulted in the absence of synthesis of performance (2006, p. 83). Within the contemporary performing arts context, with the increasing experimentation with technology, the notion of synthesis cannot be understood according to traditional dramatic parameters. Instead, it needs to be framed within the new forms of artistic language in performance that often mixes signs based on visual communication, sound, or movement. Dramaturgical work can still be determined by the structure of signs, and focused on organising the performative action.

Overall, this chapter aimed to profile dramaturgy as a practice, and as an all-inclusive discipline. The overview concentrated on dramaturgy's basic functions and understands the different methods in order to provide performance with a structure. This overview allows the research to find a common ground for dramaturgical enquiry, based on the ideas of structure for elements and critical analysis. Structure and critical analysis were emphasised through the brief examination of Aristotle's *Poetics,* and

Lessing's *Hamburg dramaturgy.* The historical background exemplified how structure of compositional elements and critical analysis can become part of dramaturgical practice. Structure and critical analysis are two vital notions for this research on *space dramaturgy*. They are essential for the investigation of the performativity of interactive art installation during the creative process. In addition, the ideas of structure and critical analysis are put into context through theoretical perspectives such as Lehmann's *postdramatic* theory, and the paradigm of *new dramaturgy*. These perspectives depict the state-of-the-art of contemporary dramaturgical practice, and offer an inclusive body of academic work that points to how dramaturgy is integrating technology and multi-sensory scenic composition. The research also includes dramaturgical perspectives, and art criticism that take on the subjectivity of the audience as a method to investigate the audience's active participation.

This chapter aimed to examine the concept of dramaturgy in order to create an understanding of this practice, and to isolate pertinent aspects for the investigation into *space dramaturgy*. The following chapters of this thesis illuminate each step of the developmental processes of *space dramaturgy*, culminating in the production of an interactive installation, and its public presentation. It will include an analysis of the compositional elements of the practice, focusing on the specific definition of the relationship between space, body, and technology.

Chapter 2. Defining the conceptual ground for *space dramaturgy.*

2.1. Introduction

This chapter examines the theoretical background that defined the compositional elements for the investigation into *space dramaturgy*. It presents two complementary strands that build the ground for the research practice. The first strand consists of the critical analysis that forms a philosophical and theoretical background for the compositional elements: space, body, and technology. The second strand, analyses the concepts of performativity and interactivity, examining the specificities of both concepts in artistic practice.

The first part of the chapter begins with the philosophical theories of Maurice Merleau-Ponty (1962; 2004), and Gaston Bachelard (1969), in order to determine the relationship between body and space. These two philosophers have developed spatial theories framed within the realm of phenomenology. Thus underpinning the role of sensory perception in the process of knowledge (Merleau-Ponty, 2004), the importance of lived experience, and the psychological impact of space (Bachelard, 1969). These philosophical strands position this research within the realm of the subjective and sensory experience of space.

The relationship between body and space continues to be developed in this research through the theories of the collectiveness of space, which includes the analysis of site-specificity, and place-identity in urban environments. Miwon Kwon, *From one place to another* (2002), Henri Lefebvre, *The production of space* (1991), and Marc Augé, *Non-places* (1995), have all written seminal works on how social phenomena, determines the collective dynamics of space in modern society. Miwon Kwon, for instance, relates site-specificity in artistic practice to the problematics of alienation, and loss of space-identity in urban societies. She deems this to be the consequence of the capitalisation, and commercialisation of public urban spaces. Another point of view upon the

collectivity of space belongs to Henri Lefebvre who formulated the theory of the social production of space, in which he includes an analysis of the capabilities of the collective body to generate space.

The third compositional element for the development of a *space dramaturgy* is technology. In this chapter, the research focuses mainly on the conceptual context of technology. It investigates the concept of *machine aesthetics* with the support of a brief historical review of the 20th century avant-garde movements. *Machine aesthetics* is based on the idea that technology can be understood beyond its functionality. To clarify, technology is not confined to the idea of technical support applied to artworks for the creation of visual, or audio effects. Technology is also a means of artistic exploration of aesthetic languages. This perspective sets a goal for the research practice, which takes on the concept of *machine aesthetics* in order to bring visibility to technology.

The theoretical background of the compositional elements guided this research towards exploring the performativity of space in interactive installation art. However, the theoretical and conceptual framework of the compositional elements is concluded with a critical analysis of the concepts performativity and interactivity. The aim is to create a comprehensive understanding of the theoretical support that prepares the field for the research practice.

The first concept to be analysed is performativity. This is supported by the arguments of J.L. Austin's *What to do with words?* (1975), Richard Schechner (2002; 2003), and Mieke Bal's *Travelling concepts in the humanities: a rough guide* (2002). The purpose of this study is to firstly make a distinction between performance and performativity, and break the confusion that performativity is anything that is a performance, which is a point of view corroborated by Schechner (2002). Therefore, the clarification of the two concepts aims to demonstrate that, in spite of being intrinsically connected, they are

two different concepts. Briefly, performance is an action or a *doing something,* which implies the execution of a determined behaviour. Performativity, on the other hand, is the effect of such an action, often causing a transition, or transformation of someone's state or situation, legitimising performance as a unique and unrepeatable event.

Interactivity is the last topic to be discussed in this chapter, and it is equally as complex as performativity. Although, in order to analyse the idea of interactivity, the approach to this concept differs as it will be addressing a wider theoretical scope. The sections dedicated to interactivity use the artistic reflections of Golan Levin (2006a), and Myron Krueger (1983), theories of design interaction (Pangaro et all, 2009), and art (Shanken and Stiles, 2002), and critical reviews such as the essay *Troubles at the interface* (2004), written by Erkki Huhtamo. The aim is to get to the core of the concept of interactivity by bringing together a critical analysis of the conventional ideas associated to interactivity, and the exceptional views held on this concept. This theoretical scope is confronted with the research database in order to visualise the impact of technology in the use of interactivity. Additionally, the graphic visualisation shows how interactivity relates to experience, and determines the relationship of the public with the artwork. The primary aim is to identify the connection between interactivity and performativity.

To summarise, this chapter prepares the conceptual ground for the development of my practice, which consists in the production of an interactive installation that reflects the performativity of a space.

2.2. Phenomenology of space: study into the medium of experience.

The first step of this research into a *space dramaturgy* is to examine spatial theories that belong to the realm of phenomenology. This strand of philosophy is the major support for the exploration of the subjectivity of space, which looks for personal and sensuous experience as a primal source for the establishment of inter-relationships within the collectiveness of space.

Renowned architect Peter Zumthor described his dual relationship with space in *Thinking architecture* (2010). Zumthor takes the reader into an introspective, and sensuous journey of architectural environments, interweaving the personal experience of architecture with reflections on design. His book, focused on the essence of architecture, is a self-reflecting exercise that brings together human experience with space, and its materiality. Zumthor's reflections on architectural design echo Martin Heidegger's (1993) thoughts on the relationship between building and dwelling. Zumthor discusses the varying degrees of relationships that humans have with the environment, and how that experience can lead the pragmatism of design as much as aesthetics. He highlights an architectural experience that is a primary concern of this research: the exploration of performative environments involving the personal and subjective spatial experience.

Zumthor's architectural thinking provides an organic analysis on the relationship between experiencing and making (designing). He reveals an architectural expertise that is shaped by knowledge, and the sense of awareness linked to memories and lived experience. In *Thinking architecture*, he discloses an examination of space in a seemingly phenomenological way, highlighting the individual and subjective experience within an intellectual process of spatial awareness. Individuality and subjectiveness are essential aspects for the enquiry of this research on *space dramaturgy*, as the practice

includes the understanding, and anticipation of the audience experience of space. This connects with the idea discussed in Chapter 1, which described dramaturgy as an exercise on envisioning the public's reception. Whilst the application of spatial theory to a performative installation is the main concern for this research on dramaturgy, the study also looks for strategies to generate a participatory engagement of the audience.

Besides Zumthor and Heidegger, Gaston Bachelard also addresses in his seminal book, *The Poetics of space* (1969), the experience of architectural space. Bachelard conducts a phenomenological examination of the house in order to demonstrate "that imagination augments the values of reality" (Bachelard, 1969, p.3). Using literature and poetry references as the main resources for philosophical analysis, Bachelard explores the relationship between the human mind and space as a stimulus for the imagination.

Like Zumthor, Bachelard also takes the reader on an introspective journey into the inhabited space. Nonetheless, he goes deeper into a level of a transcendental space located beyond the boundaries of the physical world, where memory and imagination determine the meaningfulness of spatial experience. The philosopher sees the house as an experience that takes the human mind back to its origins. The house is a place charged with unity and complexity that integrates the past, present, and future, giving a feeling of shelter and protection where memories of past houses, especially from childhood, merge with the imagination weaving a narrative thread for spatial experience. This phenomenon reflects the cumulative process of memory. At every new contact with a house or spatial environment, past memories are invoked influencing the way space is perceived. Hence, Bachelard frequently refers to the house as an entity that appeals to thoughts and daydreams whereby the past is brought to the present. His phenomenological topoanalysis delves into the most intimate levels of the human mind, transforming topoanalysis into a psychoanalysis of space searching for the space of happiness and wellbeing:

All our lives come back to live in our daydreams. A psychoanalyst should, therefore, turn his attention to this simple localization of our memories. I should like to give the name of topoanalysis to this auxiliary of psychoanalysis. Topoanalysis, then, would be a systematic psychological study of the sites of our intimate lives (Bachelard, 1969, p. 8).

Bachelard's theories of the phenomenology of space provide this research with an understanding of space that is grounded in psychological perception without disconnecting from sensory experience. He creates a psychological framework to understand how space becomes meaningful to us. The human mind decodes the physical attributes and arrangements of space capable of relating to spatial surroundings, and gives it significance. Hence, Bachelard associates subjectivity of spatial perception with pleasure. His theories on space highlight fundamental mind processes that happen in any given spatial experience: memory and association. Pleasure and happiness are mental states that emerge when space, environment, or architecture appeals to memories, and stimulates associations between different realities, thus making space meaningful. Whilst developing a topoanalysis of wellbeing, Bachelard creates a critical thinking about pleasure and place, which can be applied to artistic creation, and reflection. For this research, Bachelard's philosophy opens a multitude of possibilities for the establishment of a relationship between the public and art installation that is based on spatiality. It prepares the field for the exploration of spatial narratives that are created through external sensory stimulus of spatial surroundings.

Bachelard's philosophical analysis of daydreaming is strengthened with the introduction of the concept *immensity*: "One might say, that immensity is a philosophical category of daydream" (1969, p. 183). Whilst daydreaming, the human mind is transported outside the physical world, and enters into an infinite world. Immensity is the enlargement of memories by means of imagination. Here, Bachelard presents a paradox: through our inner immensity we can give meaning to certain expressions of a real and visible world. He uses the image of the forest in order to

illustrate this idea: the forest allows one to go deeper into the vastness of a world with no boundaries, entering into a psychological transcendence that enables us to express our inner depth.

Immensity, in Bachelard's phenomenology of space, becomes the highest expression of the coexistence of inner and exterior space, or the virtual and physical space. The philosophical contemplation of *immensity* culminates with a reference to Phillipe Diolé's book *Le plus beau desert du monde* (1959). The book describes the experience of the desert – a space that immediately fulfils the mind with the idea of *vast* unlimited space – and how it becomes the expression of inner immensity. Bachelard pays a particular attention to a parallelism in Diolé description of the desert. Diolé[16], who was a deep sea explorer, and familiar with the sensation of being in the ocean's depths, noticed that when he experienced the desert, a completely alien environment for him, his inner being changed. In both cases Diolé experienced depth, but being in the desert challenged his perception of space, and thus he became aware that the new environment became part of his intimate space.

Bachelard's perspective on the relationship between the body and space is clear in the description of the experience of the desert. *The poetics of space* is an exploration of how spaces are embodied, and form part of the human consciousness and sub-consciousness. Spaces are assimilated on the inside and projected towards the outside. Throughout his book he emphasises the importance of memory as a determinant factor in lived experience of space, producing a cumulative process of what was perceived and felt before in similar spatial contexts. Every time that this process produces

---

[16] Bachelard describes it as space-substance and one-dimensional space. Bachelard also narrates Diolé's experience: "At the end of his book, Diolé concludes that 'to go into the water, or wander into the desert, is to change space', and by changing space, by leaving the space of one's usual sensibilities, one enters in communication with a space that is physically innovating. 'Neither in the desert nor on the bottom of the sea does one's spirit remain sealed and indivisible.' This change of a concrete space can no longer be a mere mental operation that could be compared with consciousness of geometrical relativity. For we do not change place, we change our nature" (1969, p. 206).

experiential contrasts it generates an awareness of how the body is situated, and how it integrates itself within spaces. Hence, Bachelard deduces that when one changes place or space, it changes itself.

As part of this dramaturgical enquiry, the conceptual framework for space follows the premises of intimacy, subjective, and psychological experience. In terms of theoretical support, Bachelard's phenomenological analysis provides the research with a poetic point of view, showing that the human inner dimension and imagination can determine the significance of space and enhance its narrative qualities. The two main dramaturgical elements, body and space, become intrinsically connected within the realm of subjectivity. Bachelard's *The poetics of space* defines the value of space as a concept for this research, thus establishing the process towards the production of an art installation that offers the public an intimate relationship with the spatial surroundings. Nonetheless, Bachelard's spatial phenomenology is mainly concerned with the exploration of the virtuality of space, belonging to the world of memories and imagination. To some extent, this perspective is insufficient for the investigation of this research into spatial phenomenology. The research finds in Maurice Merleau-Ponty theories that complement Bachelard's spatial theory with an analysis of perception as a process of consciousness of sensory experiences. He develops an outstanding philosophical contemplation of perception and the role of sensory experience in the acquisition of knowledge.

In *Phenomenology of perception* (1962), Merleau-Ponty develops a phenomenology of space based on perspectivism, and how objects are not perceived as autonomous, but in relation to other objects in both spatial and temporal dimensions. He recognises that this philosophical way of thinking generates a paradoxical situation: the "dilemma of having to fail either the subject or the object" (Merleau-Ponty, 2004, p. 82). Objects and bodies are part of a system, or world, and relate to each other. The body is not

regarded as a subject but as another object in relation to other objects in space. This is what, according to Merleau-Ponty, constitutes the process of consciousness:

> The whole life of consciousness is characterised by the tendency to posit objects, since it is consciousness, that is to say self-knowledge, only in so far as it takes hold of itself and draws itself together in an identifiable object (1962, p. 82).

The paradox resides in the objectification of subjects (bodies), which abstracts bodies out of their subjectivity. The problem with this theory is that it generates an empirical fallacy: if the subject/body relates to other objects also assuming the position of an object, it will tend to believe that this relationship is as it appears to the senses. There is little place for subjectivity in this understanding of perception. Yet, it also analyses objective thinking through the separation of the subject from the objects, which is sometimes necessary to generate factual knowledge. This dilemma summarises the main points of Merleau-Ponty's philosophical thinking, thus revealing his phenomenological approach that conciliates empirical knowledge with intellect. He proposes the discovery of the world of perception as the means through which knowledge is produced, creating also a philosophical balance.

Merleau-Ponty's philosophical thinking remains close to empiricism, although he never disregards the importance of the intellect in the process of perceiving the world. The knowledge derived from the sensory experience is articulated through the intellectual capacities of the human mind. The eyes, ears, skin, the sense of smell, and taste are sources of embodied and structured information on the exterior physical world, but they cannot produce any cognition of that world in itself. Therefore, he develops a sentient psychology that establishes a bridge between sensorial experience and human intellectual ability, placing the body in the centre of the production of knowledge. There is a correlation between thinking and perceiving, which allows the sensory experiences to gain significance and to generate specific situations from those experiences. Hence, significance, or the production of meaning, is centred in the body.

Moreover, bodies also possess qualities of time or, in other words, the ability to construct a past, present and future. This refers to Bachelard who also discusses this ability of the human mind to create a timeline that unites the past and present: memory. For Merleau-Ponty memory is also a subjacent influential factor in the production of meaning in (spatial) experience. Through memory, the human mind recognises familiar objects or situations, and makes associations. Perception is, therefore, enhanced by memory. The link between memory, familiarity, association, and significance is paramount for the practice in this research. Perceptual experience, and memories associated with it, played a fundamental role in the first phase of the design for the interactive installation, which explored the narrativity of space.

Merleau-Ponty's spatial theory revolves around the analysis of the body and *being in the world.* Bodies are endowed with movement and the ability to interpret their position within a spatial logic. We apprehend our bodies within the frame of space and time, and in relation to external objects. It is within this frame that we constitute our sense of spatiality. Nonetheless, getting a sense of spatiality, according to Merleau-Ponty, is not merely positional, but situational (1962, p. 112). The relationship between objects and bodies inside a space-time frame form a system, and the situational sense of space is a result of how these elements are structured altogether. The ontology of space emerges from the synthesis of information gathered by our senses processed by the intellect. Consequently, bodies are able to situate themselves in space and establish a relationship with external objects, forming unique experiences. Spatiality becomes a composite totality of bodies in relation to objects, and objects to objects. These spatial relationships result from the bodily orientation, sensation of depth, and movement provided by visual perception, our sense of touch, or hearing. This idea defines space as a multidimensional reality where bodies and objects change when moved. Space is not a background. It is, instead, an arrangement of external objects, and the relationship that a given subject has with those objects.

This section began with Peter Zumthor's *Thinking architecture* in which the architect shares his thoughts on personal spatial experiences, and architectural environments as being determinant factors in his architectural design. To some extent, his reflections on architectural design mirror the phenomenological way of thinking found in Bachelard's and Merleau Ponty's theories on knowledge, consciousness, and perception. Our experience of the world is subjective and individual, but can be transformed objectively in order to permit others to perceive it, for instance an audience of an artwork. Zumthor presents a type of thinking about space that meets the aims of this research: to explore the value of subjectivity, memory, and imagination in relation to sensory experience, and how these ideas can determine the use of space in artistic creation.

Phenomenology is a philosophical movement focused on how experienced things appear to human consciousness, "which emphasises the attempt to get the truth of matters, to describe *phenomena,* in the broadest sense as whatever appears in the manner in which it appears" (Moran, 2000, p.4). Bachelard's, and Merleau-Ponty's phenomenological philosophy of space focuses on subjective experience. This is the main premise for the development of a *space dramaturgy* applied to interactive art installation. Instead of taking on the broadness of the concept, it focuses on the phenomenology of space as the beginning of a dramaturgical enquiry. Like Zumthor's self-reflective analysis of architecture, it looks into the possibility of exploring the subjectiveness of space as an avenue for the creative process.

Overall, both Merleau-Ponty, and Bachelard clarify the relationship between the body and space. They highlight the connection between sensory experience and intellectual ability in the process of perception. The arguments about space are centred on the body. Merleau-Ponty and Bachelard consider that space is beyond its materiality, with particular physical attributes and geometry, and recognise that is apprehended by the body. They assert the importance of human attributes such as memory, imagination,

sensibility, and rationality. Therefore, space is not an absolute reality, but is instead flexible and free from rigid formations.

The study into these two phenomenological theories of space defines the arrangement between body and space. It places the body in the centre of this relationship, and underpins the individual, subjective, and psychological aspects of spatial experience. The concept of space for this research draws on an amalgamation of relationships and interactions. In addition, it also reflects on personal and individual spatial relationships as a means to generate an artwork.

The spatial theories discussed in this section build the basis for the investigation of the narrative potential of space, how it gains significance, and generates social or individual situations. However, the research is not limited to phenomenological theories of space. These theories prepare the ground for artistic experimentation and enquiry, defining the initial paths for the practice in this research. Bachelard's, and Merleau-Ponty's views on space are embedded in the initial concept for an interactive installation, focused as it is, on the subjective relationship with space. The research also suggests that the result of these personal, individual, and subjective interactions with space engenders collective synergies with a performative potential. Therefore, the starting point is to use a phenomenological description of perception, and space, to engage the public in an intimate interaction with an installation, and then observe what type of collective performative interactions may emerge. Hence, the philosophical scope of the research is not crystallised around phenomenology. The theoretical investigation expands into theories concerned with social and collective aspects of space.

To conclude, the dramaturgical questions that emerge from the study into these phenomenological perspectives are: how may we incorporate subjective spatial experience in a creative process? And, how may we use perception, in both sensory and psychological dimensions, as a means to build an interactive installation that may

reframe spatial experience, or challenge common spatial logics? These questions provide the initial guidelines for the practice in this research. They also represent the first dramaturgical enquiries on the application of phenomenological theories of space to the building of an interactive installation. This will be further discussed in Chapter 3: *Generative practice.*

2.3. Site-specificity, social and place-identity.

After the investigation into phenomenological theories of space, this section expands the analysis of space theories into site-specificity, place-identity, and the collectiveness of space. The introduction of these concepts in this research is supported by a theoretical framework that includes Miwon Kwon (2002), Henri Lefebvre (1991), Harold M. Proshanky et al (1983), and Marc Augé (1995).

The aim is to create a dialectical discourse on the relationship between body and space in order to enrich the proposal of a *space dramaturgy*. Whilst phenomenology emphasises the value of the senses, and the individual and subjective spatial experience, the theories into collective aspects of space underline the relational, and social dynamics of spatial interactions. The expansion of the theoretical field is part of the research of dramaturgical decision-making, thus aiming to define the direction for the practice in this research. It situates the practice within the realm of site intervention and performance, creating a connection between the individual and collective experience of space.

In her book *From one place to another* (2002), Miwon Kwon discusses the broadness and multiplicity of site-specificity in artistic practice. She analyses an array of artistic projects in the areas of site intervention, performance, and public art. Kwon makes the *genealogy of site-specific* (2002, pp. 11-32) in which she traces the historical evolution of site-specific art. She outlines three paradigms of site-specificity: phenomenological, social-institutional, and discursive. Focusing on the phenomenological model, it centres on the physical elements of the location of the artwork, the importance of its environmental context. In addition, these artworks rely on the sensory experience of the public who become an essential element of the artwork. This paradigm links the two theories discussed in this thesis, phenomenology and site-specificity, thus

demonstrating that they are not opposites, but in fact two complementary views on space as a concept for artistic practice.

The practice in this research explores the performativity of space through the juxtaposition of individual with collective experience. Building a performance with an interactive installation leaves no need for the use of professionally trained performers, and aims to get the attention of people circulating within particular architectural space. The individual and subjective experience of space, which Bachelard, and Merleau-Ponty subscribe to, gives the public a role as a participant in the artwork. However, the installation also relates to a type of architectural space within a collective context, thus merging the individual experience with a collective and social dynamic.

Space is an amalgamation of sensory-based experiences and dynamic interactions between all its components and subjects. Shared spaces, whether private or public, indoor-outdoor, are the best examples of multi-layered and dynamic interactions. These types of spaces have a live element that results from unconscious choreographies to spatial, and even social, disruptions. Judith Rugg, in *Exploring site-specific art* (2010), also asserts that the interstitial nature of space brings up the performativity of everyday life:

> Space can be regarded as a site in which forms of identification and alienation are performed and where the production of social and power relations are revealed, reproduced and maintained. (2010, p. 53).

Rugg identifies the relational features of space as where the dynamics of everyday life performance are defined. Space is a multi-layered social network full of entanglements and divisions. She observes that the performativity of everyday life emerges from the interaction and interrelationship of the collective, which is constituted by a plurality of individual bodies. Rugg also states that the performativity happens in the disruption of

the normative of the collective in spatial relationships, when the normative of space is altered, and behaviours change.

This research has been analysing space from the point of view of how sensory perception impacts people's behaviours, even within the collective sphere. However, in order to deepen the analysis of the relationship between space and body, it is fundamental to ask to what extent this relationship is reciprocal. Therefore, the research poses two questions: Do bodies while inhabiting space endow it with new qualities? And, can bodies, with their organic characteristics, prevent space from absoluteness, and transform it into a dynamic reality? Philosopher Henri Lefebvre (1991) tackles these interrogations in his deliberation on the social production of space. He contends that bodies are also capable of generating space: "each living body *is* space and *has* its space: it produces itself in space and it also produces that space." (1974, p. 170).

Lefebvre observes a relation between the body with all its capacity of movement and bilateral orientation, and the generation of space. The relationship of the body with its surrounding, endows space with symmetry, a characteristic essential for spatial orientation. According to Lefebvre, space is defined by duality (right-left, up-down, front-back), and the release of energy. Humans are capable of leaving traces behind that alters space. For Lefebvre, the spatial body emerges from the physiological and social practice.

Site-specificity in artistic practice involves the capacity of producing a work of art that is responsive to space. Moreover, the research also asserts that responsiveness in spatial relationships is reciprocal. However, the concept of space within the frame of site-specificity is still broad, and needs to be specified in order to understand the responsiveness of spatial relationships. The final concept to be analysed in this section is place-identity, an idea implicit in site-specificity.

The term is almost self-explanatory since the idea of place already implies an association to identity. Edward Casey (1998) suggests that modern conceptualisation of place is endorsed by phenomenology of space. Augé (1995) also takes on phenomenological analogies of space in the distinction of place and non-place. Casey holds his argument in Bachelard's psychoanalysis of space, whereas Augé includes Merleau-Ponty's existential space as "the scene of an experience of relations with the world on the part of being essentially situated 'in relation to a *milieu*'" (1995, p. 80). Once more, phenomenology is used to reinforce the connection of space related ideas, in this case of place, to the body.

Assuming that the presence of people in spaces, and the use they make of it is what makes space significant and, therefore, a place, there is a problem in the place-making of contemporary society. Augé (1995, p. 78) claims that if a space loses its relational properties, history, or identity it would be a non-place. Since the boundaries between private and public space have been blurred, it jeopardises the sense of belonging: a sense of place. Miwon Kwon (2002) also recognises this problem and suggests there is a crisis of place-identity. She points out the impact of deterritorialisation and mobilisation in the relationship between space and identity, which she calls the theory of 'the wrong place' (2002, p. 157). This, she contends, is a consequence of the dissociation of place and identity. Alienation, defragmentation, the tendency to travel, and migration, characterise this place-identity crisis of modern society, thus resulting in a loss of uniqueness that usually site-specific art attempts to recover. According to Kwon however, it fails to fully manifest its social and political effectiveness.

Kwon's argument on the wrong and right place, tackles the problem of sense of belonging, an idea that defines place-identity. Proshansky (Proshansky et al 1983) asserts that place-identity is part of a cognitive process that is always in mutation and re-adaptation, from which the sense of belonging to a place emerges. This sense of

belonging to a place involves a social and cultural identification with a territory that can belong, for example, to a particular urban space or community. These experts in environmental psychology define place-identity as "a sub-structure of the self-identity of the person consisting of, broadly conceived, cognitions about the physical world in which the individual lives" (1983, p. 59). They claim that: "an important general function of place-identity is that it provides the *environmental past* against which any immediate physical setting can be judged" (1983, p. 66). Hence, according to this point of view, place-identity is more that just an identification with places of cultural, social, or political relevance, it is a cognitive process from which is created an environmental past. In addition, it is an accumulation of memories, feelings, and experiences related to places, including the physical, social, and cultural environment. The experience of a new space is determined by previous experiences, from which meaningfulness is produced.

Site-specificity and place-identity are crucial concepts for the practice in this research. These two concepts enable the exploration of the performativity, and narrativity of particular spaces, allowing the practice to create an installation that simultaneously responds and disrupts the spatial norms.

This section addresses ideas that complemented the previous reflections on the relationship between body and space. Body and space are two natural concepts for any art form, especially in the performing arts, in which theatre and dance have developed different understandings of these two concepts. Specifying the understanding of body and space, as well as how these concepts relate to each other, represents a vital stage for the research. The application of dramaturgy to interactive installation art is still a very unexplored field. Therefore, the concepts of body and space need to be specified and contextualised for this investigation into the performativity of interactive art installation.

In traditional theatre, dramaturgy helps to structure a narrative in which is included character development, creation of conflict, time, and spatial context. This structure is often deconstructed in experimental and avant-garde theatre, but it still maintains the contextual and situational structure that sustains the narrative. Performance art also frequently explores narrativity through situations shared between the audience and the artist. These are examples of dramaturgical logics where, despite the artistic differences, everything is bound together in a situational or contextual narrative structure. The adaptation of dramaturgy to an interactive installation also requires the establishment of contextual and situational logics. There are no characters or professional performers, and the performance aims to reach individual members of the public as a primary focus, but without disregarding the fact that it belongs to a collective. These aspects are determined by the discourse of body and space that are placed in situational contexts within two performative levels. Thus the individual and collective spatial experience, transform the established elements of body and space into a singular bi-dimensional element.

This section concludes the conceptual scope of the relationship between body and space for this research. This constitutes the main compositional elements for the development of a *space dramaturgy*. This study into spatial theory is the main influence for the practice. It led to the idea that transformed the approach of the research towards body and space. Thus, the practice proposes to build an interactive installation based on the idea of labyrinths and mazes. This choice was primarily influenced by the symbolism and familiarity of such structures. The architectural structure of such spaces offers the possibility of an individual and personal experience of space. Labyrinths and mazes are architectural spaces that individualise its user; however, it can also offer a collective experience, and possesses the potential for architectural intervention.

2.4. *Machine aesthetics* and the evolution of technology in art.

This section concentrates on defining the third dramaturgical element, technology, and contextualises this compositional element within the realm of *machine aesthetics*. It analyses the value of technology in artistic creation, focusing on various examples of performing arts.

Previously, the investigation focused exclusively on the conceptual articulation of body and space, combining phenomenology with theories around site-specificity and place-identity. Therefore, the aim of this section is to create an understanding of technology that could enhance this relationship between body and space, from the point of view of aesthetic experience. The research tackles the concept *machine aesthetics* by drawing on performing arts historical examples that integrate technology as an aesthetic language.

The research approaches space and body as two concepts that orbit around each other in order to establish a sentient spatial experience. Moreover, the research defines space as a dynamic, pliable, and lively reality. Hence, there are dramaturgical questions to ask in order to define the role of technology within this framework from an artistic perspective:

1) What is the contribution of technology within the dynamic relationship between body and space?
2) How can technology be integrated as a form of artistic expression?

The first question looks into the role of technology in relation to body and space. The research asserts that technology enhances the relationship between these two elements. Technology is, therefore, the unifying element from an aesthetic point view,

and essential for transforming the concepts of body and space into an interactive artwork. In addition, technology is also a decisive element, because it provides a set of techniques and pragmatic thinking for the creation and design of an interactive installation. In order to create a balanced and coherent relationship between body and space, technology needs to convey the research's phenomenological premise, and to become the means through which is possible to create a sentient experience of space. Thus, technology is circumscribed within the scope of techniques related to physical computing technologies, including the use of sensors, actuators, or platforms, such as Arduino, as a way to express the sensory and physical attributes of space. Adding technologies like these enhances the sensory experience through movement, rhythm, and responsiveness, thus breaking the rigidity of space. The merging of body, space, and technology takes place through a tactile interactivity, and performativity of space.

The second question proposes a pragmatic decision on how to integrate technology in the process of the practice in this research. Whilst the first question is concerned with the integration of technology within the phenomenological framework of body and space, the second question deals with the aesthetic definition of technology, aiming to transform it into *machine aesthetics.* The aim of this research is to escape the view of technology as a set of tools and instruments, and address the machine like-properties of technological components as sources of artistic expression.

The term *machine aesthetics* implies a view of technology beyond the instrumentalist perspective, which associates technology to tools, instruments and techniques. Instead, it offers another meaning of technology: as a means of artistic expression, of critical thinking, and knowledge. The discourse around technology also develops into social-political analysis. Heidegger attempts to tackle the essence of technology describing it as a 'mode of revealing' (1977, p.13). Could this interpretation of technology as a *mode of revealing* be materialised through art? W. Brian Arthur (2009) admits that technology is still an undefined concept whether it is because it is an ever-changing

branch of knowledge and science, or because there is little effort from experts to find a steady and clear definition. Nonetheless, Arthur describes technology as purposeful. To put it differently, technology is what we make of it, and is defined according to human purposes:

> Viewed this way, a technology is more than a mere means. It is a programming of phenomena for a purpose. A technology is an orchestration of phenomena to our use (Arthur, 2009, p. 53).

This point of view enables us to think of technology as a means through which to convey artistic and aesthetic purposes. In Heidegger's sense, technology is a way of revealing nature, or scientific phenomena that are transformed for our use. Additionally, these perspectives demonstrate the value of technology for artistic practice, since it discloses aspects related to the social and cultural impact of technology. Hence, this understanding of technology is pertinent for this research, supporting the exploration of *machine aesthetics*.

Machine aesthetics is not a new concept, and there are historical examples of artistic artworks – namely in the performing arts – of the manifestation of this type of artistic language. The concept has evolved since the earliest decades of the 20th century, and it emerged as a response to transformations of diverse sectors of society - political, economic, social, and technological. For this reason, *machine aesthetics* is an expression of the impact of technology in society.

American historian Robert Heilbroner points out the importance of technological development for society: "Machines make history by changing the material conditions of human existence" (1994, p. 69). The technological and scientific revolution that took place during the 19th century completely reconfigured the social fabric by bringing new economic, and political models. By the beginning of the 20th century, the industrial development continued, and society witnessed the flourishment of engineering

innovations like the car, aeroplane, and the telephone, into the daily life. The fascination for these mechanical engines had a cultural repercussion on avant-garde movements, especially Futurism, Constructivism, and Dadaism. Rutsky (1999, p.13) suggests that the shift in the relationship between art and technology is a result of the interaction between different factors, including cultural, social, and economic. Avant-garde artists transformed the idea of technology, and the machine was not a simple sign of the new norms of society, it was also an expression of beauty.

Vsevolod Meyerhold and Oskar Schlemmer are two of the highest exponents of the *machine aesthetics* in the field of performing arts during the early 20th century. In both cases, *machine aesthetics* is manifested through the mechanical movements and rhythms of the body and scenography.

In the midst of the October Revolution of 1917 and the beginnings of the Russian industrial development, Meyerhold invented a new acting system, the biomechanics, characterised by exaggerated and mechanical movements of the actors. This new acting system was inspired by reflexology theories by William James and Pavlov, and the industrial innovations of mass production such as Taylorism and Fordism.

The aesthetics of the machine was extended to the theatre, intended for the amplification of the actors' performance. Meyerhold broke with the naturalistic conventions, the fourth wall, and making the scenic apparatus visible to the spectator (Bowlt, 1977, pp. 63-64). He also collaborated with the artist Lyubov Popova who designed the set for the *Magnanimous cuckold* (1922), for instance - a scenography that resembled factory machinery and unified the actors' performance with their scenic environment.
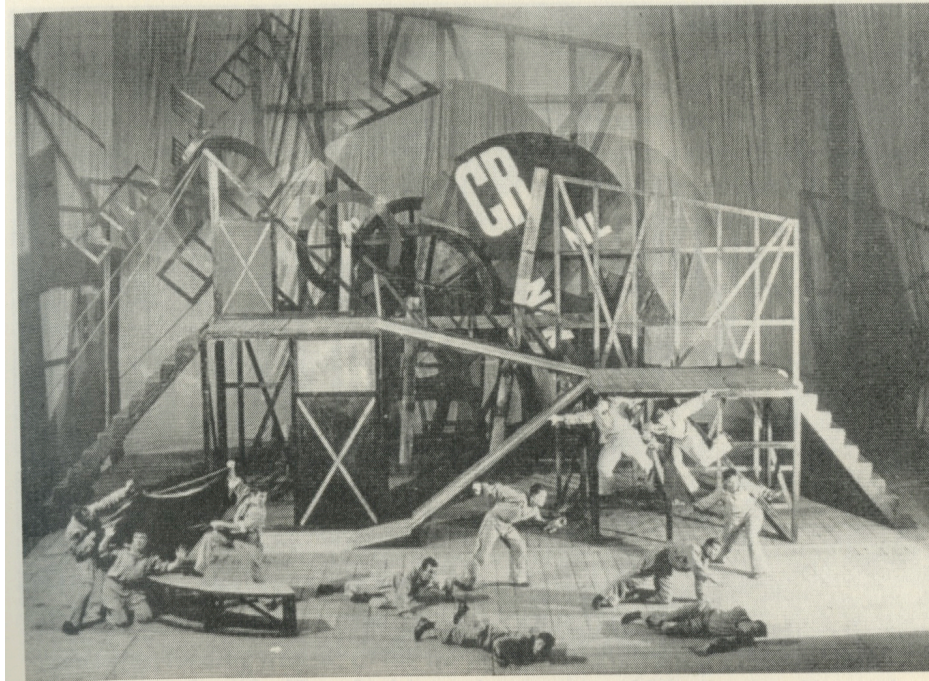
Figure 8. *The Magnanimous cuckold*, 1922 (in Braun, 1998, p. 180).

Figure 9. Actors performing in the *Magnanimous cuckold*, 1922 (in Pitches, 2003, p. 36)

Figure 10. Biomechanics exercises by Vladimir Lyuste (in Braun, 1998, p. 173).

Another example of the early 20th century avant-garde movement is Oskar Schlemmer who was in charge of the *Bauhaus Theatre.* While at the Bauhaus, he explored the bodily perception of space through the composition of movement that was inspired by mechanical technology. Nonetheless, Schlemmer's work was not confined to the mechanics of technological innovation (Trimingham, 2011, p. 332), he also explored the mechanics of puppetry influenced by Heinrich Von Kleist *On Marionette theatre* (1989).

Figure 11. Oskar Schlemmer's costumes for *The triadic ballet*, 1922*.*

Schlemmer and Meyerhold are examples of how art is able to reflect and make visible technological development, and impact on society. Both artists produced a body of work based on the modernity of technology, integrating it into their practice not as a

tool or instrument, but as a means of expression and putting emphasis on its cultural value. Meyerhold and Schlemmer created ground-breaking performative languages that expressed the rhythms, speeds, and repetitiveness of the machine functioning through the physicality of the body, and spatial design.

Machine aesthetics corresponds to a specific model often associated with avant-garde movements that emerged during the 1910s and 1920s. Throughout the 20th century, the exploration of *machine aesthetics* decreased as the integration of technology and the performing arts adopted other formats. The visibility of the machine that characterise *machine aesthetics* began to be replaced by the intangibility of the moving image.[17]

Joseph Svoboda pioneered the merging of cinema with performing arts. In 1958, during the Brussels World Exhibition, Svoboda presented the *Laterna magika*, a new concept that embedded cinematic technology and language into performance. The project was a hybrid form that combined cinema, dance, theatre, and concert. The crossover between image, human body and space, opened the way for new types of narrative and artistic language. The *Laterna magika* is an idea for a polyphonic theatre that aimed to create multi-sensory experiences for the public. Even though the *Laterna magika* did not possess the same artistic characteristics as *machine aesthetics*, it expressed in a similar way the cultural value of an emergent technology, in this specific case, cinema. *Laterna magika* was a response to the transformations of the act of seeing, and played with perceptional simultaneity. This is emphasised in Svoboda's description of the artistic goals of the *Laterna magika:*

---

[17] The aesthetics of the machine can still be found in the work of artist Arthur Ganson and Rebecca Horn, for example, whose work also explore the aesthetic properties of mechanism, which shows that *machine aesthetics* has not disappeared from artistic practice. However, this section focuses on *machine aesthetics* also to analyse the crossover between performing arts and technology and to examine the evolution of technology in media art.

Perhaps it threatens to compromise the mise-en-scène, but if properly controlled the *Laterna magika* technique is a wonderful artistic element. We see life differently today; our perception of reality has been accelerated. We do not look at a landscape as the nineteenth-century painters did, bit by bit and slowly, but as a rapid succession of images, like a movie. Yet theatre is not film or TV, though it may use them, for it must maintain an artistic space. The theatre cannot return to screen-like two-dimensional expression, but must seek the expansion and articulation of scenic space (Svoboda, Morris, & Munk 1966, p. 142).

Figure 12. *Laterna magika* performance, 1958 (in Havránek 2003, p. 102).

The second half of the 20th century also introduced another technological innovation that echoed in artistic practice – the computer. In 1968, the iconic exhibition at the ICA in London, *Cybernetic serendipity,* commissioned by Jasia Reichardt, gathered approximately 130 artists who presented works from film, sculpture, robotics, and cybernetic devices. Among the commissioned artists were Edward Ihnatowicz with *SAM (Sound Activated Mobile)*, and Gordon Pask with *Colloquies of mobiles.* The exhibition was a ground-breaking event for interactive art, launching a debate on the disciplinary crossover between computer science, cybernetics, and art. Additionally, it was also the first sign of the *democratisation* of the computer. Steve Dixon explains

how *Cybernetic serendipity* was a prediction of the computer as a social and cultural phenomenon:

> The computer's role as an accessible *art for all* machine would be confirmed later, when Apple released its very first home computer in 1984, which was sold with integral painting and drawing programs (2007, p. 102).

The exhibition's goal was to capture public attention to the merging boundaries between art, science, and engineering by getting the public involved with artworks that involved physical participation, and responded to human action.
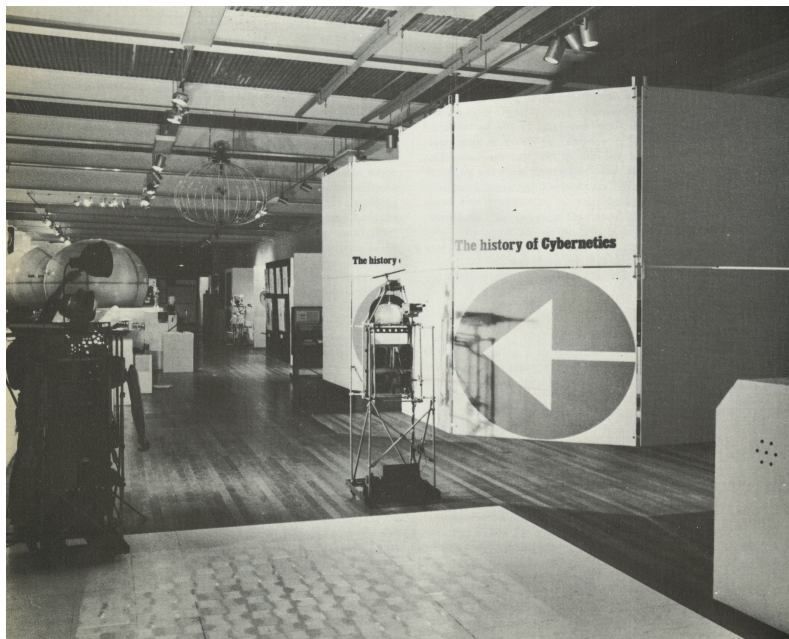
Figure 13. *Cybernetic serendipity* exhibition, 1968, ICA, London
(in Reichardt, 1971, p.12).

The artists that took part in this exhibition, ventured into what was still unexplored territory in 1968. Gordon Pask, Edward Ihnatowicz, Nam June Paik, and Jean Tinguely are some of the artists that not only participated in *Cybernetic serendipity* but also contributed for the flourishing of interactive media arts. Their contribution was the implementation of scientific principles, such as cybernetics, participation, conversation, and responsiveness into artistic practice.

These ideas had repercussions for the works of artists like Myron Krueger (1983) and his work *Videoplace*, David Rokeby with *very nervous system*, and Rafael Lozano-Hemmer with *Body movies*. Interactive media artists pushed the boundaries of the application of computer technology in an attempt to bring together art and the public. They did so by investigating methods and ways to create responsive environments that encouraged the public's participation. In addition, these artists also recognised the performative potential of participatory and responsive interactive systems, and continued to create possibilities for the intersection of technology and performing arts.
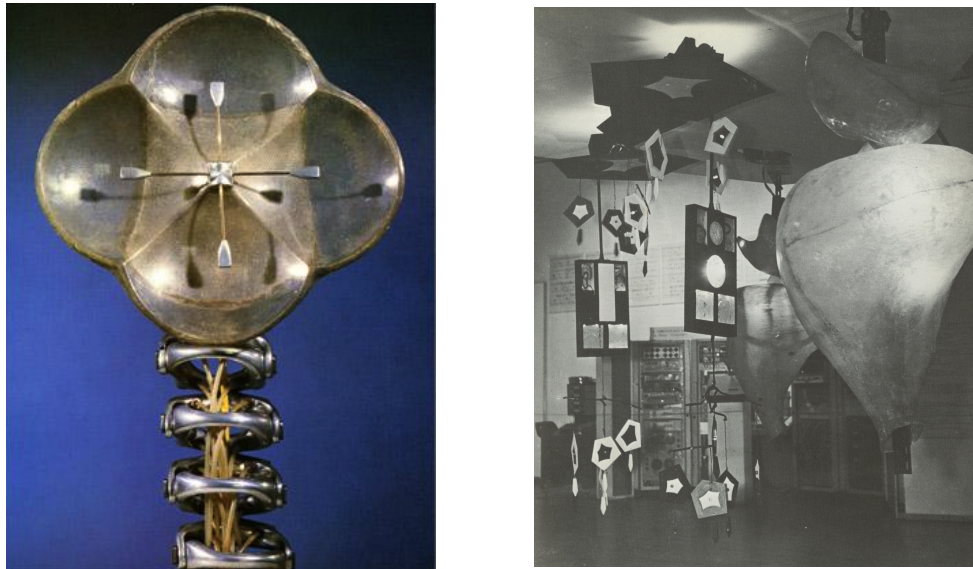
Figure 14. *SAM - Sound Activated Mobile,* Edward Ihnatowicz, 1968 (on the left) and *Colloquies of mobiles,* Gordon Pask, 1968 (on the right).

Returning to the second question presented in the beginning of this section, "how can technology be integrated as a form of artistic expression?", the selection of artistic examples confirms that technology can be successfully used to create new aesthetic languages. However, technological innovation transformed, over time, the idea of the *machine*, and subsequently, the artistic expression of the *machine* was also

transformed. Altogether, the historical examples described in this section illustrate the evolution of the relationship between technology and art.

The booming of digital technologies brought an intangibility, and invisibility of technology into artistic practice. As part of the observational work, the database of this research gathers a significant number of artworks in which the technological elements and components are often invisible to the public. Technology is only perceptible to the public through the visual or sound effects. For example, *Messa di voce* (2003), a project developed by Golan Levin and Zachary Lieberman, is a complex interactive installation that augments vocal sounds in order to create the illusion that the voice can be visible.
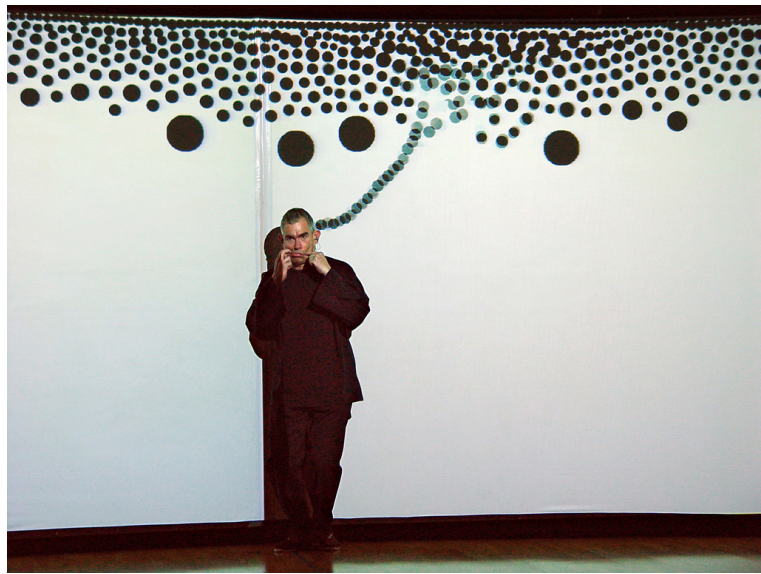
Figure 15. *Messa di voce*, Golan Levin and Zachary Liebermann, 2003.

To conclude, this brief historical review illustrates how the intersection between art and technology portrays social, economical, scientific, and cultural transformations. However, the *machine aesthetics* lost its historical momentum when cinematic and computer technologies began to take over artistic practice. This research finds inspiration in the concept *machine aesthetics* to unfold technology in all its

components, and define parameters for the development of the practice. Firstly, as a dramaturgical element, technology is intended to shape the aesthetics for an interactive installation and to involve all the elements together where the machine stages itself and becomes a spectacle. The aim is to explore the theatricality of technology within a spatial structure. Secondly, making technology visible enhances the sensory experience of space, allowing the public to fully apprehend the capacities of movement and rhythm of the installation's environment. Finally, the approach of this research towards *machine aesthetics* is not as a palimpsest of the avant-garde movements of the early 20th century. Instead, it is intended to generate a reflexive practice on the re-adaption of *machine aesthetics* and reflect on the evolution of technology.

2.5. Performance and performativity.

The previous sections offered definitions of the foundational elements for a space dramaturgy, namely, space, body and technology, and the relationship between them. As already discussed, the research's practice aims to bring performativity into interactive art, specifically apply it to interactive installations. However, in order to fully understand what is performativity, it needs to be distinguished from another similar term, performance. Hence, this chapter draws upon the theoretical contributions of Richard Schechner (2002; 2003), and Mieke Bal *Travelling concepts in the humanities: a rough guide* (2002), and J.L. Austin's seminal work *How to do things with words?* (1975), all of whom tackled the definition and differentiation of performance and performativity.

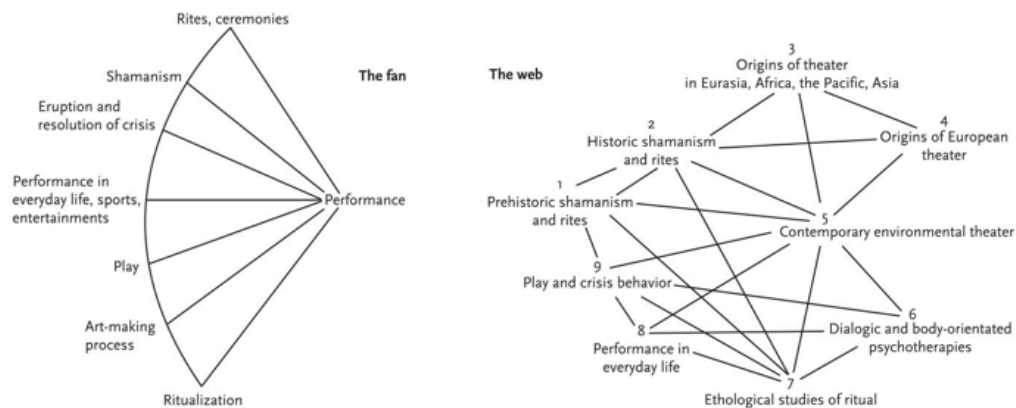**Figure 16.** Schechner's graphic visualization of performance studies (2003, p. xvi)

Performance and performativity are not exclusive concepts to the performing arts, and can be found in linguistics and performance studies. The latter is a broad field of studies that refers to everyday and religious rituals, entertainment, and art. Scholar Richard Schechner (2003, p. xvi) visualises the broadness of performance studies in two

graphics, which he calls *The fan* and *The web* (figure 16). The graphic *The fan* shows the variety of fields included in performance studies, whereas *The web* illustrates the connections between the different fields.

Both graphics represent the disciplinary complexity of performance, showing the inter-connectedness between different fields. This complexity often raised an academic debate about performance and performativity, enquiring how the two concepts are distinguishable, yet at the same time acknowledging their almost inseparability. J.L. Austin (1975), Richard Schechner (2002; 2003), and Mieke Bal (2002), offer pivotal academic views on the difference between these two concepts. Respectively, they positioned performance and performativity in linguistics, performance studies, and art within a transdisciplinary context.

The British linguistics philosopher J. L. Austin coined the term *performative utterance*, which he describes as utterances that perform actions and are part of daily routine. Austin analyses the processes of language from *what is said*, to *what it is meant* and to *what is accomplished*. Performative "is derived, of course, from *perform*, the usual verb with the noun 'action': it indicates that the issuing of the utterance is the performing of an action" (Austin, 1975, p. 6). The performativity of language emerges in this last process, when saying a word or a sentence, becomes an action and produces an effect.

Despite the fact that Austin's theories on the performativity of language belong to the field of linguistics, it has become a touchstone for the discussion of performance and performativity in other fields. James Loxley emphasises Austin's influence "what we might call Austinian performativity looms rather large in performance theory" (2007, p. 140). Richard Schechner and Mieke Bal refer to Austin in their discussion on the definition of performance and performativity. Both analyse performativity in contrast to performance, aiming to clarify the meaning of each term, and how performance and performativity relate to each other.

Richard Schechner begins his analysis of performance with the identification of the actions that clarify what it means *to perform*: *being*, *doing*, *showing doing*, *explaining showing doing*.

> *Being* is the existence itself. Doing is the activity of all that exists, from quarks to sentient beings to super galactic strings. *Showing doing* is performing: pointing to, underlining, and displaying doing. *Explaining showing doing* is the work of performance studies (2002, p. 22).

In general, the verb *to perform* is applied to most of our daily routines and activities. For example, heart surgery performance, sports performance or technology performance. However, Schechner breaks down the concepts by isolating actions that constitute different modes of performance, each one of them with different behavioural implications.

Paying particular attention to *explaining showing doing*, Schechner describes it as *twice-behaved behaviour* or a *restored behaviour*. Whether the performance in question refers to artistic practice, rituals or quotidian social situations, it implies a learning process and rehearsed or trained behaviour. To perform an action is to perform a constructed behaviour from past behavioural experiences. However, Schechner emphasises that performance cannot be generalised and needs a context.

To put it differently, in order to understand performance, it is necessary to make a distinction between the different types of performance. For instance, performance art is different from religious performance because they appear in different contexts and imply different behaviours.

Schechner also notes the broadness of the concept performativity and that it needs to be distinguished from performance. Despite the close relationship between the two concepts, he stresses that performativity, as a concept, should not be used to describe

an event or an action of a performance (2002, p. 110). Performativity creates a reality, causes an effect, and marks a transition from one specific state to another.

Whilst developing an understanding of the concept of performativity, Schechner posits J.L. Austin's definition: when *saying* something is *to do* something. Performativity, according to Austin, can be understood as an extension of that restore-behaviour action defended by Schechner. It emerges as the effect of such action. Nonetheless, Austin's theory on the performativity of language is mainly about linguistics. Schechner critiques Austin for undermining performativity in art, namely in theatre. He underlines an important aspect of performativity that cannot be restricted to only one point of view, disciplinary field, and context[18] (2002, p. 111).

In the book *Travelling Concepts* (2002), Mieke Bal reflects on performance and performativity. She explicitly asks "What is to perform?", as the starting point for her argument. Bal also refers to Austin's concept of *performative utterance* to offer a general view on performance and performativity. Nevertheless, she manifests the will to extend Austin's views to an artistic context (2002, p. 178-179). In contrast to Richard Schechner, who warns about the generalisation of the term performativity, Mieke Bal deliberately generalises the term performativity, stating that "generalisation, itself is a useful way of unfixing rigid categories by stretching their boundaries, calls for new orderings" (2002, p. 178).

Bal conceptualises performance as an *act of doing* something, *to do,* also based on the repetition of behaviour. Conversely, performativity, according to Bal, is the instance each time that behaviour is repeated. To put it differently, performativity corresponds to the uniqueness and to the subjective effect of performance. Her perspective

---

[18] Contextualising performativity is a pertinent aspect for this research, specifically for the evaluation of the public's reaction. Types of spectatorship are defined by the different behavioural impact of the artwork and the audience, from which emerges different types of performativity.

concentrates on the timely qualities of performance, and introduces an element that bridges the two concepts: memory.

> Memory concerns the past and happens in the present. (…) The elements of present and past in memory are what specifically distinguish performance and performativity (Bal, 2002, p. 183).

Memory is a defining element of the relationship between performance and performativity. It invokes the past into the present adding time qualities to aesthetic experience, transforming each repetition of behaviour into a unique event. Bal analyses this phenomenon by reflecting on an installation artwork by the artist James Coleman, *Photograph* (1998). She concludes that the time qualities of memory, whilst contemplating Coleman's artwork, create an inner *mise-en-scéne* where the public becomes the performer. Furthermore, she also pins down the importance of memory as a means of producing associations and, subsequently, interpretations. This also brings back another recurrent topic of this thesis, referring in particular to Bachelard (1969), whose phenomenological spatial theories emphasise the role of memory in the experience of space. Therefore, memory is a vehicle for performativity in non-scripted performances[19].

The theoretical framework discussed in this section pinpoints vital aspects for this research. The aim is to investigate the performativity of the relationship between body, space, and technology. Firstly, it allows understanding performance and performativity, the difference between the two concepts, and how they relate to each other. Schechner and Bal provide a view that defines performance as a part of a process of a learned behaviour by repetition. Performance, according to their view, is not just an execution of an action, but a *behaved action* that each time is repeated in a unique way. Performativity emerges out of the singularity of performance as an action in two ways: the effect of that action, as well its inherent behaviour, and the time qualities of the

---

[19] The term non-scripted performances refer to the absence of the text-based plot.

uniqueness of each performative event. Secondly, Mieke Bal introduces in her argument an important concept for this research: memory. The underpinning of memory allows establishing a connection with theories already discussed in this thesis, namely Barchelard's phenomenology of space. For Bachelard, memory is fundamental to spatial experience, as every new experience builds upon the previous ones. Memory establishes a narrative thread that makes the present experience more meaningful, bringing to the surface the sense of *here and now*. The link between Mieke Bal and Gaston Bachelard supports the practice in this research towards a performativity of space. Finally, the combination of these two theoretical perspectives, shows that performance does not need to be confined to the performing arts, and can be found in other artistic fields.

To conclude, in order to apply dramaturgy to interactive installations that deal with space, it is necessary to understand that a performance within spatial logic is associated with pre-established behaviours. The conceptualisation of the practice and the technical design need to respond to a specific behaviour and transform it into a performative event. Triggering associations is essential to construct a narrative of the artwork. Additionally, the practice in this research intends to find a spatial logic that appeals to familiarity, but challenges the public into a shift of behaviour, thus attempting to offer a singular spatial and interactive experience to the public. The next section analyses interactivity from different disciplinary perspectives.

2.6. Interactivity: a ground-breaking concept or a conventional idea?

In the same way that performance and performativity required a framework in order to build a context for the research, this section is focused on building an understanding of interactivity as a concept, thus providing a solid ground for the practice in this research. However, in contrast to the previous section, instead of creating an argument of selected views on performance and performativity; this section broadens the analysis of interactivity in order to unfold the relationship of this concept with art and technology. The overview on interactivity includes perspectives from artists such as Myron Krueger, academics as Edward E. Shanken, and the interactive design analysis of Paul Pangaro. Likewise, the analysis sets a particular focus on Erkki Huhtamo's article *Troubles at the interface* (2004), which tackles a controversial understanding on the interactivity of the artwork *The Listening post* by Mark Hansen and Ben Rubin*.

There is a widespread idea that all art is interactive. This idea is indeed true, but there is a lack of clarity to what it actually means. Gordon Pask, a cybernetician that ventured into art, makes the point that even during the contemplation of a painting "our interaction with it is dynamic for we scan it with our eyes, we attend to it selectively and our perceptual process build up images of parts of it" (1971, p. 77). Any aesthetic experience triggers mental processes that lead to an unlimited number of interpretations and associations. Pask's explanation relates to Rancière's analysis of aesthetic experience. In the book *Emancipated spectator* (2009), Rancière claims that the spectator is never passive, even when just contemplating an artwork. Audiences engage with art whilst internalising and interpreting it. Pask also pertinently stresses that artists can intentionally externalise the inner process of aesthetic experience.

At this point, it is possible to draw a distinction between interactivity and active spectatorship. Interactivity consists of externalising the mental processes that take

place during aesthetic experience. Previously, this thesis has presented the arguments of De Marinis (1987), and Rancière (2009), on active spectatorship. In particular with Rancière there is a negation of the passiveness of the spectator even in the act of seeing. Nonetheless, the concept of interactivity still requires a deeper analysis in order to clarify the understanding of interactivity within the context of technology.

Edward A. Shanken and Kristine Stiles analyse the nature and application of interactivity in art in their essay *Missing in action: agency and meaning of interactive art* (2002). They state that interactivity is neither new to artists nor exclusive to technology, and it is often found in different artistic contexts.

> Throughout the 1960s and 1970s, performance, process, installation, environmental art, video, and experimental tendencies provided a fertile and interconnected ground for the evolution of interactive art. Artists developed interactivity as a means to widen the social base, and as an exercise in active interconnection with cultural and political milieus (2002, p. 32).

Their argument demonstrates that interactive art, as an intentional and planned artistic practice that strives for the public's participation, is broader than it might appear. The happening performances of the 1960s, for instance, explored interactivity as a means breaking the boundaries between the public and art. However, Shanken and Stiles also point out another generalisation about interactivity: the use and the public's engagement with technology, namely digital computer technology. The authors consider that this is a result of the misappropriation of the term by the Silicon Valley tech businesses: "the appropriation of the concept of interactivity as a novel feature of specific technologies falsely implied that interactivity did not exist before or without those technologies" (2009, p. 34). In the essay *Interactivity: tracking new concepts for communication studies* (2008), Jens F. Jensen describes the meaning of interactivity in the field of computer science and communication studies. Interactivity is understood as a communication between a machine and a user, or a machine as an intermediary between two users (2008, p.190).

Hugh Dubberly, Usman Haque and Paul Pangaro also analyse the interactive human-machine relationship in their essay *What is interaction? Are there different types?* (2009). The authors explain the basics of interaction design according to three different theories: Design, HCI, and system theory. They summarise the design interaction perspectives, and look at interaction as offering numerous possibilities to develop human-machine systems, feedback loops, and systems with predictability and control. However, the views presented in the essay circumscribe interaction and interactivity to the realm of technology. It is analysed from the point of view of the machine and system design, and not from the point of view of human experience.

Overall, these views demonstrate that interactivity is not a one-dimensional concept. Despite the misconceptions identified by Shanken and Stiles, interactivity is understood differently depending on the field in which it is found. Whilst in art interactivity is a means through which to bridge the gap between the public and art, other fields such as design or computer science, see it as a means through which to create a relational system between people and technology. The point of intersection between these areas is the understanding of interactivity as a mode of communication that also becomes an experience.

Erkki Huhtamo attempts to pinpoint the ontology of interactivity in art in his essay *Trouble at the interface* (2004). He offers a critique of the work *Listening post* by Mark Hansen and Ben Rubin, an installation which was awarded the *Golden Nica* prize at the *Ars Electronica Festival* in 2004: "It is certainly a work that deserved a prize, but did it deserve it in the Interactive Art category? That is the question" (Huhtamo, 2004, p. 3). He claims that, in interactive art, the artistic or aesthetic experience ought to be based on the experience of interaction instead of on the functionality of the piece.
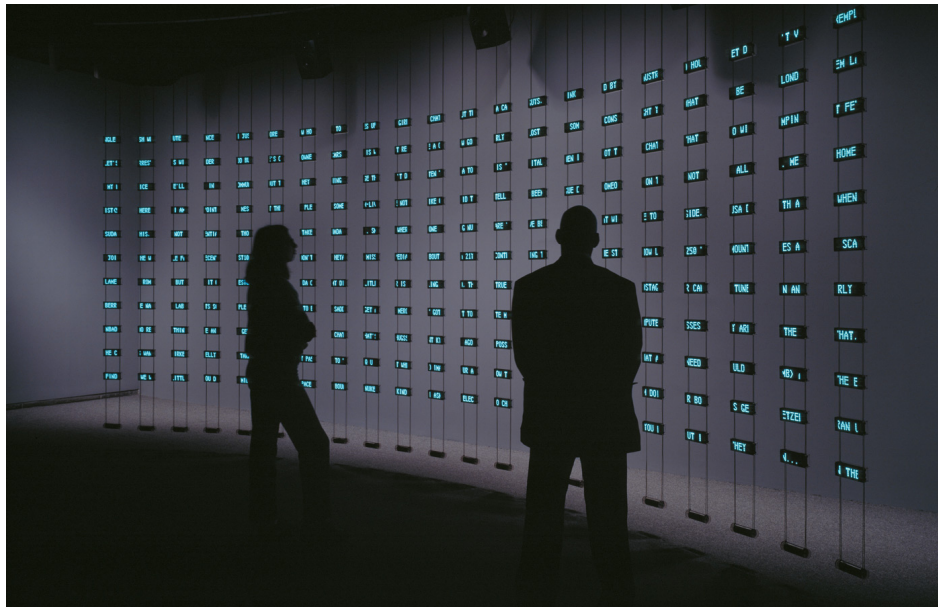
Figure 17. *The Listening post* by Mark Hansen and Ben Rubin, 2003.

Huhtamo's critique uncovers one of the most conventional ideas on interactive art, advocating that interactivity is a result of the public's action. Therefore, according to Huhtamo, because *Listening Post* does not require any action from the audience the installation does not fall into the category of interactive art. His criticism is debatable, since he rejects the possibility of interactive art exploring different modes of communication on the Internet. He does not seem to consider that artists explore real-time interactions between Internet users, and that this mode of communication is representative of today's social interactions.

The association of interactivity to physical action responses from the public has a long history in interactive art. As mentioned above, since the 1960s artists have been interested in exploring interactivity as a tactic to bring art and its public closer. When computer technology began to emerge artists like Myron Krueger (1983) pursued interests in the physical interaction between the public and technology. Initially, these types of interactions broke the barriers between art and public, and also attempted to

reconfigure the relationship between human-machine. Apart from Myron Krueger, artists like David Rokeby, Daniel Rozin, and Rafael Lozano-Hemmer also explored the physical engagement of the public, which contributed greatly to the development of interactive art. But in contrast, the repetitive use of the physicality of the public resulted in new artistic conventions. Interactivity is understood as an active participation of the public that involves some degree of physical activity.

Figure 18. *Very nervous system*, David Rockeby, 1986-90.

There are two complementary ideas about interactivity implicit in Erkki Huhtamo's criticism. Firstly, interactivity implies the use of technologies that are able to respond to human action, usually described as responsive technology. Secondly, interactivity is also understood as the physical participation of the audience. Hence, interactive art is frequently associated with the image of a person physically interacting with a machine, from exaggerated movements like shaking hands in the air to the simple action of pushing buttons. Huhtamo's criticism takes on these conventional ideas as the basis for his analysis of *Listening post.*

The ambiguities of *Listening post* allow to question and analyse the nature of interactivity. At the beginning of this section, the difference between interactivity and active spectatorship was discussed, asserting that interactivity consists of an externalisation of the active inner interpretations of the public. To clarify, the aesthetic experience of a work of art goes beyond the psychological effects, and the public be active while appreciating an artwork. The interactivity of this particular installation is not based, however, on the participation of the public, and does not require any physical action. Instead, the interactivity emerges from the interaction between Internet users who, indeed, take an action mediated by a technological medium of communication. To the general public, the artwork is merely for contemplation. In terms of defining whether *Listening post* is based on interactivity or active spectatorship is, somehow ambiguous.

According to Huhtamo, the *Ars Electronica* jury classified the project as "an expanded definition of interactivity" (2004, p.4), which admits a level of complexity in the understanding of interactivity that is not necessarily linked to physical interaction. In fact, in *Listening post*[20] the artists explored interactivity without any type of interaction, but still provided the public with an experience of interactivity whilst revealing the dynamics and fluidity of interactions between Internet users. The installation functioned like a self-reflective work on this specific technology. Although the interaction is absent, interactivity is somehow felt[21].

---

[20] My analysis of the *Listening* post is also based on my experience of the artwork, which is part of the permanent exhibition of the Science museum in London.

[21] In the past few decades we have become increasingly familiar with art installations based on interactive screen projections, immersive virtual environments, using mobile technology, robotics or camera tracking systems. Nonetheless, to some extent Mark Hansen and Ben Rubin manage to challenge the understanding of interactivity with *Listening post,* even though this installation might not be the most audacious example. Some interactive and new media artists have demonstrated that their artistic field is capable of producing artwork that reflect on the digital and technological language and its cultural impact. Another example is *The Green Eyl*'s interactive installation, *Appeel*. The work does not include any type of digital technological device or setup and consists of a red wall formed by a grid of stickers that resemble a pixel. Every time each member of the public peals off the stickers, it creates digital-like images. Unlike *The Listening post,* the project requires the active interaction of the public, but the technology is missing, proposing an expansion of the digital aesthetics into the physical world. This

Erkki Huhtamo's critical review of *Listening post* does not provide a definitive view on interactivity. Mark Hansen and Ben Rubin created an installation that challenges the conventional idea about interactivity, demonstrating that it still offers an open space for experimentation, reflection, and a reconfiguration of spectatorship. In addition, it is evident that, even with an ambiguous project like *Listening post*, the technological element is a vital and decisive element in interactive art, which impacts not only on the public's experience, but also on the public's role.

There is another concept to be introduced in this section's discussion: participation. This last point is a key question that underpins the study of the performative potential of interactivity.

Returning to Myron Krueger who is a pioneer in interactive art, in his book *Virtual realities* (1983), he describes interactivity as computational reactive behaviour, "which interprets what it observes and responds through intelligent visual and auditory displays" (Krueger, 1983, p. xii). This definition of interactivity puts emphasis on the technological element. However, later in his book, Krueger expands the idea of responsive environment as a form of art: "Responsive art is fundamentally conceptual" (Krueger, 1983, p. 49). His argument evolves with a balance between technical execution and the role of the participant. Between the technical execution and the participant, there is the artist who mediates the computational elements. He conceives a computer system that is able to perceive, examine and respond to human behaviour at the same time that it also provokes the public to alter it. It is in the behavioural shift that the audience become participants. This process unfolds throughout the public's experience with the artwork: in order to interact with the installation, the public receives a stimulus that enables a consideration of the installation environment, and a modification of his or her usual behaviour. To put it differently, only when participants

---

particular project is not based on the relation of human-machine; however, the work appeals to the aesthetic specificity of digital media, namely digital screens and video games visual graphics.

adapt to a new situation, are they able to access the work of art, experience it, and understand the concept of the artwork.

Figure 19. *Videoplace*, Myron Krueger, 1969.

Retrospectively, this section presented several critical positions on interaction and interactivity that disclosed the main conventional ideas on these two concepts. Nonetheless, these ideas also helped to have a picture of the relationship between body and technology within the frame of interactivity. Having a clear view of this relationship is vital for the development of the practice in this research. One of the research's main enquiries is if interactivity can convey performativity, which is essentially the proposal of a space dramaturgy applied to interactive art.

Many theorists and academics agree that interactivity can be experienced to different degrees. W. Brian Arthur (2009), Aaron Smutts (2009), and Edward Shanken (2002) emphasise the purposefulness of technology, and interaction in relation to the user or public. Myron Krueger (1983) also asserts this aspect of interactive and responsive systems according to artistic circumstances. However, some of the arguments on interactivity tend to focus on the technological structure, modes of usability, control,

and responsiveness, thus disregarding the impact on human experience as being unique and even subjective. Interactive artistic practices also include conceptual purposes, aiming to offer a particular experience to the public, based on the creative use of technology.

The diversity of definitions show that interactivity is not an objective concept, but instead relative and even subjective, especially when used in artistic contexts. Mark Hansen and Ben Rubin's installation *Listening post,* in the context of Erkki Huhtamo's critique, translates the complexity of interactivity in technology and art. It has enabled the possibility to reflect on interactivity as a means of defining the role of the public.

The following section continues the analysis introduced in this section, and deepens the investigation on participation and interactivity. In addition, it confronts the theoretical analysis with examples of artistic practice from the research database in order to generate methods of analysis for the practice in this research.

2.6.1. Between theory and practice: visual methods to analyse interactivity.

Through graphic visualisation methods, this section continues to examine the body of theoretical work on interactivity. It also examines the artworks in the research database, in order to establish the first dramaturgical bridge between theory and practice. This bridge between theory and practice also aims to establish a connection between interactivity and performativity, and to generate methods for the upcoming analysis of the research practice results.

In the previous section, the analysis of the theoretical views identified conventional ideas on interactivity, which corresponded with the idea of the public interacting with an artwork through a physical action of some kind. In particular, Erkki Huhtamo claims

in his critical essay, *Troubles at the interface* (2004), that interactivity needs to be experienced. He criticises Mark Hansen and Ben Rubin's interactive art installation, *Listening post,* for not following that premise. The problem with Huhtamo's critique is that he is only concerned with a type of interactivity that involves physical action. Ambiguous works like *Listening post* allow for grey areas in the definition and understanding of interactivity. For this reason, the purpose of the first analysis of this section is to use the theoretical scope on interactivity in relation to art and technology, and to proceed with a visual analysis in order to understand interactivity in relation to the use of technology and the public's engagement.

The graphic in figure 20 gathers some of the definitions of interactivity used by researchers and theorists in the context of art, technology, and the intersection of both. The study in this section aims to make a visual interpretation of these definitions in order to distinguish the different levels of interactivity in art and technology. The selection includes the theoretical scope of the previous section, but it also introduces the artistic views upon interactivity of Golan Levin (2006a; 2006b), for example.

The horizontal axis reveals the different modes of interactivity that imply the use of technology, whereas the vertical axis shows interactivity as participation in the context of art. This graphic consists of a visual exercise to reflect on the variations of interactivity, and how it is interpreted in relation to art and technology. For instance, Edward Shanken and Kristine Stiles (2002) attempted to create a comprehensive overview of interactivity, frequently addressing the concept as a form of participation. Their critical analysis spans over interactivity and participation in art, namely artistic movements of the 1960s and 1970s such as happenings and Fluxus; interactivity within the technological and commercial context, which the authors point out as the Silicon Valley industries; and finally, the intersection between the two perspectives of interactivity. Furthermore, the graphic aligns interactivity with responsiveness, adaptive, and feedback loops. The graphic also identifies the two theoretical strands of interactivity within art and technology. Firstly, interactivity is oriented towards the

participation and experience of the public with a work of art. Secondly, interactivity is defined through the capacity of technological and computational systems recognising, and interpreting human action.
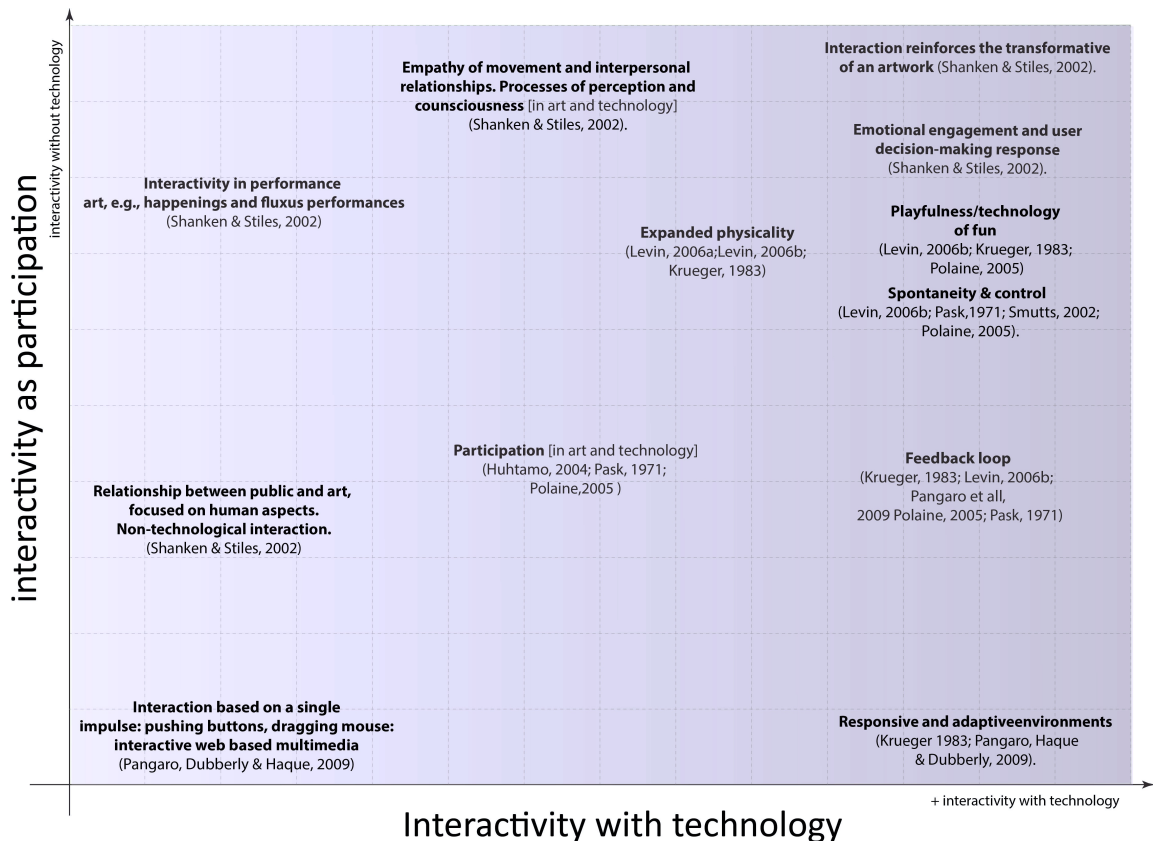

Within the figure, the following text appears:

- **interactivity as participation** (y-axis label)
- interactivity without technology
- **Empathy of movement and interpersonal relationships. Processes of perception and counsciousness** [in art and technology] (Shanken & Stiles, 2002).
- **Interaction reinforces the transformative of an artwork** (Shanken & Stiles, 2002).
- **Emotional engagement and user decision-making response** (Shanken & Stiles, 2002).
- **Interactivity in performance art, e.g., happenings and fluxus performances** (Shanken & Stiles, 2002)
- **Playfulness/technology of fun** (Levin, 2006b; Krueger, 1983; Polaine, 2005)
- **Expanded physicality** (Levin, 2006a;Levin, 2006b; Krueger, 1983)
- **Spontaneity & control** (Levin, 2006b; Pask,1971; Smutts, 2002; Polaine, 2005).
- **Participation** [in art and technology] (Huhtamo, 2004; Pask, 1971; Polaine,2005)
- **Feedback loop** (Krueger, 1983; Levin, 2006b; Pangaro et all, 2009 Polaine, 2005; Pask, 1971)
- **Relationship between public and art, focused on human aspects. Non-technological interaction.** (Shanken & Stiles, 2002)
- **Interaction based on a single impulse: pushing buttons, dragging mouse: interactive web based multimedia** (Pangaro, Dubberly & Haque, 2009)
- **Responsive and adaptiveenvironments** (Krueger 1983; Pangaro, Haque & Dubberly, 2009).
- + interactivity with technology
- **Interactivity with technology** (x-axis label)

Figure 20. Interactivity and in art and technology (I).

Artistic practice in interactive media art tends to explore the fields between these two strands, integrating the public's participation in the work of art through the development of computational systems. These types of artistic works emerge within the different areas identified in graphic 1 (figure 20), and the next step is to look closely at how artistic practice spans over the different areas.

The second visual method takes on the research database[22], in which are included one hundred examples of interactive artworks. It begins with a qualitative categorisation of the artworks located in the interactivity section of graphic 1. This analytical exercise constitutes the first dramaturgical bridge between theory and practice. The application of the categories described bellow, also aimed to narrow down the number of art projects included in the database, in order to analyse a range of artworks that fall into the contextual specificity of this research.
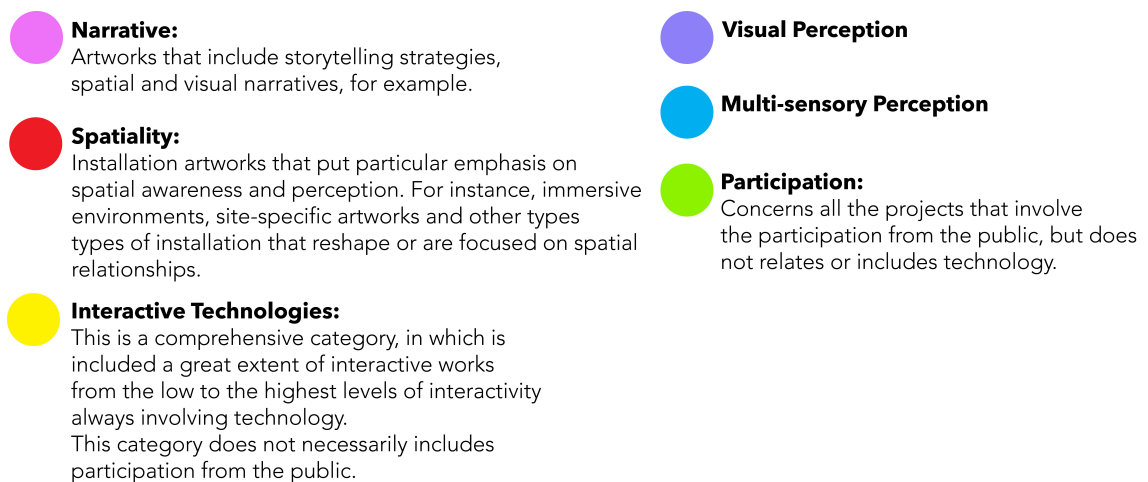
Narrative:
Artworks that include storytelling strategies, spatial and visual narratives, for example.

Spatiality:
Installation artworks that put particular emphasis on spatial awareness and perception. For instance, immersive environments, site-specific artworks and other types types of installation that reshape or are focused on spatial relationships.

Interactive Technologies:
This is a comprehensive category, in which is included a great extent of interactive works from the low to the highest levels of interactivity always involving technology.
This category does not necessarily includes participation from the public.

Visual Perception

Multi-sensory Perception

Participation:
Concerns all the projects that involve the participation from the public, but does not relates or includes technology.

Figure 21. Database categories.

The categories shown in figure 21 represent the main theoretical guidelines included in this chapter: *narrativity* (pink), *spatiality* (red), *visual* and *multi-sensorial perception* (purple and blue)*, interactive* (yellow) and *participation* (green). The categories are closely linked to the theoretical framework of this research. Narrativity, spatiality, multi and visual perception, reflect the fundamental ideas of phenomenology of space included in this research. Participation and interactive technologies are deliberately

---

[22] Information about the research's database can also be found in appendix 1.

separated in order to verify to what extent the interactive technologies generated participation. The selection process to narrow down the number of artworks consisted in including for further analysis projects that: fall into the category of *spatiality*, gathered the more than three categories or, at least, the categories *interactivity* and *participation.* The selection also included a few exceptional projects, for instance, *Messa di voce* (2003) by Golan Levin and Zachary Liebermann or *Appel* (2007) by The Green Eyl [23] for presenting interesting approaches to interactivity.

The categorisation of art projects resulted in a group of 43 artworks that exemplify the most common definitions in interactive art in terms of the use of technology, space, and participation. This analysis is completed in the following graphics that visualises where, within the range of definitions on interactivity, the artworks are located.

The examination of the selected artworks bridges theoretical investigation with artistic practice, feeding into the research ideas and concepts that enable to link interactivity to performativity. The behaviours with the most obvious performative potential are dancing, running, jumping, and open or expanded body. There is an intrinsic connection between physical response and interactive technologies. The majority of the artworks included in the graphics of figure 24 and 25, use interactive technology to enhance the sensory stimuli and trigger a physical reacti

---

[23] The complete analysis of the database is included in Appendix 1.

Messa di Voce G. Levin/Z. Liebermann 2003	*Interstitial Fragment Processor* Golan Levin 2007	*Sustainable Dance Floor* Daan Roosegaarde 2008	*Sonicity* Stanza 2010	*The Treachery of Sanctuary* Chris Milk 2012
Access Marie Sester 2003	*Appel* The Green Eyl 2007	*Hylozoic Soil* Philip Beesley 2008	*Little Magic Stories* Chris O'Shea 2011	*N_Polytone* Chris Salter 2012
The Listening Post Mark Hanse & Ben Rubin 2004	*Propagaciones* Leo Nuñez 2007	*Optical Tone* Tsutomu Mutoh 2008	*Between You and Me* Anke Eckardt 2011	*Small Global* D-Fuse 2005-2013
Audio Space Theo Watson 2005	*Funky Forest* Theo Watson 2007	*Visitors to a Gallery* Stanza 2008	*Desire of Codes* Seiko Mikami 2011	*Rain Room* Random International 2013
Tango Virus Emiliano Causa, etc. 2005	*Vivisection* Mette R. Thompsen 2007	*Nemo Observatorium* Lawrence Malstaf 2008	*MEMOPOL II* Timo Toots 2011	
Gravicells S. Mikami/ S. Ichikawa 2005	*There is still time…* The Wooster Group 2007-08	*Performative Ecologies* Ruairi Glynn 2009	*Me and my shadow* Joseph Hyde 2011/12	
Snow Mirror Daniel Rozin 2006	*Apostasis* R. Lozano-Hemmer 2008	*Liquid Space* Daan Roosegaarde 2008-10	*On the space time foam* Tomas Saraceno 2012	

Figure 22. Artwork selection with colour code: interactive installations.

Vectorial Elevation R. Lozano-Hemmer 2000	*Sky Ear* Usman Haque 2006	*Night Lights* YesYesNo 2010
Bump Assocreation 2000	*Laser Tag* Theo Watson 2007	*Capacitive Body* Andreas Muxel 2010
Body Movies R. Lozano-Hemmer 2001	*Dune* Daan Roosegaarde 2007	*Dancing House* Klaus Obermaier 2011
Under Scan R. Lozano-Hemmer 2004	*Primal Source* Usman Haque 2008	*Sensor Valley* Daan Roosengaarde 2012
When Laughter trips… Osmar Khan & Kim Beck 2008	*Burble* Usman Haque 2006-10	*Marble* Daan Roosengaarde 2012

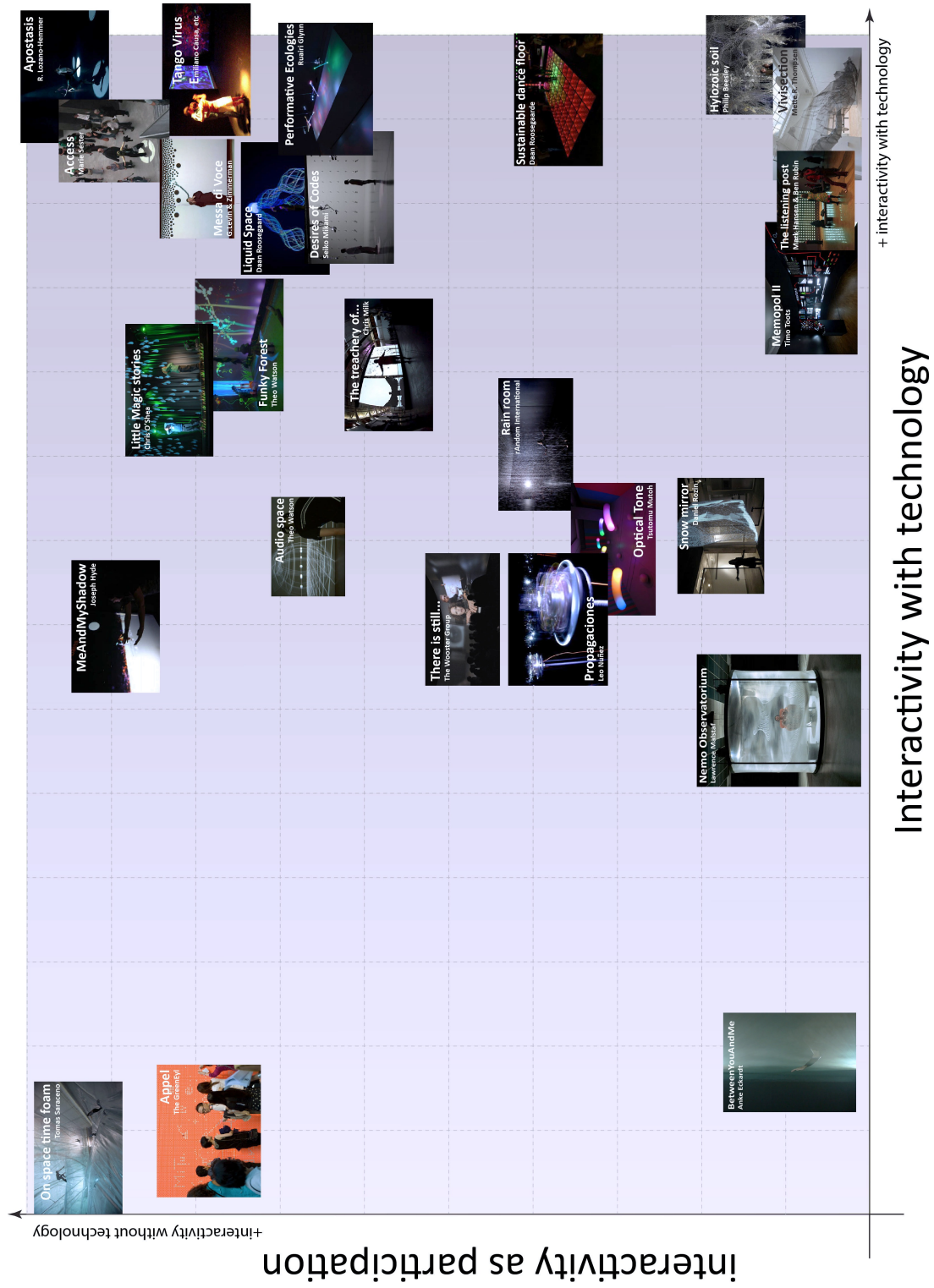**Figure 23.** Artwork selection with colour code: public space installations.

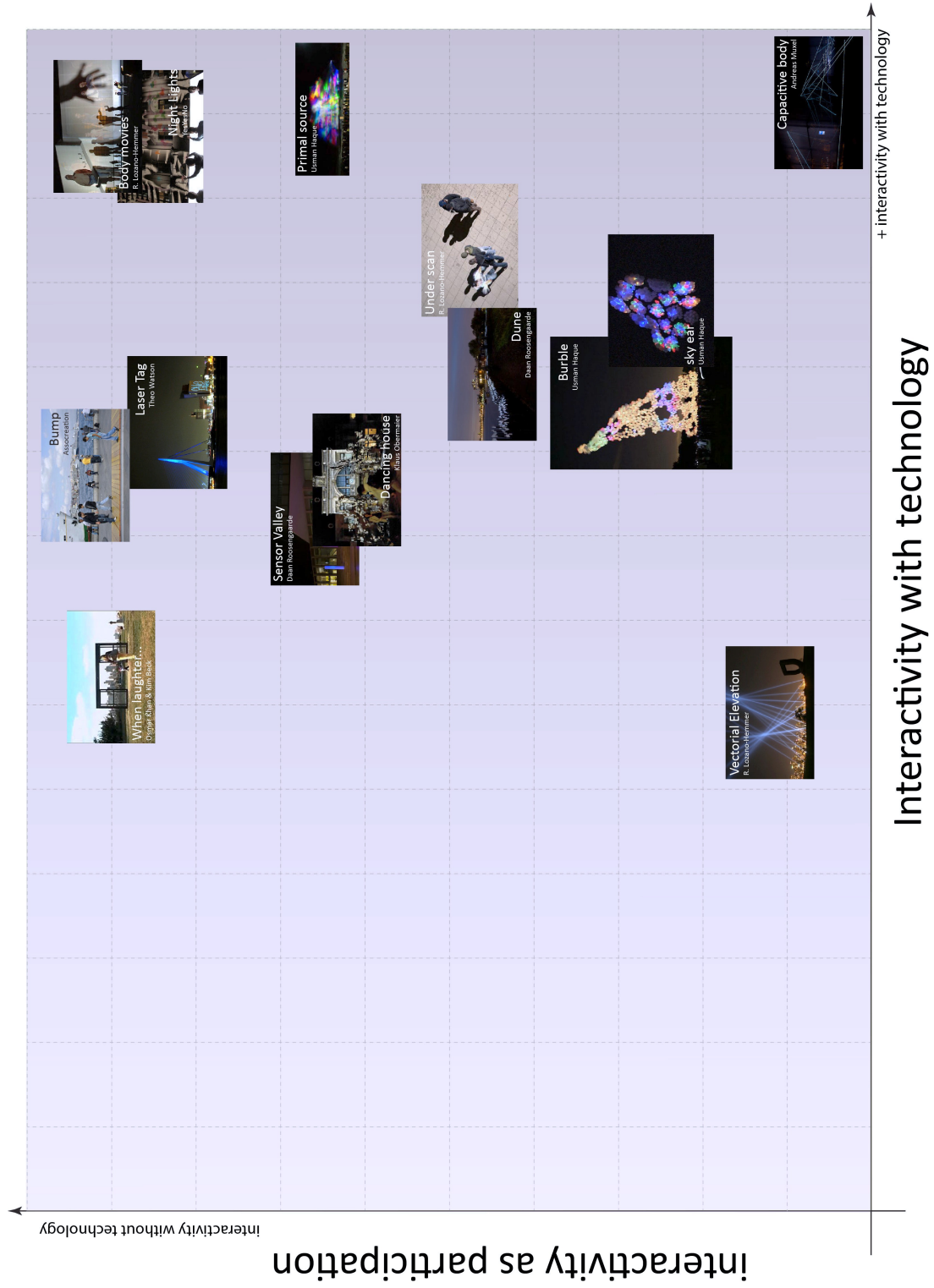**Figure 24.** Measuring interactivity and participation (I).

Figure 25. Interactivity and participation (II).

Golan Levin (2006a), however, raises an important question about the behavioural patterns of interactivity, in particular, the phenomenon of 'hands in the air' or 'open arms' posture of the public while interacting with the art installations: the repetition of such gesture may result in a loss of meaning to the extent that it is no longer a sign of interactivity. He problematises this type of response by pointing out that the repetition of this gesture may not empower the public in their participation with the artwork, instead it just expects a reaction. He concludes his reflection with:

> These *interactive* systems are predicated on the idea that the user is controlling a responsive system. To judge from this recurring pattern of behaviour, however, might we speculate that this control is ultimately an illusion? (Levin, 2006a).

The repetition of behaviour in interactive installations may put a question mark on interactivity. In the previous section, it was clear in Huhtamo's (2004) critique of *Listening Post* that there are some conventions regarding interactivity, and what is generally understood as participation. He makes a retrospective analysis of the origins of interactive art when the artistic endeavour was geared towards the creation of a participatory public as opposed to an active spectator. Since the 1960s and 1970s, such ideas about interactive art have been aligned with computer technologies. But as interactive art has progressed, the physical participation and the idea of a public interacting as a user has become generalised, and sometimes even predictable. Golan Levin (2006a) in his brief essay identifies this phenomenon in interactive installations, and its potential loss of meaning. To clarify, the repetition of the same gestures, such as 'open arms' or 'hands up', may not be as empowering as it was during the 1960s, 70s or 80s, because it has become too predictable. Thus, it becomes unclear to what extent the public is indeed controlling the technology, or are simply reacting in a predictable way and, therefore, is being controlled.

The graphic analysis of figures 24 and 25 reveals the existence of some benchmarks for interactivity, which frequently are based on visual sensory input, sophisticated technical systems, and focused on stimulating an active physical response from the public. Likewise, the analysis also reveals, despite the most common definitions, interactive art continuously produces exceptions. Apart from the work of Mark Hansen and Ben Rubin, *The Listening post,* there is *Appel* by the green Eyl (2007) and *Nemo observatorium* by Lawrence Malstaf (2008). Some are more clear and deliberate than others; nonetheless, they make a contribution to the debate on interactivity.

The installation *When laughter trips at the threshold of the divine* (2008), created by Osman Khan and Kim Beck, consists of simple and common sliding doors placed in a public park. Technically, the installation presents an action-reaction type of interaction. The contextual displacement of the sliding doors generates curiosity and surprise in people walking along the park, and even generates comical situations. The anonymous public become participants in staged and absurd situations. This installation is an example of a highly interactive and performative artwork based on a simple technological setup. In terms of experience, the interactivity of the installation is not dominated by the technology used; on the contrary, the interactivity emerges from the *out-of-context* type of situation of placing supermarket sliding doors in a public park.

Figure 26. *When laughter trips at the threshold of the divine,* Osman Khan and Kim Beck, 2008.

Another brief example of unconventional interactivity is Rafael Lozano-Hemmer's *Body movies* (2001)*.* This is a well-known interactive artwork made for public space with a more complex technological system in comparison with Osman Khan and Kim Beck's work. The installation proposes a shadow theatre in an urban public square. The technology behind the installation consists of a computer vision system that tracks the presence of people walking in the square, and changes the projections of a building façade. But what really makes this installation extremely interactive and performative is the shadow projection of the members of the public. Lozano-Hemmer's installation possesses almost a double interactivity. While in the first type of interaction the public's presence changes the projections of other people's photographs on the façade, which also changes the storyline; in the second type of interaction, the public interacts with their own shadows instead. Thus, in spite of the sophistication of the technical setup, technology is not the main influential aspect for the interactivity and performativity of the piece.

Figure 27. *Body Movies*, Rafael Lozano-Hemmer, 2001.

This section asserts that there is little discrepancy in the theoretical and artistic interpretation of interactivity and, indeed, both interpretations complement each other. The debate, however, splits into two main routes that often intersect. On the one hand, interactivity is seen from the point of view of the public as a means of breaking the traditional passive spectatorship, implementing instead an active participation. On the other hand, interactivity is seen from the technological perspective, concentrating on the design of interactive, responsive computational systems. Altogether, most artistic practice explores interactivity as a challenge to build relationships between humans and machines. Therefore, interactivity in this context is defined by the experience of the public with technology as a means of artistic expression, intersecting the human relationship with art and technology.

Thinking of interactivity as a concept that mediates experience establishes a paramount parallelism for this research with performativity, which also refers to the experience of the public. Interactivity is a relational concept that shows a great level of complexity, which blurs the understanding of the effect on the public and how to determine its role. Distinguishing interactivity from passive, and even active

spectatorship is straightforward, since interactivity, in its basic sense, requires an action from the public. Nonetheless, in the course of those two last sections, it has become clear that interactivity is a mutable concept and proposes diverse relationships between the public and the artwork. Thus, interactivity is still an open debate with space for new types of spectatorship to emerge.

To conclude, the graphic visualisation of the research database has allowed access to the differences of the artistic interpretation of interactivity, and to identify the most common examples and exceptions. The graphic in figure 24 and figure 25 show how interactive artworks span over different types of spectatorship. There are a significant number of artworks illustrated in the upper right corner which indicates that artists tend to explore interactivity through the combination of high physical engagement with the application of high technology systems. Additionally, these artworks manifest an interest in creating performance through behavioural feedback between the public and the artwork. Regardless of the level of difficulty of the technological setup, the graphic visualisation localises the field where performative participation or interactivity is found. Briefly, performative interactivity is a complex mode of spectatorship that blends different levels of the interactive experience. The public is able to experience the artwork aesthetically whilst experiencing the technological elements. The members of the public simultaneously allow the artwork to modify their behaviour while, in return, modifying the artwork as well. There is a continuous re-adaptation that engenders unique, and therefore, performative experiences for the public.

This section also identified a parallel between interactivity and performativity. In the same way that it is possible to think of performance and performativity as two different concepts, it is also possible to think of interaction and interactivity as separate concepts. The graphic demonstrates that artists tend to explore interactivity through advanced technological systems; however, this establishes

modes of interaction or, in other words, ways of determining an execution of an action with technology. The result can be an action of simply pushing buttons, dancing, waving or jumping. Interaction is defined by actions that usually express certain physical behaviours. Interactivity, on the other hand, translates the experience of those behaviours. In an artistic context, interactivity reflects the aesthetic and intellectual experience of art, which brings up interpretation, association, and the production of meaning in relation to an artwork. Hence, the *Listening post* is an ambiguous interactive installation, since interactivity happens without interaction. Looking at the parallel between performativity and interactivity helps to understand why interactive art has manifestly shown an interest for performance.

The study of the database created methods and strategies that help to understand the performative potential of interactive art. These methods uncovered a reflection about the distinctions and degrees of interactivity in art, which reveals where performativity usually emerges. The visual methods of the categorisation and graphic visualisation will be applied again in the upcoming Chapter 4 of this thesis, in order to examine the final results of the practice, and analyse the impact of the research's interactive installation on the public.

2.7. Conclusion.

Chapter 2 completes the theoretical investigation for the development of a *space dramaturgy*, thus preparing the ground for the practice of this research. The first half of this chapter was dedicated to the definition of each compositional element, space, body, and technology, and how they relate to each other. The second half reviewed two paramount concepts for the research: performativity and interactivity.

The first part of this chapter focused on the narrowing down of the compositional elements for a *space dramaturgy*, which is based on the relationship of three concepts: space, body, and technology. The nature of such concepts is comprehensive, and as part of a dramaturgical enquiry, it was necessary to decide on an approach that could transform generic concepts into specific ideas for the development of practice. The research opted for phenomenology as the foundation for the philosophical articulation of the elements of body and space.

Gaston Bachelard's *The poetics of space* (1969), and Merleau-Ponty's theories about the perception of space (1962; 2004) created a close link between the elements of body and space. The phenomenological theories of space allowed the research to build up a perspective of a sentient and bodily-apprehended space, refusing the view of this concept as an absolute reality. On the contrary, the research undertakes the concept of space within the realm of subjective and individual experience, which is guided by memory and psychological states.

Phenomenology created the foundations for the relationship between body and space. This was brought together through the theories of perception that valued the sensory experience and the role of memory and imagination. Hence, the two

first compositional elements of the research became unified under this view. After establishing the foundational ground for these two elements, the research expanded phenomenology into theories of the collectiveness of space, integrating concepts like site-specificity and space-identity. Authors like Miwon Kwon (2002), Proshanksy et al (1983), and Augé (1995), for example, tackled the problematic of site-specificity, and space-identity.

Generally, the recurrent topics of site-specificity and place-identity, within the discourse of artistic practice, are the privatisation and institutionalisation of urban spaces. Modern societies have been witnessing the proliferation of hybrid and ambiguous spaces that have emerged from the commercial and political agendas. The boundaries between private and public, indoor and outdoors spaces have become almost indistinguishable. Consequently, there is a loss of social identification with spaces, and social communities have become indifferent or alienated. According to Kwon (2002), site-specific artistic practice often targets the problems of privatisation of space, aiming to bring to the surface social disparities in urban environments.

It is within the grey areas of conflict in modern urban spaces where the artistic practice finds its ground. Regardless of the impact of commercialisation and privatisation of space, or misadjusted social policies, place-identity still comes into being (Proshansky et all, 1987) and bodies still leave their traces and marks in space (Lefebvre, 1991). Thus, shared and collective spaces are a complex juxtaposition of interactions where unconscious crowd choreographies, and irregular behaviours take place. It is in the midst of spatial complexities and interactions where the performativity of everyday life happens (Rugg, 2010), and narrative properties of interaction within space can become meaningful.

Altogether, this theoretical framework builds up a dialectical argument that articulates the individual with the collective spatial experience, and informs the research on the performative potential of space. The dramaturgical proposal takes space as the key element, but not in a scenographic sense, as dramaturgy, in this research, is not aimed to support the creation of a scenario for performances. In other words, space is not taken as a background support for the staging of a performance, highlighting the performing body. The research strives to explore the logic and language of space, focusing on how it is structured and assimilated by its users. The development of *space dramaturgy* is, therefore, focused on a performance produced by the mesh of spatial interactions at two levels: firstly, the individual interactions of people with their spatial surroundings based on the phenomenological premises. The research aims to provide each member of the public with a *role* through his or her sensory and individual spatial experience. Secondly, the performativity of an interactive installation is also a collective performance that results from the sum of those individual experiences within the specificity of site.

Technology, the third compositional element, poses dramaturgical questions about the value of technology within the relationship of body and space, and how technology may be integrated as a form of artistic expression.

Whilst the argument about body and space defined pathways for the practice to investigate the performativity of space, technology brings into the research the direction for an execution of an artistic work. The first connection between technology and the previous theoretical framework is the technical support, turning to physical computing techniques in order to design a sentient space for haptic interaction. The objective of the application of technology is to follow the phenomenological premises and enhance the perception of space, transforming it into a pliable and mutable reality. However, this chapter was concerned with the

specificity of technology as an area of knowledge, and not just a set of tools and techniques.

The research investigated the nature of technology as an aesthetic element, aiming to recover the concept *machine aesthetics* through the historical analysis of the impact that technological development has had in culture and art. The chapter selected historical moments of the 20th century that became milestones in media art, particularly for the field of performing arts. Meyerhold and Oskar Schlemmer integrated technology in their artistic work through the investigation of mechanical movements and rhythms of the machine, and translated into performative and scenic language. Their work demonstrates that the intersection of art and technology does not necessarily involve the application of technological tools and techniques.

Machine aesthetics conveys a point of view on the artistic value of technology. The research focuses on this concept as an artistic strategy in order to augment the relationship between body and space in its sensory dimension. The concept *machines aesthetics* aims to transform technology into a sculptural and visual spectacle for the public.

The second part of this chapter concentrated on the explanation of performativity and interactivity. The reflection around these two concepts emphasised two recurrent topics in this chapter, *experience*. This topic appeared throughout the spatial analysis, and in particular was underpinned in Bachelards phenomenological topoanalysis when he refers to the value of memory and imagination. In fact, Bachelard also asserts that his analysis of space is a topoanalysis of happiness and well-being. The idea of experience also underlines site-specificity and place-identity, since it also relates to the collective experience of space.

In the section dedicated to performativity, the study was focused on the discourse of the distinction between performance and performativity, and how these two concepts are connected with behaviour and its transformative effect. Nevertheless, it was Mieke Bal who framed performativity within the realm of memory and time, and therefore experience of performance and art. Experience is almost an omnipresent idea throughout this chapter thus enabling the creation of links between the diverse theories and concepts that shape the dramaturgical elements. The idea is broached again during the examination of the theoretical ground of interactivity, and defined in art through the experience of the public.

Overall, despite the variety of interdisciplinary fields included in this chapter, one simple idea like experience allows to unify the diversity of theoretical framework and to spread concepts of performativity into other territories. Experience opens up the performativity of space and interactivity. Additionally, it defines the pathway for one of the crucial functions of dramaturgy, which is mainly concerned with spectatorship. It also prepares the practice in this research to materialise the compositional elements into an interactive art installation.

Chapter 3. Generative Practice.

3.1. Introduction.

This chapter describes the progress of the generative practice in this research, and the stages that form the dramaturgical enquiry, aiming to generate methods for plotting without text and to explore the performativity of space and interaction.

The progress of practice evolves around four aims that characterise the stages of production of an interactive installation project:

1. To find a familiar narrative as a starting point.
2. From the narrative starting point, develop concepts and ideas into means and strategies to create a provocative spatial situations.
3. Focus on the technical methods that develop the background theories of the research into an artwork.
4. Envision the relationship between public and artwork.

The analysis of the production process opens a new stage for the dramaturgical enquiry. It takes a close-up view of the creative process, showing how the theoretical investigation on space, body, and technology is shaped into an artwork. Hence, this chapter also seeks to determine the value of each of the compositional elements in the development of a space dramaturgy.

The four aims described above overlap throughout the production process. However, the first two aims, which are focused on the establishment of a narrative structure for the practice, mark the beginnings of the creative process. These aims address the establishment of the primary spatial concept needed to build an interactive installation. This is found in the idea of mazes and labyrinths, and in the analysis of the narrative properties of these architectural structures.

The architectural concept of the maze is examined, and its narrative is deconstructed through visual analysis methods. These methods isolate ideas associated with mazes, such as spatial fragmentation, discontinuity, and interruption of space, in order to develop provocative strategies that generate meaningful spatial situations, and motivate the public's participation in the artwork. The proposal for an interactive installation does not crystallise within the literal idea of the maze, creating a conductive thread for the development of installation design and technical components. Hence, the idea of the maze is not included in the practice in the literal sense, but figurative instead.

The third aim deals with methods, and the process of prototyping in which are included the design and testing of electronic circuits, mechanical components, and interface materials. Although the work developed during the prototyping stage is mainly practice-based, the research continually references the theoretical background. The phenomenology of space as theorised by Merleau-Ponty, and Bachelard, is once more invoked during the technical development of electronic circuits. These circuits detect and test materials, such as wood and fabric, in order to highlight the sensory experience of space. The combination of electronic system, and materiality, is used to augment spatial perception, and provide an intimate experience of space. The historical analysis of *machine aesthetics* has fed the development of the mechanical components as a visual element of the installation that implements a visual spectacle in the artwork.

The chapter ends with the description of the different contexts in the final setup of the installation inside the Granary Building where Central Saint Martins is located: as an immersive, and intimate closed environment; as a fragmented, and spread out spatial organisation in *the Street,* the college's main lobby area; and as an obstacle in a corridor space that gives access to the studio spaces of the college. The final part of the chapter analyses the flexibility of the installation in terms of

spatial organisation, and the importance of experimenting with different spatial situations in order to explore the performativity of the installation.

Altogether, the different stages of the creative process work towards the definition of the public's relationship with the installation. The combination of the study on the narrative of mazes, the design of the functional elements of the installation, and the development of *machine aesthetics,* are all part of the exercise of predicting the public's reaction to the installation, and how it will relate to the artwork. This reflects the fourth aim of this chapter, and one of the main dramaturgical functions within this research. As explained previously in this thesis, dramaturgy works towards the public.

3.2. Finding a narrative: the original idea.

The development of research on *space dramaturgy* stands on an unconventional narrative paradigm for performance in interactive art, which focuses on spatial narratives rather than textual**.** *Chapter 1: Finding dramaturgical contexts,* investigates several definitions of dramaturgy, and contextualises the research within the realm of non-textual dramaturgies. This prepares the ground for an enquiry on the creation of a *space dramaturgy*. This section presents the first two initial proposals for an installation's spatial narrative based on the concepts of mazes and labyrinths.

This thesis has already defined the context of dramaturgy and the compositional elements; these are the two essential stages for the establishment of a *space dramaturgy*. This section begins with the transformation of the theoretical framework that defines the relationship between body and space into practice. The combination of the phenomenological theories of Bachelard (1969), and Merleau-Ponty (1962; 2004), and the perspectives upon the collectiveness of space, display the inwardly and outwardly qualities of both body and space. Thus, the first aim of the research practice is to find a spatial narrative that can represent the individual and subjective nature of the relationship of body and space, as well as its collective dynamics.

Bachelard and Merleau-Ponty's theories on spatial experience find expression in the ideas of labyrinths and mazes. These structures offer an individual and intimate experience within which the senses become the main means of spatial exploration. Thus, the idea of building an installation inspired by labyrinths seems a viable

narrative through which to create an adaptable structure that can generate contradictory and playful situations in space.

Labyrinths and mazes are charged with symbolism, and are often found in literature, for instance, in Jorge Luis Borges' *El aleph* (2011), in mythology with the Minotaurus myth, and architecture, in gardens such as Leeds Castle (England). There is a cultural relevance in mazes and labyrinths that produces an easily recognisable narrative and imagery. The rich spatial narrative of labyrinths and mazes gives the research a range of possibilities to explore the performativity of space. However the main interest is in how these structures re-shape spatial logic.

These architectural examples are the primary idea that inspired the proposal for the practice. However, the concept of mazes and labyrinths were broken down in order to understand the differences between these spatial structures and what kind of narrative they may offer for the practice. Although these architectural structures are often referred to as being the same, in fact, they present different spatial arrangements. The labyrinth is a single-path space that leads, whoever enters in it, to a linear journey without deviations or dead-ends; whereas the maze is a puzzled and multi-path space that can confuse, and mislead. Hermann Kern describes the characteristic of a labyrinth and what differentiates it from mazes:

> Their sole function is to mark a path, to define choreographically, as it were the fixed path movement. The path begins at the small opening in the perimeter and leads to the center by wending its way in circuitous fashion across the entire labyrinth. As opposed to a maze, the labyrinth's path is not intersected by other paths. There are no choices to be made, and the path inevitably leads to, and ends at, the center (Kern, 2000, p. 23).

As Kern describes, the pattern and logical arrangement of labyrinths differ from mazes. They develop into specific spatial choreographies that determine how people circulate and experience this type of architecture.
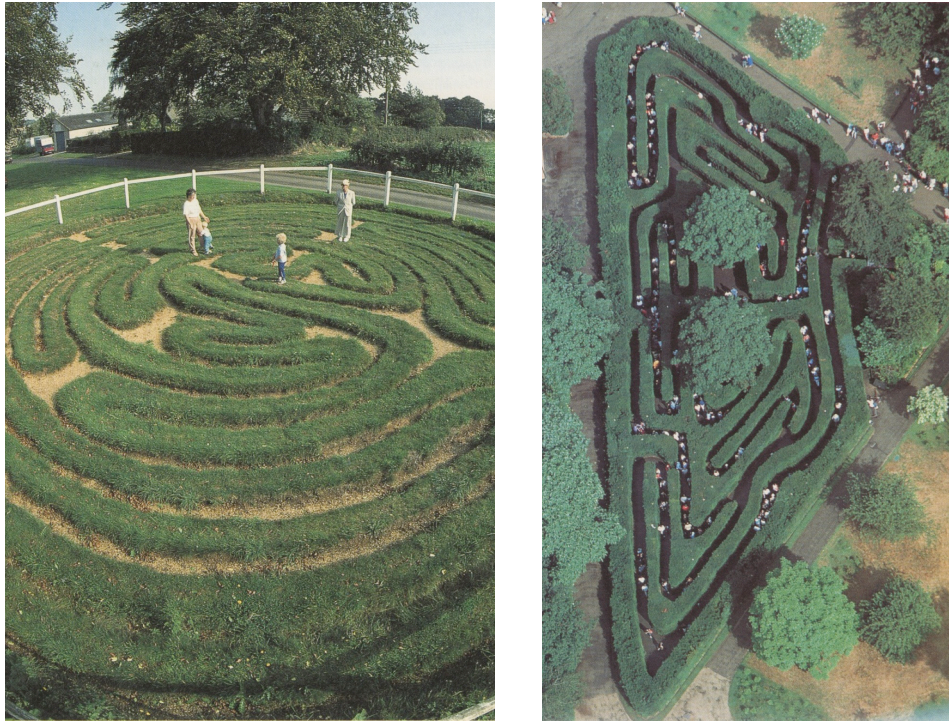
Figure 28. Turf circular labyrinth on the left, and maze on the right (in Fisher & Gerster, 2000).
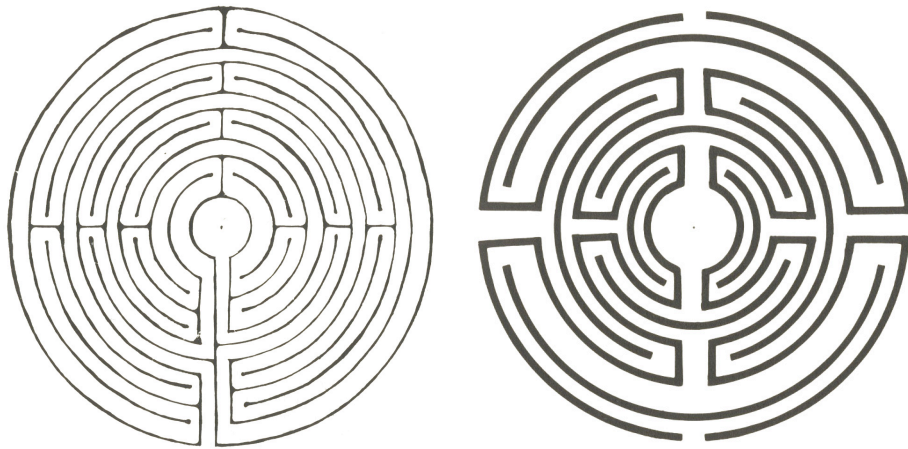

Figure 29. Circular labyrinth on the left, and circular maze on the right (in Doob, 1990).

Figures 28 and 29 compare labyrinths and mazes in two different contexts: as part of a landscape architecture, and as graphic representation. Indeed, these two concepts are visually and aesthetically similar, and both provide a sense of familiarity that facilitates the production of meaning. This is one of the crucial aspects identified in this research in the spatial theory analysis. But the structure of the spatial arrangement makes a significant difference. The spatial arrangement choreographs the movements of the walker in completely different ways and, therefore, they generate different narratives: in the labyrinth *you find yourself*, in the maze, *you lose yourself*.

Author Penelope Doob (1990, pp. 46-51) describes the symbolic and narrative qualities of mazes and labyrinths. She categorises mazes as multicursal models that present themselves as a puzzle to solve. The person who enters a maze is confronted with multiple choices that incite doubt, confusion, and frustration with a higher risk of getting lost. Mazes are places of ambiguity and complexity and, according to Doob, are analogous to the forest, the desert and to places of difficulty. These structures offer a journey based on the individual experience that leads the walker to frustration, or to a transcendental experience on the overcoming of obstacles. In contrast, the labyrinth is unicursal and linear, guiding the person who enters the labyrinth, even when he or she does not know to where the path leads. Labyrinths also provoke confusion; however, the confusion lies in the walker and in his confidence in continuing the journey. Thus, the labyrinth shows the walker how to be patient and to endure on his or her journey, and find the labyrinth's centre.

These are the guiding principles for the starting point of the practice that supports the examination of possibilities for two main proposals: the creation of an indoor and outdoors labyrinth, and an outdoors maze.
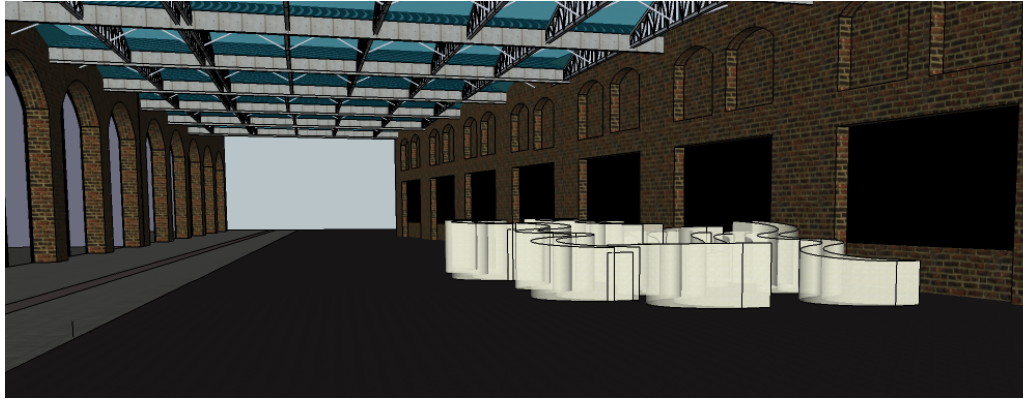
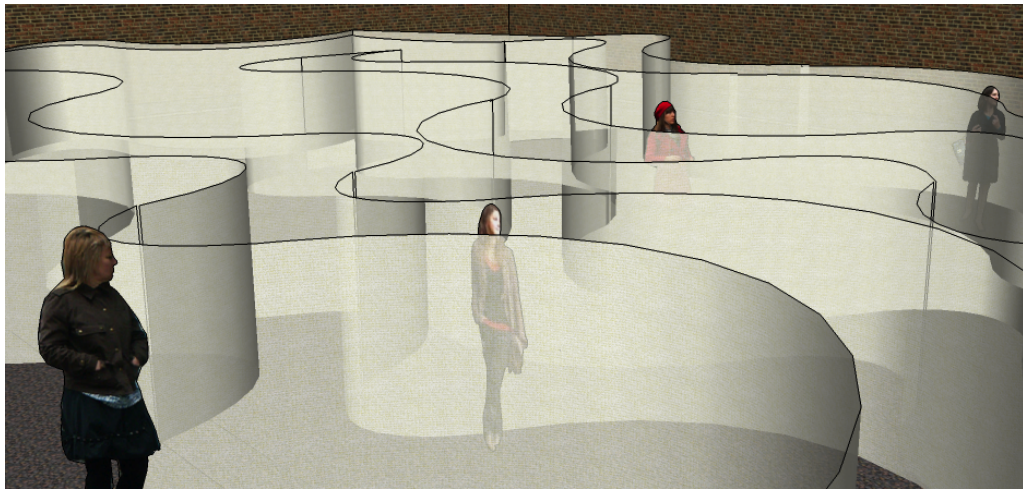**Figure 30**. Maze outdoor proposal (I).

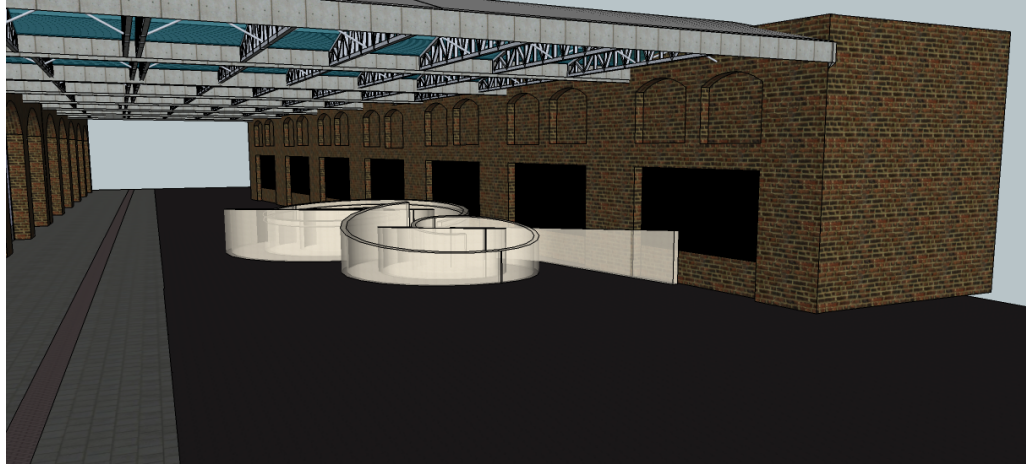**Figure 31.** Maze outdoor proposal (II).

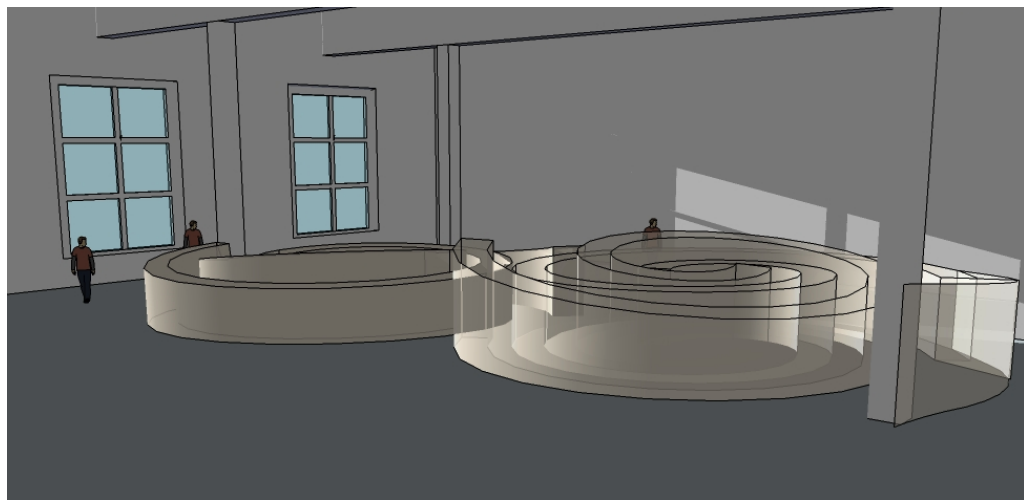**Figure 32.** Labyrinth outdoor proposal.

Figure 33. Labyrinth indoor proposal.

The sketches from figures 30 to 33 attempt to combine the narratives inherent in labyrinths and mazes with Bachelard (1969) and Merleau-Ponty's (1962; 2004) theories, in order to create proposals that project the subjective, imaginary, and sensory qualities of space. The two first sketches, figures 30 and 31, portray a situation in which the public encounters a maze-like spatial environment with a multi-path logic, that offers the public different choices on how to interact and explore the spatial surroundings. It speculates on the possibility of the public experiencing the installation individually or collectively. The sketches also envision the use of a transparent material that gives visibility to the members of the public, potentially making interaction easier between the people inside the installation space. The second group of sketches, figures 32 and 33, propose a more familiar and recognisable spatial structure that can easily be associated with a circular labyrinth. The advantage of this familiarity is that the engagement with the installation is potentially more intuitive, but the interaction with the spatial surrounding is likely to not be as diverse as in the first two sketches.

Both proposals present a solid spatial narrative based on the cultural meaning and familiarity of mazes and labyrinths found in a variety of contexts with a built-in storyline. In order to invoke the storylines of mazes or labyrinths, the practice needs to engage with memory and the public's capacity to interpret and establish associations. Therefore, Bachelard and Merleau-Ponty are two touchstones in the creation of a narrative based on these types of spatial structures. Phenomenology, and theories on the collectiveness of space support the practice's investigation into the creation of a relational space in which the public is able to relate to others as much as with their surroundings. Spatial narrative is integrated into the search for a behaviour associated with spatial dynamics from which can emerge the performativity of space.

Overall, the two first sketches form a conceptual base for the further devolvement

of an interactive installation. Nonetheless, it is necessary to specify which of the two proposals is going to be developed further. The maze presents itself as a flexible and adaptable idea, a space that gives more freedom for the public to explore and interact with its spatial surroundings in multiple ways. Furthermore, maze structures constitute a space that inhabits another space. The re-arrangement of the pre-existent spatial logic works as an invitation for the public to enter and explore a new spatial environment.

To summarise, this section discussed the conceptual and narrative basis for the practice through a brief examination of labyrinths and mazes. The next section develops the narrative of the maze, and analyses its spatial intervention based on the study of the differences between labyrinths and mazes.

3.3. Transforming narratives: *Space machine*

Space machine is the title of the interactive installation developed as practice in this research. Its starting point was the narratives associated to mazes to reconfigure the experience of space. After the analysis and distinction between mazes and labyrinths, this section continues with the deconstruction of the maze narrative, and its reconfiguration, whilst preparing the conceptual framework for the practice. Hence, the section examines the defining characteristic of mazes as spatial structures.

The research opted to integrate the idea of the maze into the practice instead of the labyrinth. Despite the similarities, the two concepts possess fundamental differences as spatial structures, including their inherent narratives and movement choreography. The research opted to investigate the spatial relations and narratives of the maze for its adaptability and flexible storylines. However, the maze is not integrated in the research in its literal sense, but figurative instead. It works as a motif within the dramaturgical composition.

The investigation into the narrativity of the maze is carried through visual strategies aimed at uncovering familiar, visual, and spatial logics to which the public can relate. The first visual strategy consists in the study of maze-like structures in three different contexts: graphic representations of algorithms and mathematical mazes; architecture and landscape; and installation artworks. These three contexts are placed side by side in order to unravel which are the most commons characteristic and aims, and how they may be able to shape spatial narratives and relationships.

Mathematical and Abstract
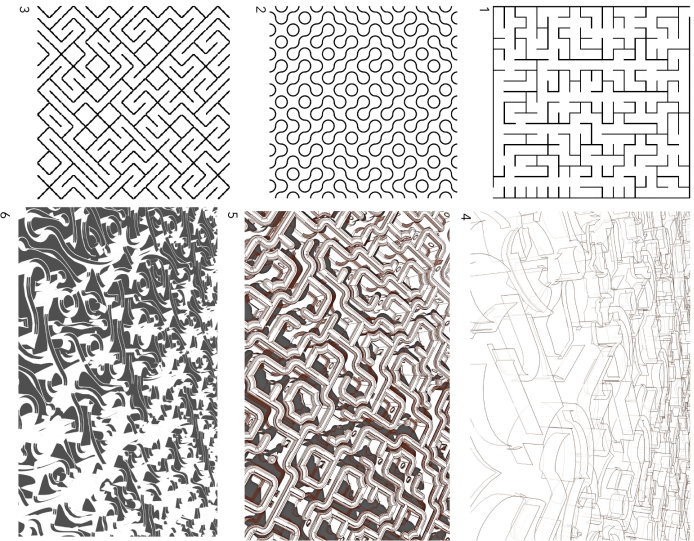
Architecture and Landscape

Installation Art

1. Prim Maze.
2. Truchet's Maze (I).
3. Truchet's Maze (II).
4. Un-named abstract maze (I).
5. Un-named abstract maze (II).
6. Un-named abstract maze (III).
7. Longleat Safari Park, Wiltshire, England.
8. Isabelle Beaufort and Bernard Ramus (architects), Cordes-sur-Ciel, France.
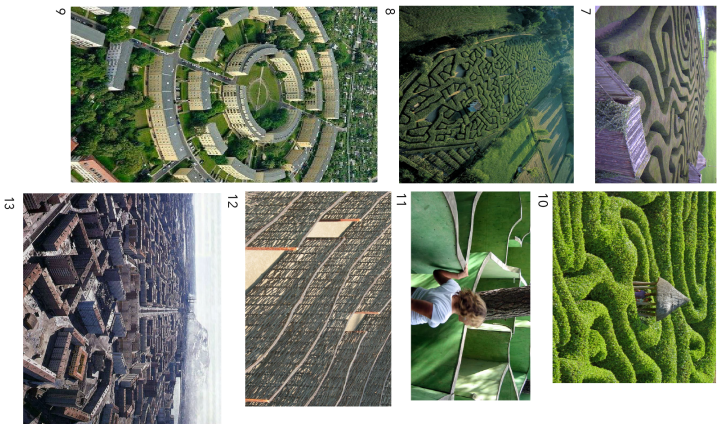
9. Urban Maze (unknown place).
11. Garden Maze (unknown place).
10. Glendurgen Garden Maze, England.
12. Garden Maze (unknown place).
13. Urban Maze, City of Norilsk, Siberia, Russia.
14. Claudio Parmiggiani, *Untitled* (2001)
15. Jeppe Hein, Mirror Labyrinth (2008)

16. Huabing Guan, Travel in time (2010)
17. FABRIC desing (2013), Rosenborg Castle, Denmark
18. Etta Lilenthal & Ben Zamora, Throug hollow lands (2012)
19. Michelangelo Pistoletto, Labirinto e grande pozo (1969)

Figure 34. Examples of mazes' contexts.

148

The first visual group shows abstract mazes with mathematical properties. For example, Truchet's mazes[24] represent algorithmic puzzles. These types of mazes are simultaneously organised and complex, with relentless visual repetition and fragmentation. Moreover, the mathematical patterns are visually minimalistic and over organised. Segmentation, repetition, division, simplicity, and structure are some of the words that can best describe these types of mathematical mazes, which are, indeed, a visualisation of algorithms and calculations.

In the architectural group, mazes are found in both landscape and urban design, often treated as an aesthetic adornment of gardens. In this context, mazes are carefully designed to create a positive fragmentation of space, inviting users to a playful experience of their surroundings. Urban design, on the other hand, has created large-scale, and probably unintentional, mazes that are, in some cases, a result of over planned and dysfunctional urbanism. The maze patterns in urban landscape are prone to generate a negative fragmentation of space. The Siberian city of Norilsk, for instance, presents a maze-like pattern as a result of over-industrialisation, which projects a sense of unhealthy urban environment. These two architectural contexts show how the meaning of the maze can shift depending on the purpose, functionalities, and the challenges that mazes might pose to the user. Particularly in urban landscapes, mazes are not represented in the literal sense as they are in gardens. The idea of the maze emerges by visual association or through a sense of fragmentation and discontinuity of space. Hence mazes in urban and city landscapes are prone to negative connotations.

Figure 34 shows three different contexts where mazes can be found, namely installation art projects. In the context of art installations, the maze has both positive and negative connotations. In some of the examples in figure 34, artists emphasise the geometric lines and puzzle-like properties. These types of artworks

---

[24] The *Truchet maze* is an algorithm maze created by the 17th century mathematician Sebastian Truchet, consisting in rotating a geometric shape in 90 degrees to generate a visual pattern.

explore the narrativity of mazes in order to enhance spatial relations and interactions amongst the public, highlighting its theatricality and performativity. For example, Danish artist Jeppe Hein's installation *Mirror Labyrinth* (2008) is a foreign body in a natural landscape with the ability of camouflaging itself. Aesthetically, the installation marries with its natural surroundings, and its enigmatic and intricate spatiality incites the curiosity of the public. Another example of a maze in art is the work by Claudio Parmiggiani who built a glass maze (2001). The work is both an installation and a performance evoking emotions of isolation and anger. During the performance the artist walks through the maze with a hammer breaking the glass wall, gradually destroying the maze. Finally, Etta Lilienthal and Ben Zamora's installation *Through the hollow lands* (2012), takes on a non-literal version of a maze. The artists built a three-dimensional fragmented space that expands horizontally and vertically. This representation of the maze is more abstract than Jeppe Hein or Claudio Parmiggiani's work, but it still gives a sense of the characteristic spatial fragmentation of mazes.

These examples tackle the main narrative lines of mazes in terms of spatial organisation, aesthetics and meanings. The symbolism of mazes proves that these spatial structures have a rich narrative potential to which the public can relate. The above examples demonstrate that fragmentation and discontinuity are defining features of mazes, and can disrupt spatial experience either in a positive or negative way.

The second visual strategy examines where spatial fragmentation can be found beyond the context of the maze. Figure 35 bellow shows two sets of images that portray the idea of fragmentation, interruption, and discontinuity in ordinary spaces. This exercise allows defining ideas inherent in mazes within other contexts, and observing how mazes may be translated into other spatial situations.
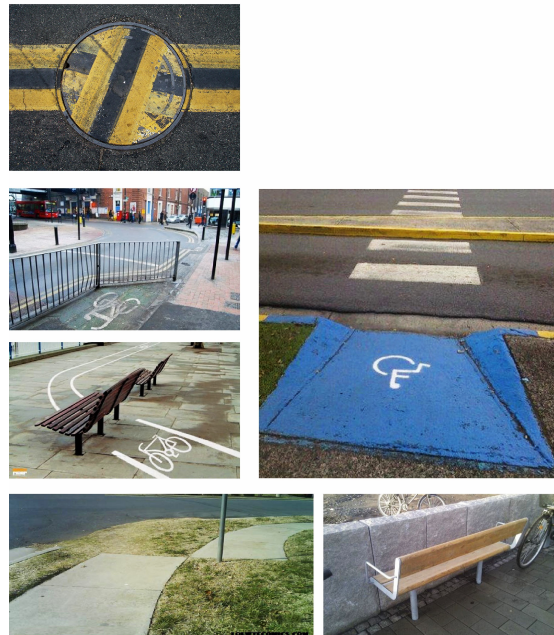
Fragmentation

Interruption and discontinuity

Figure 35. Visualizing interruption, discontinuity and fragmentation of space.

Miwon Kwon's (2002) critical analysis on site-specificity tackles problematic place-identity and social alienation, which can be associated with the idea of fragmentation, interruption and discontinuity in urban and quotidian spaces. In some images, spatial fragmentation is found in urban spaces with dysfunctional design as a consequence of careless policies for the development of public spaces. Since space is a complex multi-layered reality where subjects and objects relate to each other (Merleau-Ponty, 1962), spatial fragmentation and discontinuity impact the individual and collective behaviour. Nevertheless, it is within the areas of spatial conflict and ambivalence where the artistic interest emerges.

From an artistic point of view, fragmentation, interruption, and discontinuity of space can be deliberately used to disrupt the normality of the social routine in shared spaces. There are unconscious choreographies generated by bodies' circulation within the spatial fabric. These choreographies, as Judith Rugg (2010) defends, generate the performativity of everyday life.

Within the research's dramaturgical frame, the idea of the maze presents itself with a dual meaning. In its literal sense, the maze is able to evoke positive interpretations and emotions. Previously in this chapter, it was discussed how the imagery of the maze connected with Bachelard's (1969) ideas on the role of memory and imagination in spatial experience. Therefore, fragmentation, interruption and discontinuity can symbolise the individuation and isolation of space that provides an immersive and personal perception. They can also increase the awareness of spatial surroundings and unconscious everyday life choreographies. It makes the experience prone to playfulness. In contrast, fragmentation can also generate negative responses to space. Disrupting spatial continuity can be perceived as a hindrance, forcing people to have to re-adjust to an unexpected obstacle in space. There is a probability that interfering with spatial arrangements may incite a negative response.
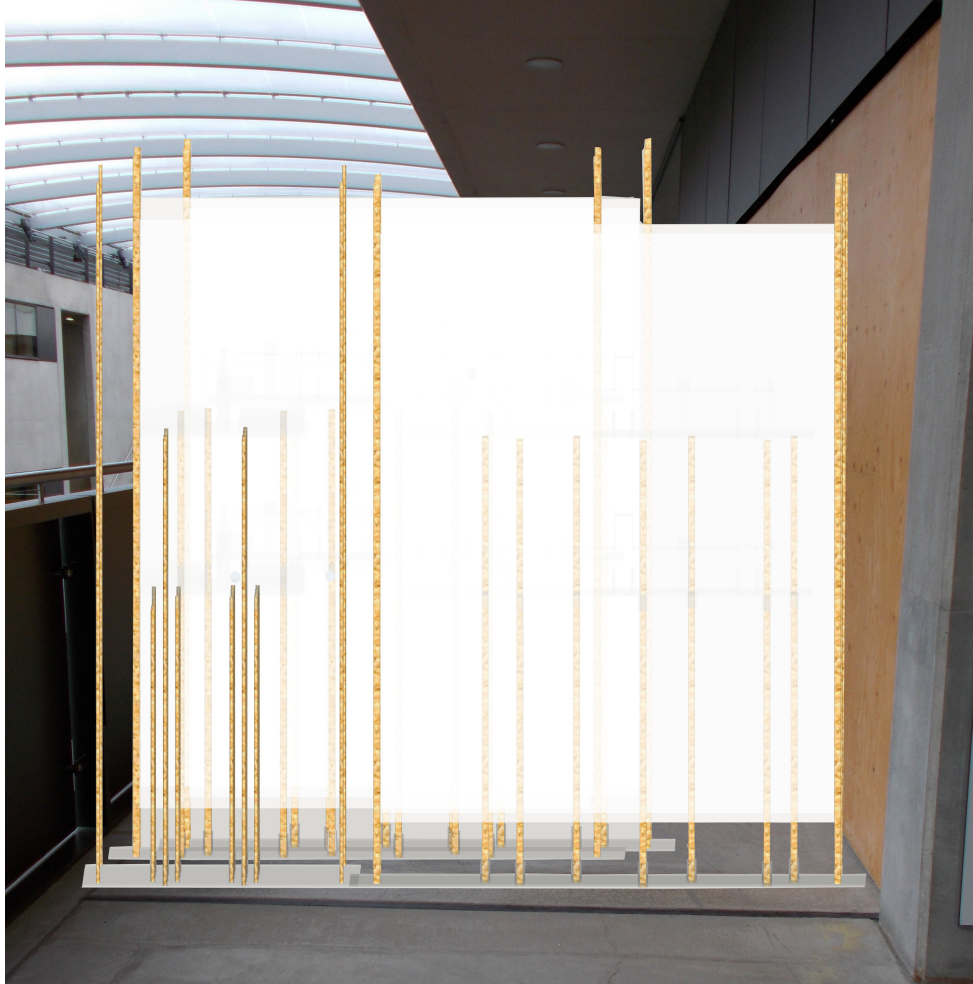
Figure 36. Installation in corridor (I).

Figure 37. Planning the installation in communal space.

Figure 38. Planning the installation in one of the building's bridges.

Figures 36, 37, and 38 represent the second stage of the installation's development. The sketches propose an installation that mimics the spatial arrangements of a maze rather than portraying it in a literal sense, as in the sketches in the previous section shown in figures 30-33. They envision a modular structure that interferes with the original spatial logic, posing an obstacle, fragmenting and interrupting the continuity of movement in that space. Overall, the above sketches attempt to integrate the narrative and ideas associated with the maze: fragmentation, interruption, and discontinuity.

The aim is to create a space that inhabits another space and challenges the user to reconfigure or adapt to a new spatial arrangement. The installation stages a situation in space as a foreign body in a passage in the Granary Building at Kings Cross. It interrupts the linearity of the corridors, which allow students and staff to traverse from one place to another. These spaces were designed to be functional and allow free and quick circulation of people. The provocation of this particular proposal lies in the ambiguity between a playful situation and a troublesome or bothering obstacle. The artwork is open to different types of response in order to give the public the possibility to be spontaneous whilst interacting with the installation. Spontaneity underpins the concept of participation, which is a manifestation of the public's ability to produce different interpretations and meanings. At this stage, the research proposal for an interactive installation envisions the possibility of the public showing common reactions as well as exceptional behaviours. It is in the unexpected result, that lays the provocative and disruptive qualities of this artwork.

Overall, this section analysed the narrative of mazes, and excluded the possibility of creating an interactive labyrinth. Additionally, the visual methods used also deconstructed the conceptual and symbolic qualities of the maze in order to establish a narrative for the practice in this research.

3.4. Analysing the creative process: graphic outlines and prototypes.

Following the previous discussion on the concept for an interactive installation inspired by the narrative of maze-like structures, this section concentrates on the technical aspects of the installation. It unfolds the development of the creative process, from the earliest stages of prototyping to the final setup. This process includes the graphic outlines of the technical requirements, and the creation of a series of prototypes that define the haptic interactive and mechanical system of the installation[25].

In *Proposals for a cybernetic theatre* (1964), Gordon Pask also highlights the importance of building small-scale models, or prototypes, before venturing into the production on an interactive artwork in life size scale. He explains that a miniature system provides "detailed design data for a much larger system and some experience in dealing with suitable plots and dialogue" (1964, p. 17). The creative process of this research follows the same principle. Prototyping is a useful art research method that allows for the planning and testing of the technical and functional requirements of the artwork; however, it is also a method for reflection, discovery, and artistic experimentation.

Before the prototyping stage, the practice outlined the basic technical requirements through graphic sketches of the mechanical components, electronic design, and installation interface. These sketches prepared the ground for the practice to develop the prototypes that test the functionality of mechanisms, materials, and electronic systems, including sensors and actuators. In total, four prototyping stages were created, each one focusing on a different technical component or design

---

[25] The video documentation of this process is attached to this thesis in a USB memory stick.

element of the installation. This stage of the practice is not only focused on the technical functionality of the installation, but is also a method for bridging the compositional elements for the creation of a *space dramaturgy*.

The practice at this stage of the research develops according to two complementary strands: the design of mechanical components, and the development of electronic system involving actuators, sensors, and Arduino boards. As one of the dramaturgical elements, technology mediates the relationship between body and space, underpinning the main theoretical premise of this research: multisensory perception and the development of *machine aesthetics*. The main purpose of technology is to expand the visual narrative, that of the maze, and also add another sensory dimension by determining a type of interaction that involves touch. Thus, the technical design of the installation pursues a haptic interaction highlighting the materiality and multi-sensory perception of space.

Although this section emphasises the technical development of the installation, it is still concerned with the narrative proposed in the previous section. Overall, the prototype process seeks to build an interactive modular installation, titled *Space machine*, that intervenes in space evoking the sense of fragmentation, non-linearity and individuation experienced in mazes.

3. 4. 1. First stage of prototyping: gears and electronics.

The first stage of the prototyping process combines the graphic sketching and building of small-scale models. This investigates both the functionality, and the mechanical and electronic components in relation to the aesthetic properties of materials of wood and fabric.
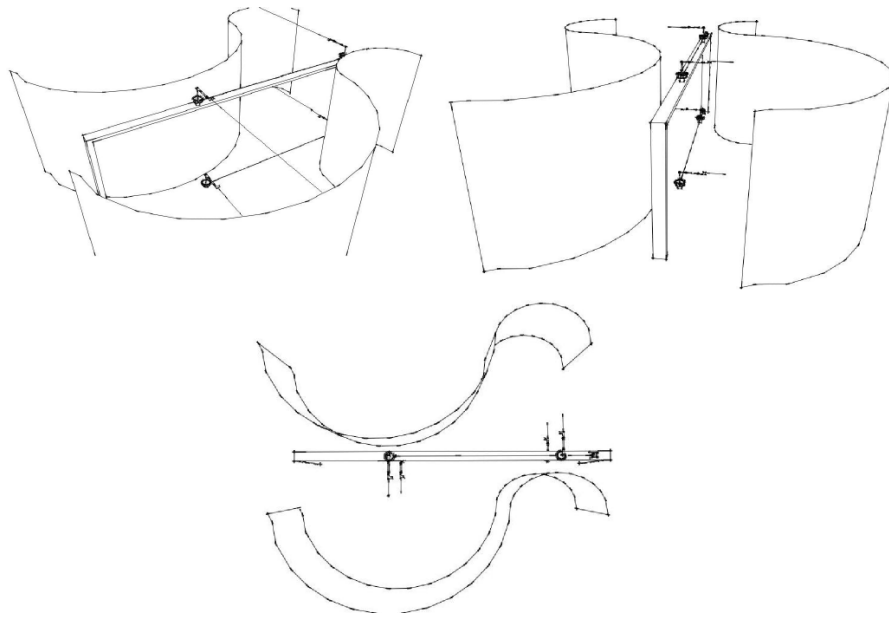
Figure 39. Initial installation's modular plan.

The sketch in figure 39 shows the initial modular organisation and basic functioning of the installation. In the middle of the modular structure there is a rotating mechanism that pulls a malleable interface, generating undular movements. When combined, these modules create a spatial environment based on a maze's logic of fragmentation, and are designed to achieve flexible and adaptable setups in different types of spaces.
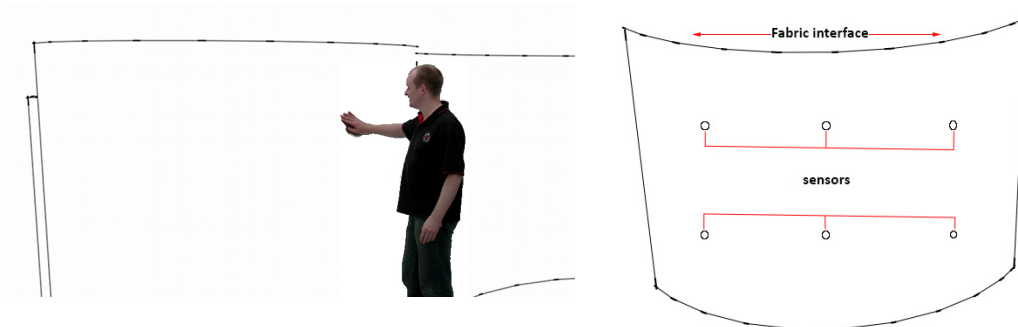

Figure 40. Haptic Installation interface.

The installation's interface is sensitive to touch and, at this stage, it was planned to have incorporated six sensors to trigger the mechanical components to move with different rhythms depending on the intensity of touch. The movements of the interface are meant to give the installation an organic quality in the spatial environment. The first plan envisions a wave-like movement that turns the interface inwards and outwards, achieved through pulling mechanisms. This type of interaction breaks with the ordinary use of space, aiming to offer the public a more intimate relationship with their surroundings.
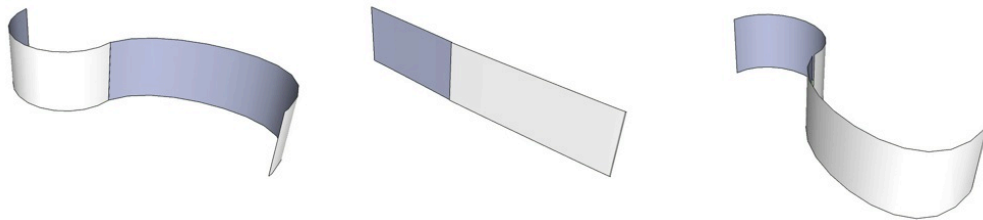
Figure 41. Movement response.

The study of this research into the phenomenological theories of Bachelard (1969), and Merlau-Ponty's (1962; 2004), echo again in the creative process of the practice, supporting the design of the installation's technical system. The haptic interaction is grounded by the idea of the perceptive experience of space, which guides the public in the interaction and apprehension of the spatial environment created by the installation. The combination of visual elements and spatial arrangement, inspired by the idea of the maze, with the haptic interaction, also emphasise the materiality of the installation.
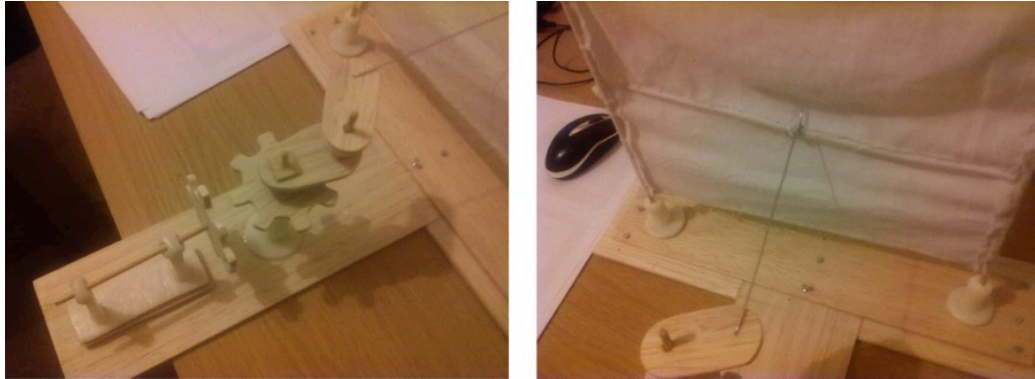
Figure 42. First Prototype.

The first prototype (figure 42) is a small-scale model of gear mechanisms attached to a piece of white fabric. This prototype experiments with fully manufactured gears to test the functionality, aesthetic, and sculptural potential of the mechanical elements. This is part of an enquiry into the materialisation of the concept *machine aesthetics* in the practice of this research. The intricate assembly of manufactured gears creates an attractive visual feature that shows how to combine aesthetics with functionality in the building of mechanical components. Despite its simplicity, this small-scale prototype establishes key materials, wood and fabric, and the basic functions for the installation's final outcome. The electronic components are not included in this prototype, and the interaction is not yet defined; nevertheless this first prototype engenders the basis of the installation's functionality and sets the path for further investigation into the design of the mechanical system that will provide the fabric interface with movement.

3. 4. 2. Second stage of prototyping: sensing system.

This stage concentrates on the sensing system of the installation. The technology used in this research is open source, and based on low-tech physical computing. The initial technological circuit consists of two DC motors, 6 photoresistors, an Arduino board, and a motor driver L1293D. The first circuit is very minimal, but allows testing for the resistance of material, and the potential behaviour that may be explored in the forthcoming prototyping.

Each of the installation's modules possesses two parallel interfaces in which the sensors are placed in order to detect when someone touches the fabric. Although photoresistors are not specifically touch sensors – they measure light levels – they can be used to detect touch.
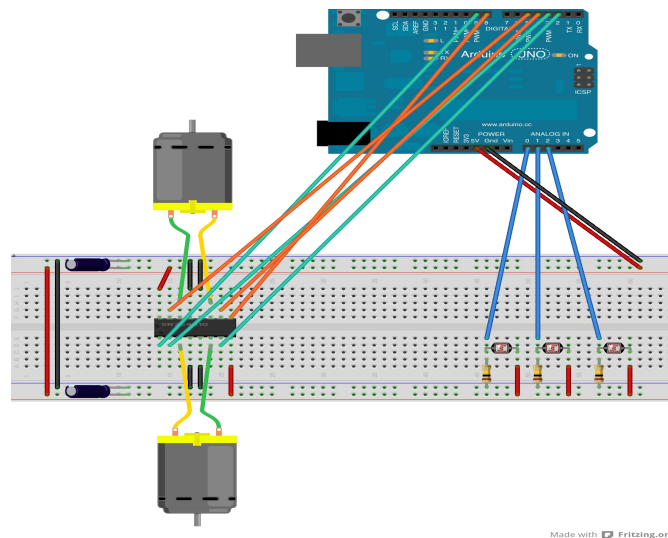

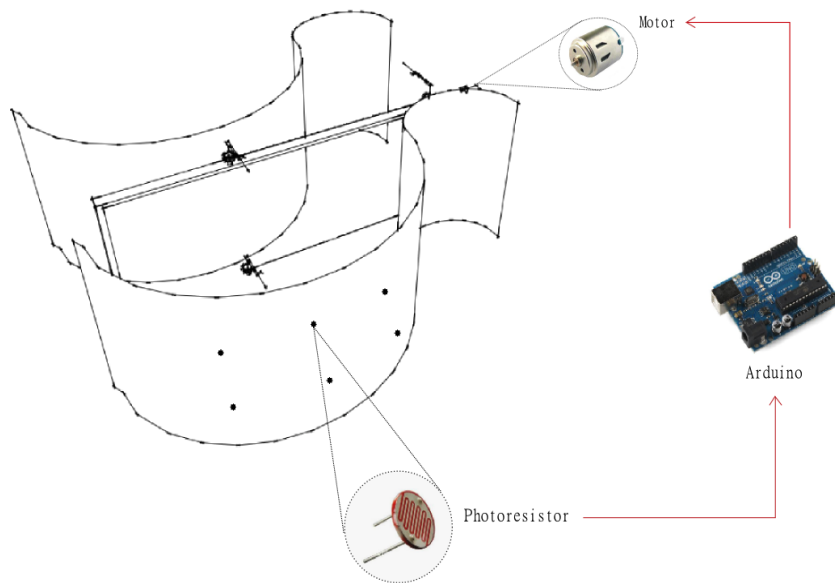**Figure 43.** Initial electronic circuit.

Figure 44. and installation's fabric interface.

The electronic system described in figure 43 and 44 is functional. Nevertheless, this electronic circuit does not provide an accurate input for the installation. As touch sensors, the photoresistors are not stable, and do not provide a consistent input. These sensors respond to changes in light conditions even when not touched. This type of interaction can potentially be confusing for the public.
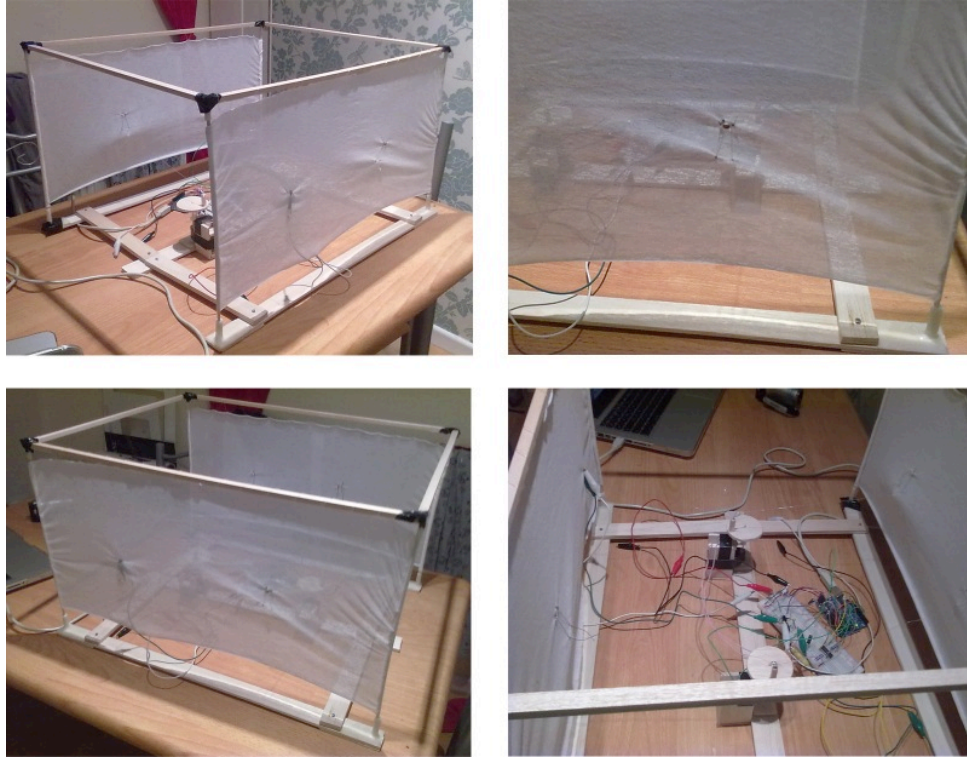
Figure 45. Second prototype.

The previous small–scale model (figure 42) uses standard cotton white fabric, opaque, and non-flexible, whereas the second prototype (figure 45) tests a different fabric: a sheer white, and elastic cotton fabric. This material feels like a thin layer of skin, and aims to give the installation an air of delicacy; however, the material is still resistant and flexible. This is, to some extent, a more pragmatic prototype test that mainly focuses on the function of the electronic components; hence, it uses a simpler mechanism in order to better understand the accuracy of the sensing system[26].

---

[26] The purpose of this decision was to obtain a clear picture of how well the sensing touch worked with photoresitors. Using the elaborate version of mechanism from the first prototype may have interfered with the test. In case the prototype failed to function properly, it would have been difficult to determine the cause, such as whether the circuit of the mechanism design was causing the failure. Additionally, at this initial stage the final version of the mechanism was still not decided.

163

This prototype is still at very early stages and does not establish a link between functionality and behaviour. Thus, the second prototype does not provide sufficient information on the interaction between the public and the artwork, thereby preventing the prediction on the impact of the artwork in the public. There are, however, some positive aspects about this prototype, which has helped the investigation onto the next step. Firstly, the testing of the electronics within the physical structure of the second small-scale model (figure 45) has demonstrated the possibility of building a modular installation. Secondly, this prototype has also established the main material: the white fabric. This experiment proves that the qualities of this textile material have aesthetic qualities that meet the initial ideas of this research, and also offer technical solutions. The fabric is flexible and transparent, and gives an air of delicacy previously projected in the 3D sketches of a maze and labyrinth illustrated in figures 30-33. Nonetheless, the fabric is also resistant to pulling movements from the mechanism, and also allows the incorporation of the electronic circuit within it. Additionally, the flexibility of the fabric opens more possibilities to explore different types of movements as part of the installation's response to human action.

Although the work developed during the building of the second prototype is seemingly technical, it aims, in fact, to establish a connection with the philosophical background of the research. The articulation of the electronic circuits design and the materiality of the fabric and wood, is part of the adaptation of the theoretical premise of Merleau-Ponty's (1962) phenomenology of spatial perception, into practice. The technical work aims to associate the materiality with the installation behaviour in order to enhance the sensory experience of space. Because of the delicate but solid appearance, and textural properties, the fabric and wood appeal to both visual and haptic perception. Whereas the electronics aim to bring movement, rhythm and sensitivity to the installation. The perception of spatial environments is reconfigured through the balanced bond between technology and

materiality, proposing a haptic and sentient space. The objective is to shift the spatial awareness of the public by changing their perception and behaviour in space.

To summarise, the second prototype disclosed some fundamental issues on the progress of the installation, and the direction needed to be taken in future stages. It is necessary to find strategies that refine the installation's behavioural response, and determine the type of mechanism that will be integrated into the final version of the installation, in order to provide technical solutions, and portray the idea of *machine aesthetics*.

3. 4. 3. Third stage of prototyping: movement, rhythm and behaviours.

After testing basic structure and functionality with the two first prototypes, the third phase of prototyping looks into strategies of behaviours, and continues to experiment with mechanical components. This stage also includes the last prototype before the final version of the installation, making the transition from small-scale to large-scale models.

Bodies are naturally mutable and dynamic, always moving from place to place, which creates a contrast with the space where they express their capacity of motion. Unlike bodies, space can often be rigid and immutable. Philosopher Henri Lefebvre (1991), contradicts this idea of an immutable space, and upholds that the body, because of its capacity of movement, can leave a trace and cause changes in spatial environments. Adding movement to the installation design breaks with the contrast between the moving and dynamic body, and immutable and rigid space. This shift in the relationship between body and space becomes part of the phenomenological approach of this research, inviting the public to physically interact with a pliable spatial environment. Thus, movement is a vital aspect for the development of the

practice, as it can enhance the perception of space and improve the interaction of the public with the installation. Authors and architects Michael Fox and Miles Kemp note the importance of a phenomenological perspective in the application of kinetics to architecture:

> The result is a moving image, the behaviour of which becomes the responsibility of the designer; an architect, much like a cinematographer, programs human experiences of moving through the spaces he designs (2009, p. 30).

Phenomenology defines the connection between the psychological and physical aspects of spatial experience and, in the case of this research, mediates the relationship between space, body, and technology. Throughout this thesis, the value of technology within the relationship of body and space has been emphasised. In addition, according to the phenomenological frame of the research, technology needs to relate to a sensorial experience and also be oriented to a behavioural and emotional response.

These are the aspects addressed during this final stage of prototyping. It explores ways of transforming the fabric into a dynamic, more fluid, and responsive interface, in order to provide the public with a sense of a living environment. The previous models have created directions for the following stages of practical investigation. They have demonstrated which technical elements are relevant for the practice, such as material, and which need further testing. However, the sensing system and the mechanism have not provided a satisfactory response to touch, and the movements of the fabric need fluidity. The solution has been found through a method that enables the textile interface to have more defined shapes and fluid movements while someone interacts with the piece: building a net-like structure based on geometric patterns. The research has experimented with the idea of creating this type of net and directly integrate it on fabric to achieve a fluid and dimensional behaviour.
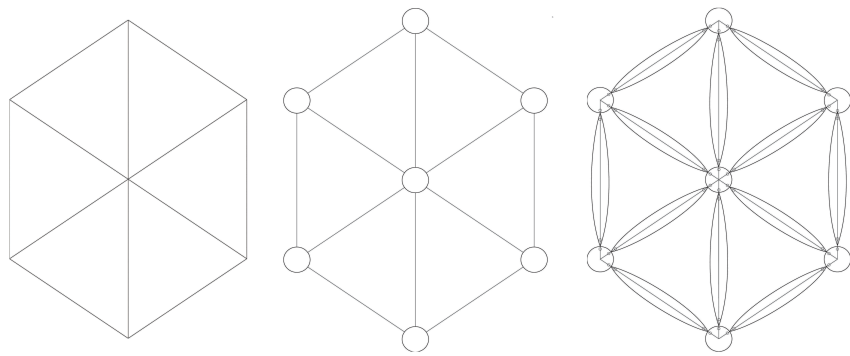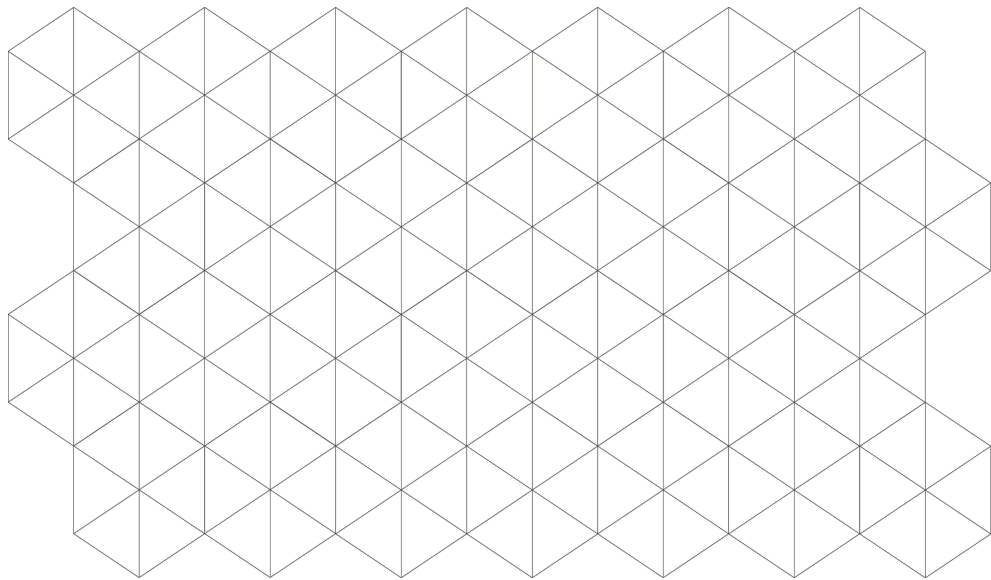
Figure 46. Geometric pattern (I).

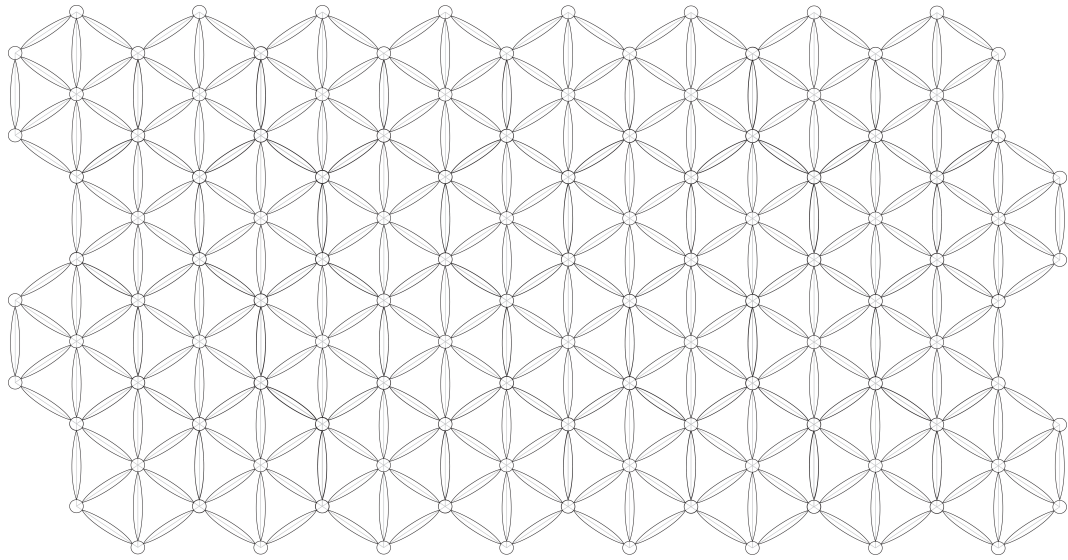**Figure 47.** Geometric pattern (II).

Figure 48. Geometric pattern (III).

Figures 46, 47 and 48 represent the graphic evolution of a net created from a hexagonal shape with seven interconnected points. The structure is initially tested on a smaller scale, and attached to a module of the fabric.
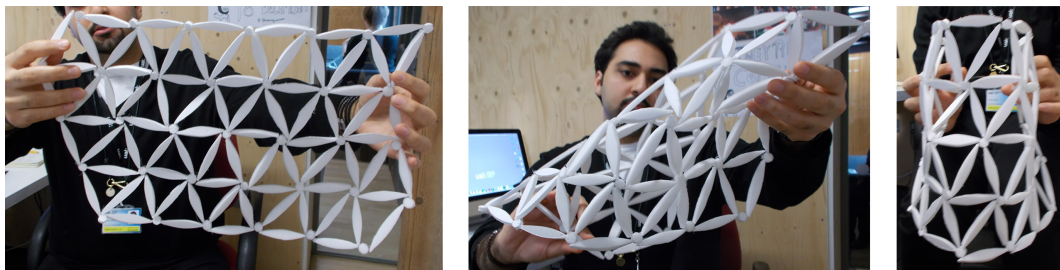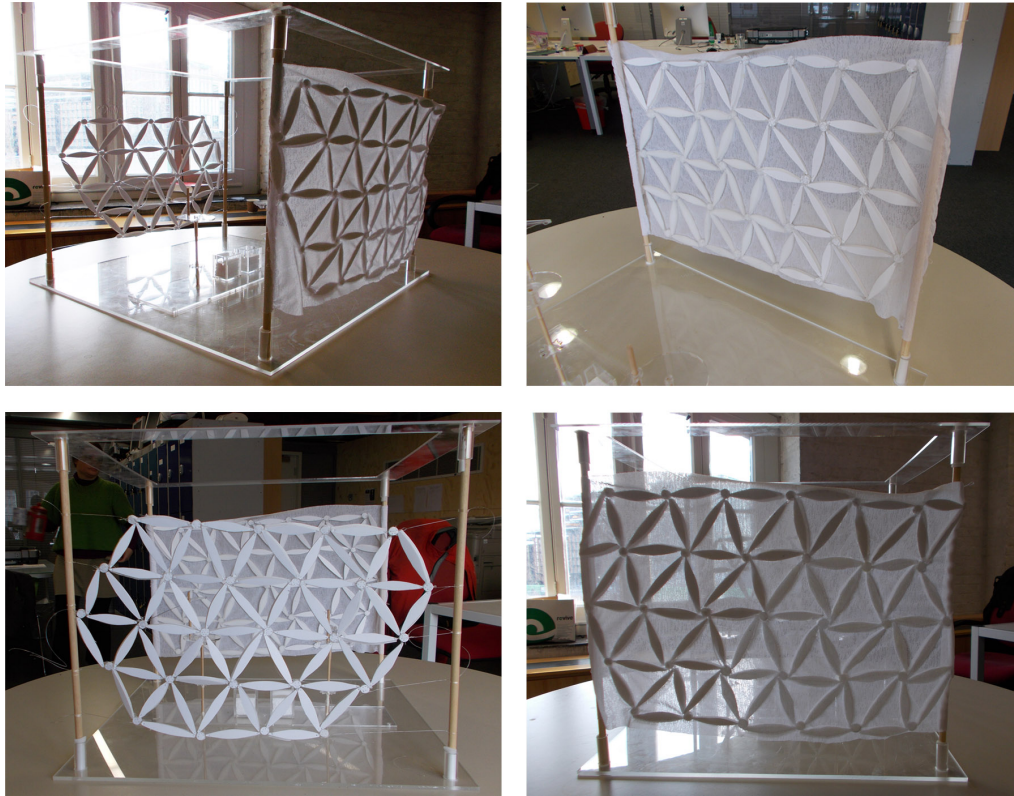

Figure 49. Foam net test.

Figure 50. Foam net on small-scale model.

The feasibility of all basic component parts of the installation composition has been tested in three small-scale models presented in this chapter. This test has been done in order to minimise the margin of error in the construction of the final installation. Furthermore, small-scale prototyping allows a quick visualisation of the potential outcomes before entering into detailed technical planning. Nevertheless, these models do not offer a deep insight into the relationship between the installation's aesthetics and the technical requirement, which is a dramaturgical concern for this research. The research's dramaturgical proposal*, space dramaturgy,* aims to build a coherent and balanced interconnection between the artistic purpose and technical achievement, without one overlapping the other. Another limitation of these models is the scale. The small components are fragile and not fully functional, which poses some challenges in the gathering of sufficient information on the functioning of the mechanical components and their contribution for the interactivity of the

piece. This marks a transition in the process of prototyping. The model that ends this stage of the practice is constructed on a bigger scale. It assembles all elements together, and continues to investigate and experiment with circuits and mechanisms.
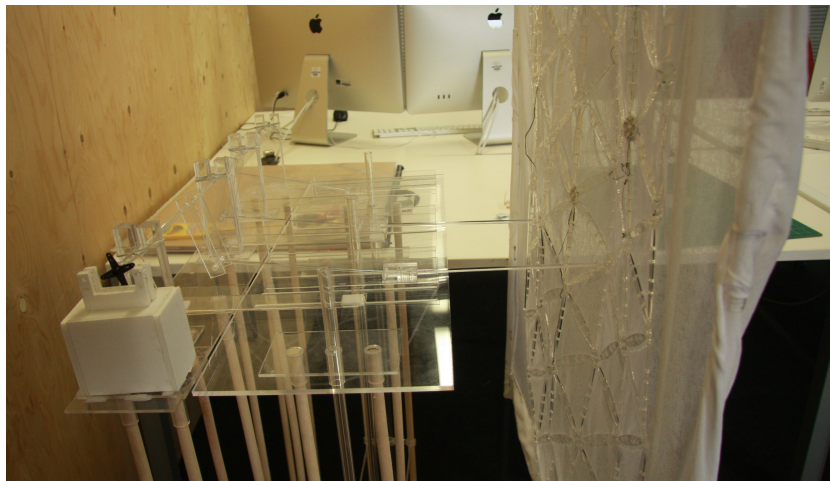

Figure 51. Large Scale prototype - touch sensor.

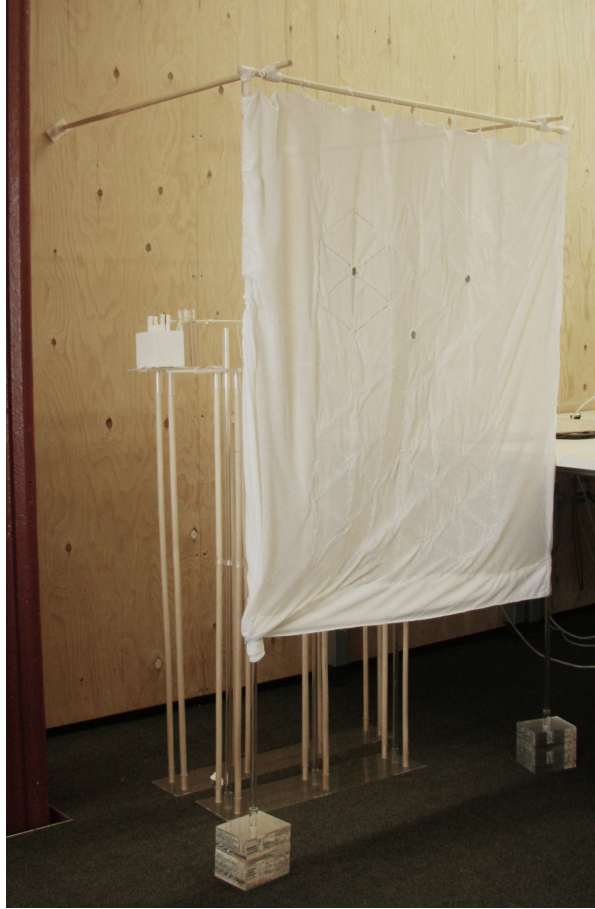

Figure 52. Mechanical structure

Figure 53. Large scale prototype.

The final prototype includes all the installation features: a textile interface with a structural net stitched on the inside, sensors made with conductive fabric and thread already integrated on the surface, and a slider mechanism that, due to 'push and pull' movements, generates the movements of the fabric.

The conductive fabric and thread are used as sensors to detect touch. The input is generated by physical contact without the risk of interference from environmental conditions such as the levels of light. This prototype also demonstrates that the net is a reliable strategy, producing a range of movements that allows exploring effects and responses of the textile according to the intensity of touch. There is, however, a discrepancy between the potential range of movements of the net and the

mechanism. The integration of the net in the interface enables more organic, fluid and diverse movements, whereas the slider and crank mechanism's movement is very limited. The prototype has tested three slider-crank mechanisms with a difference of 90 degrees rotation around the same axis attached to a single actuator, in order to create a sequential movement. However, the movements have been repetitive, and have not offered sufficient response to the interaction. The final prototype has not fully resolved the design of the installation's mechanical elements, yet it has been possible to gage that actuators should operate each slider mechanism individually in order to achieve a greater variety of movement.

The most important feature of this prototype is the scale, which provides an insight into how the public may perceive and interact with the installation's interface. Moreover, this prototype also demonstrates that building a large-scale version of the installation creates a spatial *mise-en-scène* that enables the possibility of setting up an immersive spatial experience.

In hindsight, these prototypes reflect a process of discovery and experimentation towards the technical execution of a performative interactive installation based on a netting of different concepts such as *machine aesthetics,* and the sensory perception of space. Each prototype addresses separately each technical component of the installation, testing functionality, and realising one of the main research dramaturgical concerns: the anticipation of the public's experience. This has been done through experimentation with the mechanism, the physical properties of the materials, the perception of movement, and the interactive movement of touch.

The creative process of prototyping has allowed assessment of materiality, and how it may be enhanced by technology. The materials of the installation have become as crucial as the technological components that have transformed the structure into an interactive installation. The installation's materiality was originally thought to be

appealing to touch and visual senses. Nevertheless, the prototyping process reveals that the combination of all technical and physical components produce sonorous rhythms. The rhythm of the sounds produced by the electronic and mechanical elements lifted the installation sensory qualities, and have produced in the odd rectangular structures a sense of liveness.

To conclude, the installation's materiality is emphasised through a range of multi-sensory effects such as sound, movement, and rhythm. The sound qualities of the installation can potentially trigger associations with memories of other *things* with similar properties, enabling the public to produce meaning and interpretations. Therefore, appealing to several physical senses enriches the interaction of the public with the installation, which is also an essential aspect for triggering the performativity of the artwork.

3.5. *Machine aesthetics* and mechanical components.

This section concentrates on the completion of the installation design for mechanical components made under the concept of *machine aesthetics*. The previous sections describe the design process of the mechanical structure for the installation. However, the prototypes do not establish the final format of the mechanism.

The study of the relationship between body, space, and technology results in a tangible juxtaposition between subjective experience and materiality. This juxtaposition influences the production process of the installation, which combines digital technology with handmade work. The aim is to build a space that inhabits another pre-existent space that relates to the narrativity of the maze. However, during the prototyping process, the installation has developed into a machine type structure. Furthermore, the installation has developed into a theatrical machine for space. The theatricality of the installation emerges from the scale of the modules, the visibility and aesthetic appeal of the mechanical components, thus implementing into the practice *machine aesthetics*.

The previous prototypes explore the functionality of mechanisms, integrating with the electronic circuit and organisation of the modular structure that forms the installation space. But one of the aims of this research - to transform mechanical functionality into an artistic expression - is still not fully resolved. Thus further enquiry is required on the meaning of *machine aesthetics* within the research context. *Machine aesthetics* is not a new concept in art, and this research questions a process of evolution of the machine: how can *old* forms of machinery give origin to new ones.

Samuel Butler's *Darwin among the machines* (1863), is a provocative essay that speculates on the evolution of machines towards the substitution of man as the predominant species. In this essay, Butler discusses the *mechanical kingdom* and imagines future evolutionary paths for machines. The essay introduces a visionary idea of intelligent machines, profiling their type of consciousness and morality. It is one of the earliest idealisations of artificial intelligence. Butler's argument addresses the intersection of two scientific fields: the crossover between engineering and Darwin's evolution theory. He begins his argument with the following idea:

> If we revert to the earliest primordial types of mechanical life, to the lever, the wedge, the inclined plane, the screw and the pulley, or (for analogy would lead us one step further) to that one primordial type from which all the mechanical kingdom has been developed, we mean to the lever itself, and if we then examine the machinery of the *Great Eastern*, we find ourselves almost awestruck at the vast development of the mechanical work (1863, p. 2).

Samuel Butler's line of thought draws on the evolution of machine intelligence. However, as the angle of this research on technology is not based on artificial intelligence, it considers Butler's ideas from another perspective to define the concept *machine aesthetic*. Butler envisions an evolutionary process for machines that also conveys a physical and mechanical evolution. Like any other species on Earth, the physical attributes of machines have also evolved. Machine evolution offers the research a perspective of technological development as a cumulative process, in which newer forms of technology can still maintain their links with older ones. Hence, in order to complete the development of *machine aesthetics*, the research will look back at older models of machine components.

Machine aesthetics echoes the technological evolution both in science and art. Going back to the earliest decades of the 20th century, avant-garde artists have expressed views on the impact of technological progress, applying mechanical movement, rhythms, and shapes to artistic language. Chapter 2 briefly reviewed the

work of Oskar Schlemmer and Vsevolod Meyerhold, and how their artistic practice was culturally syntonic with technological development. These artists appropriated the mechanical features of technology – movement and rhythm. Nonetheless, the process of technological evolution is not linear and continuous. With the arrival in art of film, video, and computer technology, the mechanical features of technology became intangible and often invisible.

Influenced by the idea that technology evolves, the research aims to recover the mechanical visual appearance from 19th century mechanical devices, and create a contemporary interpretation. The final stage of the design of the mechanical elements investigates the evolution and transformation of machine aesthetics into the context of the 21st century.

Cornell University researchers have created a digital library of *kinematic models for design* (kmoddl.library.cornell.edu), a comprehensive database of antique mechanisms. The database includes gears, slider-cranks, and joints that belong to steam machines, for example. The figures below illustrate some of the material included in Kmoddl library:
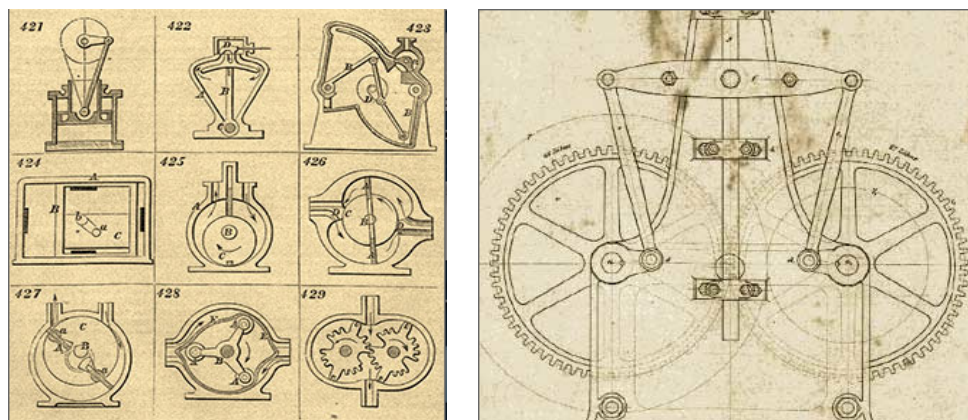

Figure 54. 19th century mechanism design plan.

Figure 55. Slider-crank mechanism.

More than a concept, *machine aesthetics* is also a research method for creating a visual coherence for the installation that harmonises technology with the other tangible and material elements. Figure 55 shows an inversion of slider-crank mechanism with substantial visual appeal. This research has already experimented with slider-crank mechanisms, but in order to improve the function and the aesthetics of the mechanism, it adopted the circular slider-crank.
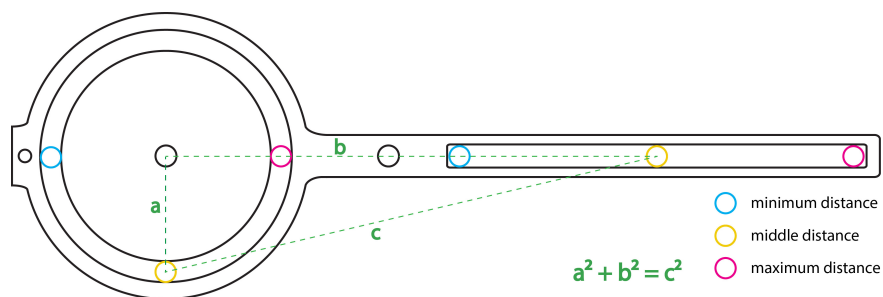

minimum distance
middle distance
$a^2 + b^2 = c^2$ maximum distance

Figure 56. Adaption of inversion slider-crank mechanism.

These mechanisms invoke a particular era of technological development – the Victorian age. The process of adaptation of these mechanical devices to the 21st century is not only achieved through re-design, but through methods of fabrication and redefinition of materials. The mechanical structure of the installation maintains the main design lines of the original 19th century model. The calculation of the measure of the mechanism is based on the Pythagoras theorem, which simplified the design for laser cutting.

The materiality of the installation is also defined by methods of fabrication. Some of its elements reflect manufacture production, but in order to create a modern version of 19th century mechanism, digital technologies of fabrication like laser cutting have been used. The original mechanisms are sturdy, and possess the robustness of steel machinery. The research inverts the logic, and explores the delicateness and vulnerability of the machine, thereby matching the sensibility of the fabric like a skin that activates a mechanical skeleton. The installation is built with clear acrylic and pinewood, which are materials that offer the strength needed for the installation's physical structure without compromising the aesthetic balance of the piece. The light colour and smooth texture are combined with the whiteness and transparency of the fabric and fragility of the acrylic.
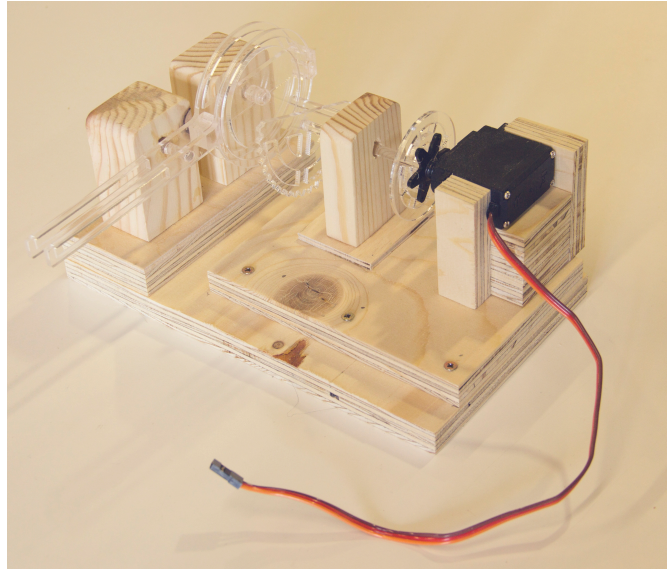

Figure 57. Final version of mechanism.

Figure 58. Mechanism with a servo motor**.**
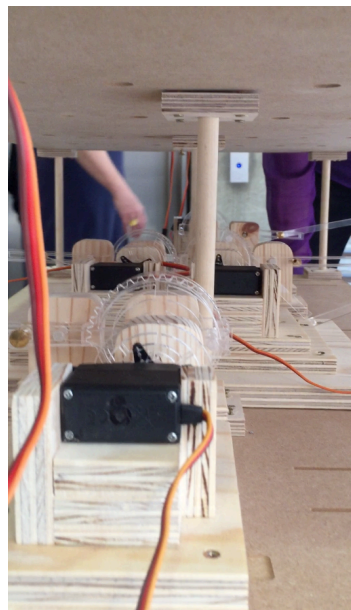
Figure 59. Installation's final mechanical system.

Figure 59 illustrates the final assembly of the inner mechanical structure of the installation, in which the devices are uncovered in order to allow the public to take in the overall system of interaction: from the physical action of touching, to the movement of the mechanism and the stretching of the fabric.

The completion of the mechanical structure ends the technical development stage of the installation. The next step is to assemble all the components of the installation inspired by the maze. The following section describes the final setup of the installation, outlining the details of the final outcome of the installation and its spatial staging within the Granary Building.

3.6. Staging context: final installation's outline.

This section concludes the analysis of the creative process, presenting the final outline of the installation previously titled *Space Machine.* It includes a description of the full assembly of the installation's modules, identifying the three stages of the artwork, and the spatial contexts for the installation within the Granary Building.

The final version of the installation consists in the combination of four modules of approximately 1.80m in height. Each of these modules has two parallel interactive textile interfaces sensitive to touch. They create different movements and rhythms depending on the area of touch. This final version of the installation also includes caster wheels in the modules to add some mobility and playfulness to the installation, thus allowing the public to reconfigure their spatial surroundings.
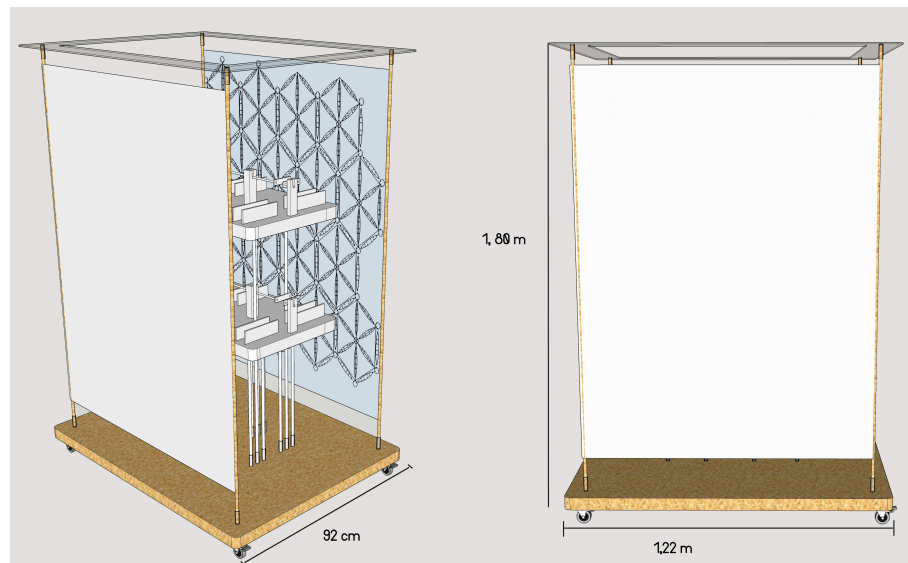

Figure 60. Final installation measurement plans.

With the exception of the mechanical inner structure, which was re-designed towards the end of the creative process, this model summarises the experimental work done during the process of prototyping. It assembles the net with the haptic fabric interface and introduces the final appearance of the modular structure of the installation. Each interface has four touch sensors [27] that trigger sequential movements of four servo motors [28] place inside the modular structure (eight in total). Depending on how many sensors are being touched, the interface either moves slower or faster, or creates different sequences of movement.

Figure 61. Final version of the installation module.

After an interdisciplinary investigation that has looked into a comprehensive range of theoretical fields and concepts such as phenomenology, site-specificity, *machine*

---

[27] It was tested two types of touch sensors: conductive thread and fabric. Tecnically, both work in the same way; however it influenced the aesthetics of the interface. Hence, the research opted to test both types of sensor.

[28] More information about the electronic circuits and code in appendix 3.

aesthetics, to name but a few, the final result is an installation that exists between familiarity and oddness. Phenomenology has supported the development of a haptic interactive system, and sustained the investigation into narratives of the maze, thus aiming to provide the public with intuitive spatial logics. Conversely, on first appearance, the installation appears alien and indescribable. Its rectangular shape and scale opposes pre-existent architecture. These two extremes are intended to incite the curiosity of the public, offering possibilities for a playful, intimate and collective experience of space.

The deconstruction of the narrativity of the maze is fundamental for a meaningful dimension that may generate a curiosity for the public. The maze serves as a metaphor of a spatial narrative that disrupts established spatial norms. The installation stands in the way of the public provoking a change in the awareness of space, inviting a re-adaptation to the new spatial logic. Moreover, this narrative becomes the connection point between phenomenological theories and the collectiveness of space. The narrativity of the maze underpins the guidelines of the practice and weaves the interdisciplinary research elements into a performativity of space. In other words, this narrative sums up the diversity of interactions proposed by the installation: collective interactions, multi-sensory interactions, and intimate interaction with space.

In order to test the performativity of the installation, three separate installation setups have been staged in different spatial contexts. Each setup seeks to impact the public's perspective on a particular communal space within the Granary Building, observing to what extent sensory experience and mental associations may shift behaviours. The degree of the installation's influence on the public's perception of space is a key factor for the establishment of active participation, and performativity of the artwork.

The first setup stages the installation in an empty and passive space between the student lockers corridor and access to the stairs. Unlike other communal and shared spaces within the college building, this particular area has little meaning and is only used as an access space. Taking advantages of the flexibility and mobility of the installation, the first setup deliberately deviates from the main narrative and instead creates an intimate and immersive environment. However, the installation still relies on one of the main narrative premises of the maze – fragmentation as isolation. The modules are carefully organised to form a closed environment that isolates the members of the public. This setup also experiments with spontaneity and control in the interaction with the installation space. Entering the installation space is not very intuitive and the members of the public do not have much mobility inside, whereas outside the installation there is more space to circulate and to freely engage with the textile interface. This setup presents an antithetical situation for the public by playing with two opposite situations: inward interaction, individual and intimate, and outward, prone to a more collective experience.

Figure 62. First setup: Immersive spatial environment.

In the second setup, the spatial arrangement is more expanded within a larger and open passage space. The installation was set in the main lobby of Central Saint Martins – *the Street*, a wide space for the free circulation of students and staff. The narrative of the maze is more visible in this setup, and the installation is spread over the main lobby of the building, fragmenting the space. The installation occupies the central area and prevents people from circulating in a linear direction. The installation also aims to draw people's attention through its unusual appearance. Nonetheless, the fragmentation is positive, allowing the public to circulate freely and spontaneously. The second setup does not restrain or control space as in the first setup.

Figure 63. Second setup: *the Street*.

The third scenario is the closest to the narrative of the maze. The modules are installed in a corridor in order to disrupt the spatial linearity, literally placing an obstacle in space, and mimicking the maze-like broken paths. In this context, the idea of fragmentation adopts a negative connotation by challenging the building's rules of health and safety, and provoking people to either accept or reorganise the space around them.

Figure 64. Third setup: the corridor.

To conclude, the installation design serves a theatrical purpose, allowing the installation to be perceived as an alien element that inhabits the pre-existent architecture. The scale and the complete openness of the inner mechanism create a visual spectacle with the aim of drawing people's attention. The installation's modular and interactive environment also creates a spatial situation that the users need to decode and make sense of it.

The initial narrative thread of the maze is deconstructed as a means of breaking the linearity of space, provoking the user to re-adapt to a new logic. In the next chapter, the spatial situations created by the installation are analysed in more detailed, and reflect on the behavioural response of the public to each situation as an indicator of performativity in interactive art installations.

3.7. Conclusion.

Chapter 3 has described the evolution of the creative process behind the research practice, disclosing methods and strategies that define the building of an interactive installation. The research has included a study of the conceptual base, the maze and narrative structure for an interactive installation, the process of prototyping, and the creation of final setup scenarios.

As space in this research is not understood solely for its physical attributes, the chapter began with a proposal of a concept that may replicate the phenomenological theories included in this research. It looked into the differences between mazes and labyrinths and established a connection with the phenomenological spatial theories of Bachelard (1969), and Merleau-Ponty (1962; 2004). Mazes and Labyrinths are hugely symbolic architectural spaces designed for individual experience and discovery. This concept has been scrutinised using a visual method that has gathered information on contexts and maze structures in art and architecture. As a result, ideas of interruption, fragmentation, and contradiction in everyday spaces with both positive and negative connotations, have been formulated. The maze has therefore been transformed into a compositional motif for the development of the practice, and the creation of a *space dramaturgy*.

After the establishment of a narrative for the development of the practice, the process of dramaturgical composition has focused on prototyping as a method for experimentation and discovery. This type of work has involved a series of experiments with electronic circuits, materials, and mechanical elements.

The big concern for the prototyping has been the application of the theoretical and conceptual framework to the practice. Phenomenology creates the direction for the

different prototype stages, supporting the reflection during the production of an interactive installation. The dramaturgical value of this type of work is the establishment of a dialectic relationship between theory and practice that prevents an undermining of the creative process by the technical aspects of the artwork. Whilst theory concentrates on the expansion of ideas and concepts, practice is focused on decision-making, and in the combining of artistic concepts with technical achievement. Altogether they build connection points between technology, space, and the body within a performative structure. Each prototype explores vital aspects emerging from theory: the mechanical experiments aim to materialise a *machine aesthetics*, the interactive and responsive interface highlight the phenomenological theories of perception of space, and the scale and openness of the installation's modules provide the artwork with a sense of theatricality.

The dramaturgical enquiry consists of a constant loop intertwining the *doing* with the *thinking*, deepening concepts, and narrowing down ideas. This process creates a duality between artistic creation and the prediction of outcomes. Firstly, it deals with prototyping as an enquiry into methods and strategies towards the achievement of a final result. Secondly, it envisions situations and scenarios for the final setup of the installation. Overall, It is an exercise of evaluation and foreseeing of the outcome, and a reflection on the performativity of artwork: to imagine how the public will perceive the installation, and to predict behaviours and effects. This prediction exercise takes place in the staging of the installation. The modular and mobile structure gives the installation enough flexibility and adaptability to experiment with different spatial scenarios. The first scenario deviates from the initial narrative; however, it remains close to the aim of presenting an immersive space that exercises an individual and subjective experience of space. The second example, responds to the characteristic of a wide shared space. The spatial organisation of the installation is spread, but follows the principle of fragmentation of space, and allows a freer circulation for the public. The third setup is the most

provocative, posing an obstacle to the public requiring that people either accept and adapt to the new logic, or rearrange the space.

This chapter ends the production process of a performative and interactive installation, weaving the compositional elements body, space and technology within a complex theoretical and conceptual framework. It has been stated at the beginning of this chapter, that the study into the developmental process of the installation aims to determine the dramaturgical value of each compositional element. Although these elements are closely linked, the creative process of the practice highlighted the dramaturgical specificity of each element. The element of space gained specificity through the examination of maze narrative qualities, providing the installation with a plot. The value of the body relates to the multi-sensory experience created by the haptic system and the installation materiality, thereby defining the interaction of the public with the artwork. Finally, technology is also highlighted in this research through its materiality, and specified within the context of *machine aesthetic*. Altogether these elements shape the installation. The following chapter analyses the outcomes of the research practice, and examines the public reaction, thereby completing the dramaturgical cycle of this research.

Chapter 4. Analysis of the practice outcome.

4.1. Introduction.

Chapter 4 analyses the final outcomes of the practice, according to two essential questions: to what extent is space important for the creation of a performative interactive installation? And, what type of public does the research practice engender? These two questions bring to a close the dramaturgical enquiry of this research, thus leading to the creation of a set of principles for a *space dramaturgy*.

The chapter begins with a critical analysis of the idiosyncratic architectural features of the Granary Building – home of Central Saint Martins – and the design premise developed by Stanton Williams Architects. This reflection aims to examine how the maze, as a narrative thread, adapts to a site-specific proposal, and how that influences the reception of the installation titled *Space machine.* Additionally, this reflection draws on two main theoretical strands. Firstly, theories of phenomenology guide the research practice to explore the intimate and subjective experience of space. Secondly, it deals with the collective aspects of space, referring to site-specificity and identity. In order to create a coherent connection between these two strands, an analysis of the building's architectural characteristics guides an exploration into the social dynamics of the college and its subsequent performativity.

An immersive environment, a fragmented space in *the Street*, and a corridor obstacle are the three main proposals for the interactive installation. Each setup occupies the communal spaces of the building differently: the first setup consists of an immersive environment that proposes an intimate and individual experience of space; the second setup, inspired by the idea of fragmentation emerging from the narrative of the maze, occupies the central area of *the Street*; lastly, the third setup

places the installation in a corridor as an obstacle, provoking the public with disruption of the normal circulation within that passage space.

In the second half of this chapter, the analysis focuses on how the spatial setup of the installations influences the public's reaction. This analysis is supported by the methods used in Chapter 2, in order to visualise the differences in the degree of interactivity and participation. It provides essential information as a means to understand the performativity of the installation and the types of spectatorship associated with it.

Changing the installation setup has an immediate consequence on the spatial narrative and the public's perception of the installation. The first setup is built with the installation modules. It generates a contemplative, yet curious and active reaction with a low level of physical interaction. The second setup presents three main outcomes. In the first outcome, the public manifests a contemplative and curious reaction without physical interaction. In the second, the public alternates between curious behaviour and interaction, with physical proximity to the modules. The third outcome takes place when two members of the public spatially alter the initial proposal, thus creating the most theatrical and playful situation. The third setup proposed a provocation in one of the buildings' corridors offering opposite outcomes: acceptance from the public, or rejection and subsequent rearrangement of the installation's space.

This research questions about how the articulation of the concepts body, space and technology could support the development of a *space dramaturgy* for interactive installation art. The three different setups of the installation demonstrate how the relationship of these concepts establishes a new dramaturgical model. Each of the installation's setup proposes a different spatial context and arrangement that impact the reaction and behaviour of the public. In every setup, space is the

determinant element in the establishment of the narrative and how the public perceived and interacted with the technological components of the piece. Consequently, space also determines the relationship between performativity and interactivity, which supports the analysis of the types of spectatorship associated to each of the installation setups. Overall, the analysis of the practice outcome completes the research enquiry for a dramaturgy applied to interactive art installations, also supporting the establishment of principles that form the foundation of a *space dramaturgy*.

4.2. Staging spatial context: analysing the practice spatial situations.

This section continues to critically analyse the spatial context for the three installation setups in the Granary Building where Central Saint Martins is located. The section also introduces a critical review of the Granary Building's architectural design as part of the analysis of the installation's narrativity within an institutional space.

In early July 2015, the practice culminated with the presentation of an interactive installation in the Granary Building, Central Saint Martins, Kings Cross. This is an idiosyncratic and inclusive building designed to reflect the cross-disciplinarity between art and design. The Architectural studio Stanton Williams is responsible for the building's re-design. The building draws attention for its openness and the materiality of the space. The architects have transformed the old building, originally designed by Lewis Cubitt, into an adaptable space for the college staff and students. According to the architectural project brief, the aim is to be an inclusive space for the various college departments:

> The design aims to maximise the connections between departments within the building, with student and material movement being considered 3-dimensionally, as a flow diagram North to South, East to West, and up and down – similar in many ways to how the grain was distributed around the site using wagons and turntables (Stanton Williams, 2011, p. 2).

The design of the building envisions continuous changes and narratives emerging from the college's quotidian life. However, in *The Architectural Review* magazine, Will Hunter criticises the design of the building, claiming that at the entrance there is a spatial paradox with the juxtaposition of open and restrictive areas:

For this reason the use of card-access gates, as if entering the London Underground, does feel a particularly inglorious 'front door' to the college. As a boundary it is either too strong or too weak, neither allowing full movement into 'the street' nor enclosing it sufficiently to define it as its own space (2013).

Will Hunter points out a controversial architectural feature in the design of Central Saint Martins. The building paradoxically presents itself as open, yet not fully accessible [29]. In other words, the architecture of the building blends spatial characteristics of public spaces, such as the typical openness and visibility, with the constraints of private space, by involving limited accessibility and controlled circulation of people. Hunter's criticisms relate to the spatial phenomena identified in Miwon Kwon's (2002) theories on the homogenisation of urban spaces. She states that "particularity of places is continually being homogenized, genericised, and commodified to better accommodate the expansion of capitalism via abstraction of space" (2002, p. 158). She also associates this phenomenon to the crisis of place identity, which affects modern societies as a consequence of defragmentation of public spaces by political and commercial powers. The growing private sector's urban and architectural planning has led to the integration of qualities and functionalities of public space into the private sphere. Large commercial buildings, such as shopping centres, mimic the qualities of public spaces with hybrid designs of indoors-outdoors and shared spaces; this is a feature visible in the Granary Building. The symmetry, the straight design lines of the corridors, the glass galleries, and the hybridity of *the Street* – a large indoor space that emulates outdoors spaces with sources of natural light – resemble other types of commercial buildings such as shopping centres.

The Central Saint Martins' building is not a one-dimensional space. There are pre-

---

[29] Central Saint Martins' architectural visibility of its interior space gives students and staff a sense of inclusiveness and connection between departments; however, there is division between some departmental areas that is made invisible by smart card technologies, which limits access.

established design functionalities that merge with open access spaces for the free circulation of people. These spaces have been deliberately planned to allow users to make sense of such spaces. As Stanton Williams Architects state in the building's project description: "The result is a state-of-the-art facility that not only functions as a practical solution to the college's needs but also aims to stimulate creativity, dialogue and student collaboration" (2011, p. 2). The building's inner architecture hosts the inner life of the college, and defines which spaces are for social gathering, and creative interchange between the different disciplinary fields. The architectural design envisions the energetic daily activity of Central Saint Martins' staff and students as a determining factor for the building's spatial organisation. The building is also designed to allow the college community to transform its interior over time. Hence, the building weaves different design components and functionalities into a spatial fabric that shapes the college's creative community.

This idea resonates with Judith Rugg's reflection of Mark Lewis' work *Rush Hour* (2005)*,* a video piece that "revealed the performative nature of commuters in defining the alienating spaces of the city where the movements of individual bodies are unconsciously choreographed through the rhythms of everyday life" (2010, p. 53). She also notes that these unconscious choreographies characterise the performativity of modern urban life in both indoor and outdoor types of collective spaces. Despite the statement from Stanton Williams Architects (2013) claiming that the building's main design is to give the college community the freedom of making sense of the space, the building also possesses features of a commercial space that, in turn, determines the behaviour of its users. For example, the straight lines and symmetry of the central lobby of the college's building also choreograph the circulation of people. The familiarity of the architectural structure makes these types of choreographies almost imperceptible.

The building's main lobby, *the Street*, is large and spacious, combining pre-established functionalities with freedom of movement. *The Street* is a space for easy

access between departments, for users to buy food, and for self-organised activities, exhibitions, and events. Overall, this polyvalent space is at the core of the everyday life of the college community. Therefore, this makes it an appropriate space for an artistic intervention. Returning to the topics discussed in chapter 2, the inclusion of adaptability, and flexibility links with Henri Lefebvre's (1991) ideas on how bodies generate space with their physical capacities, and how they leave traces behind.

> There is an immediate relationship between the body and its space, between the body's deployment in space and its occupation of space. Before *producing* effects in the material realm (tools and objects), before *producing itself* by drawing nourishment from that realm, and before *reproducing itself by* generating other bodies, each living body *is* space and *has* its space: it produces itself in space and it also produces that space. This is a truly remarkable relationship: the body with the energies at its disposal, the living body, creates or produces its own space (Lefebvre, 1991, p. 170).

Lefebvre highlights the active role of the body in its relationship with space. The body does not simply occupy space, it is also able to generate space. This helps to understand one of the architectural principles of the shared spaces of the college's building. The spaces are designed for continuous transformation and evolution, thus shaping the identity of the academic and creative community of Central Saint Martins. The daily experiences and activities taking place within the college's space impact the symbolic value, cultural and academic relevance, providing the Granary Building with a unique and individual identity and reputation.

Analysing the Granary Building design principles and aims, has a dramaturgical value for the final stage of this research alongside the presentation of the interactive installation. Besides the theories of Bachelard (1969), and Merleau-Ponty (1962; 2004), the research also integrates in its theoretical scope site-specificity and place-identity. It does so in order to define the concept for an interactive installation

planned to inhabit an architectural space; one that relates to social and collective dynamics.

As an institutional space, the Granary Building presents a spatial ambiguity that results from a superimposition of architectural conventions of crowd control and circulation, and the free use of shared spaces. These ambiguities provide the research with compelling opportunities to experiment with the installation's modular structure. Three main experiments are carried out in three different spaces: the first space is an empty and reclusive area near *the Street*; the second the central area of *the Street*; and finally, the third space is a corridor blocked by the modules in order to form an obstacle for the public. The installation is composed of four modules. They do not replicate the typical visual appearance of mazes, instead they invoke its spatial characteristics: fragmentation, individuation, and disruption of the linearity of space.

The first installation setup consists of an immersive and intimate environment occupying an area to the side of *the Street's* central area, between access to the lift and stairs. This is a recondite area and rarely used by staff and students for other purposes other than to access other places in the college. This first setup aims to create awareness of a particular area in *the Street* that is often overlooked.

Although this installation setup turns inwards, the double textile interface allows the public to also experience the work from outside. Inside the installation, the members of the public have little mobility due to limited space, and only interact with the piece by touching the textile interface. The closed environment offers moments of interaction and contemplation. The proximity of the modules makes the sound more perceptible to the public, therefore highlighting the multi-sensory aspects of the interaction and the mechanical structure of the installation. This setup generates a particular situation, in which the member of the public associates

the sounds and movements with an emotional reaction, thus perceiving the piece as a live element.

Figure 65. Installation's first setup.

The second setup places the installation in *the Street*'s central area, aiming to alter people's circulation in that space. As opposed to the first setup, this version proposes a modular and fragmented spatial environment that responds to the amplitude of *the Street*. The spatial organisation is more expansive and allows more freedom to explore and circulate around the installation's space, resulting in different outcomes. The machine-like strangeness, and the relational modular organisation of the installation, creates a type of technological staging that attracts people's attention. Curiosity is the strongest emotional reaction, and it is due to the disclosure of the technological and mechanical elements. The openness and visibility of the inner structure transform the installation into a visual spectacle for the public. In addition, the spatial organisation also plays an important role in the visibility of

the installation's inner mechanical system. With more space to circulate around the installation, the public is more drawn to examine the mechanical components.

The images in figure 65, 66 and 67 depict the most common of the public's reaction throughout the entire presentation of the installation. In the first setup, the public focus more on the textile interface, and the sound, whereas here the public are more curious about the inner structure's installation than the textile interface. Furthermore, the act of gazing is not contemplative; on the contrary, it is an active and dynamic gaze that skims through the several installation components, and the mechanical systems. Therefore, it is possible to conclude that the public in this particular setup are more inquisitive and curious.

The Street is one of the most polyvalent spaces of the Central Saint Martins building. The space functions as a meeting point for social gathering between staff and students, and as a passageway that connects the various departments. In terms of architectural design, *the Street* is a bare space, but it is not neutral. Firstly, the space is characterised by a visual simplicity that allows it to be used for exhibitions without being overwhelmed by design elements. Secondly, *the Street* fulfils the main architectural purpose of the building, blending the original functionalities of a shared space with parallel activities. The second installation setup inhabits *the Street.* It does not pose any obstacles, and benefits from *the Street's* emptiness and wide proportions, thus allowing for the public to modify the initial installation's spatial arrangement and become more participative. Whilst creating a new space the public perform their relationship with their spatial environment. During this second experiment, some members of the public realise that each module in the installation is equipped with caster wheels and can be moved around. The wide proportion of *the Street* is an essential factor in the public's engagement. However, the mobility of the installation results in a playful performance within which people are able to understand their spatial environment, as if they are performers in a theatrical

situation. This demonstrates that the spatial awareness and narrativity of the installation emerges from the relational elements of space. This links to Merleau-Ponty's spatial theory in which he contends that space is perceived through the relationship between the subject and objects, and between objects and objects.

Figure 66. Installation second setup: *the Street.*

The third installation setup focuses on ideas of fragmented space, and interruption of pre-existing linearity. This setup aims to create a provocative and disruptive spatial situation. The installation's modules are placed in a corridor as an obstacle, requiring that either the public accept the new logic, or they reorganise the space in order to make the circulation more fluid. The experiment proves that both situations are possible. The first reaction is the normalisation of space. The people instinctively adapt to the new space, circulating around the structure, being curious, but not bothered with the installation standing in their way. In contrast, the second reaction shows that some people are concerned that the modules are blocking the corridor. In fact, the experiment ends when someone pushes the modules against the wall. This last context explores the performativity of everyday life interfering with the rhythms and time of people during their daily routines. This spatial arrangement proposes a closed environment like the first setup. However, because it stages a more provocative situation, it is more prone to inciting a reaction and, therefore, to modification.

Figure 67. The third setup of the installation: the corridor.

To summarise, the three main experiments prove that space is vital for the engagement of the public and performativity of the installation. Each experimental setup presents completely different situations that impact the behavioural response of the public. The first setup occupies a recondite area of *the Street* and it becomes an autonomous spatial element that proposes an intimate experience with the installation. The second setup, on the other hand, responds to the collective and social features of *the Street*, integrating the free circulation of people. Although fragmented, the installation's space was the largest, and it turned out to be the most playful and theatrical setup. Finally, the third setup presents itself as an obstacle to the users of a corridor space. It is the most provocative of all three setups, forcing people to either adapt the way they usually walk across the corridor or to rearrange the position of the installation, thus creating an awareness of space. Moreover, this setup defies the building's rules of the circulation of people.

The architectural spatial features, functionality and social relations, in combination with the particularities of the installation, determine the narrative and performativity of each setup of the installation. The following section in this chapter concentrates exclusively on the examination of the different types of public, and deepens the analysis of the installation's performativity through the application of the methods used in Chapter 2. This is supported by the research artwork database.

4.3. Performative interactivity: analysing the practice's outcomes.

This section introduces the study of the practice outcomes. It is supported by the theoretical investigation on performativity and interactivity, and the analysis methods previously applied to the research database. This study aims to identify connections between performativity and interactivity to understand the impact of the practice's interactive installation, *Space machine,* on the public.

Chapter 2 analyses a diverse body of artistic work with the support of a theoretical framework including theories by Edward E. Shanken (2002), Erkki Huhtamo (2004), Golan Levin (2006), and Myron Krueger (1983), all of whom discuss the meaning of interactivity. Two different perspectives are prominent in the definition of interactivity. Firstly, interactivity is associated with physical engagement, and the physically expanded body, defining the public as a participant. This view corresponds to an idea of interactivity where the public manifests a high level of physicality usually involving the use of the full body while interacting with an artwork. Golan Levin's visual essay *Hands up!* (2006a), articulates this phenomenon of expanded body interaction. He points out that the repetition of what is usually perceived as an empowering gesture, like hands ups, has become a sign of conventionality. In other words, the repetition of such gesture leads to a loss of its meaning, with the risk of it being transformed into a mechanical response. Secondly, interactivity is placed in the realm of responsive technologies with a focus on how computers can interpret, respond and adapt to human actions.

The theoretical framework also integrates theories on performance and performativity. Whilst the study of interactivity is open to distinctive views from different disciplinary fields from art to interactive design, the analysis of performance and performativity focuses on specific theories that distinguish these

two concepts. Richard Schechner (2002), Mieke Bal (2002), and Jacques Rancière (2009), reflect on the behavioural action and effect of performance, highlighting crucial concepts for this research such as repetition and memory. Schechner claims that performance is a restored behaviour, an action that results from a learning process, which implies repetition, training or rehearsal (2002, pp. 22-23). Performativity, on the other hand, relates to the uniqueness of each time that an action is performed. Schechner's argument on performance and performativity focuses on the differences of performance types and *who performs;* whereas Mieke Bal places the focus on the receptor and the public. In her analysis of performativity, Bal emphasises the importance of memory, which underpins the idea of repetition: "The accumulate acts of memory performed in and by this installation are both nourishing and burdening for the viewer, who must participate in their performativity" (2002, p. 202). Memory, according to Bal, connects the present to the past and it is the mechanism of meaning production through association, and also emphasises the subjectivity of experience. Bachelard (1969) builds a similar analysis in his phenomenology of space where he highlights the role of memory in spatial experience.

It is possible here to identify a contrast between Schechner, and Bal's analysis of performance and performativity, and Golan Levin's provocative view on the experience of interactive art. He contends repetitive behaviour to be a sign of the loss of the public's control over the work of art. What was once a gesture of the breaking boundaries and empowerment for the public may now mean otherwise. This may affect the subjective experience of the artwork. Interactive art is increasingly a prolific artistic field that simultaneously challenges its public in its relationship with art. However, it is likely to continue over time to apply the same strategies to engage the public; one it has taught to behave without considering its meaningfulness. It is a contradictory situation caused by the repetition of the same mode of interaction: physically expanded body interaction. This type of interaction

usually involves a physical posture of open arms or hands up, as Golan Levin describes it.

> These interactive systems are predicated on the idea that the user is controlling a responsive system. To judge from this recurring pattern of behaviour, however, might we speculate that this control is ultimately an illusion? Perhaps these systems are really controlling us after all (Levin, 2006a, p. 6).

Levin attempts to provocatively raise a critical discussion that connects with the definition of participant and interactivity. He describes a type of behaviour that can be found, for instance, in the work of David Rokeby with *Very nervous system* (1986-90)*,* or Rafael Lozano-Hemmer with *Body movies* (2001)*.* These artists succeed in transforming the full body interaction and expanded physicality interaction into a performative artwork. Nonetheless, the extensive repetition of the same behaviour compromises the interactivity. If the public's behaviour during interaction is relegated to a mechanical response, it cannot be considered a performance or a performative response. Schechner, and Bal discern on performativity highlighting the effect of *here and now* as crucial for performative artworks. Performativity relates to the experience of a unique repetition of an event or action isolated in time. Like performativity, interactivity also needs to relate to the unique experience of the interaction with an artwork, combining the technical elements with the aesthetic language and concept. In addition, Gordon Pask's (1974) theory on novelty and control in art, conveys the performativity in interactive art. When Pask refers to control as the human need to learn how to control their novel environment (1971, p. 76), he also describes a process of performative learning and behaving that concurs with the reflection on interactivity and performativity: a type of learning that evokes subjective experience and uniqueness.

This brief summary creates a ground for understanding the possible relationship between interactivity and performativity. This is the foundation through which to

analyse the practice outcomes. The views presented above are vital for understanding and analysing the performativity of the practice's interactive installation, *Space machine.* The installation's presentation was an unannounced event within the communal spaces of the college building so as to test its potential for intervention. The analysis of the outcome of the practice is based on external observation. Video and photographic documentation were recorded of the public's behaviour whilst interacting with the piece. The process of documentation aimed to to collect data based on gestures, physical postures, and collective reactions to the piece, trying to avoid as possible any interference to minimise external influences that may affect public's perception and interaction with the piece. The purpose has been to observe how the installation may generate collective performance, and whether there are standard behaviours as well as exceptions. This information forms the basis, in the forthcoming sections, for an analysis on types of spectatorship.

The study begins with the application of the categories (figure 68) previously used in the research's database, to the practice outcomes of each setup of the installation. It includes the concepts of narrativity, spatiality, visual and multi-sensory perception, interactivity, and participation. These categories determine the qualitative characteristics of the setups. In addition to the categorisation of each setup, the analysis also differentiates the public's reactions in each setup, which are designated as situations.

Legend

- 🟣 **Narrative**
- 🔴 **Spatiality**
- 🟣 **Visual Perception**
- 🔵 **Multi-sensory Perception**
- 🟡 **Interactivity** (with the installation's technology)
- 🟢 **Participation**

1st Setup

2nd Setup

situation #1 situation #2 situation #3

3rd Setup

situation #1 situation #2 situation #3

Figure 68. Application of the research categories to practice's outcomes.

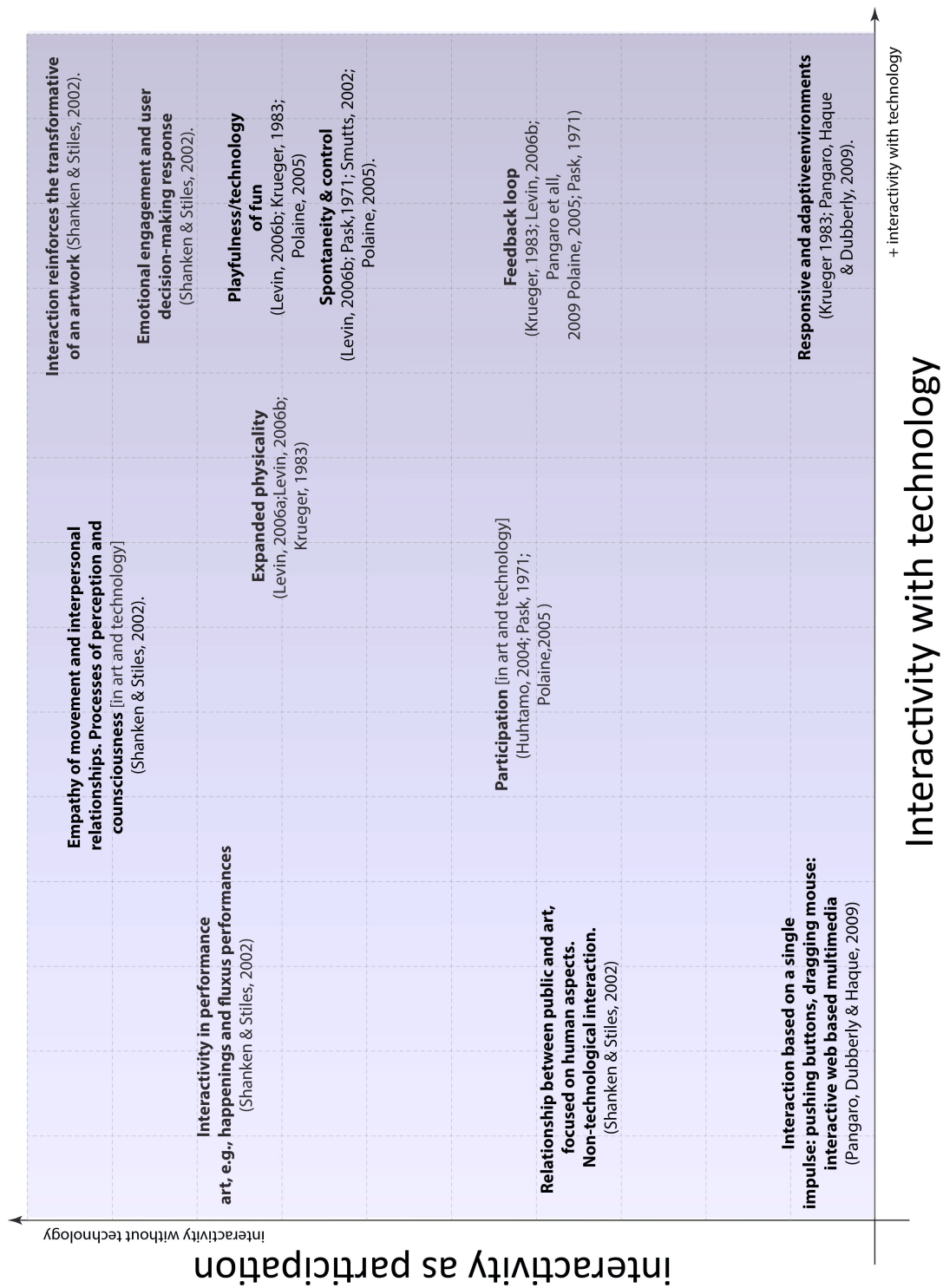interactivity as participation

interactivity without technology

Interactivity with technology

+ interactivity with technology

Interaction reinforces the transformative of an artwork (Shanken & Stiles, 2002).

Emotional engagement and user decision-making response (Shanken & Stiles, 2002).

Playfulness/technology of fun
(Levin, 2006b; Krueger, 1983; Polaine, 2005)

Spontaneity & control
(Levin, 2006b; Pask,1971; Smutts, 2002; Polaine, 2005).

Feedback loop
(Krueger, 1983; Levin, 2006b; Pangaro et all, 2009 Polaine, 2005; Pask, 1971)

Responsive and adaptiveenvironments
(Krueger 1983; Pangaro, Haque & Dubberly, 2009).

Empathy of movement and interpersonal relationships. Processes of perception and counsciousness [in art and technology]
(Shanken & Stiles, 2002).

Expanded physicality
(Levin, 2006a;Levin, 2006b; Krueger, 1983)

Participation [in art and technology]
(Huhtamo, 2004; Pask, 1971; Polaine,2005)

Interactivity in performance art, e.g., happenings and fluxus performances
(Shanken & Stiles, 2002)

Relationship between public and art, focused on human aspects. Non-technological interaction.
(Shanken & Stiles, 2002)

Interaction based on a single impulse: pushing buttons, dragging mouse: interactive web based multimedia
(Pangaro, Dubberly & Haque, 2009)

Figure 69. Interactivity and in art and technology (II).
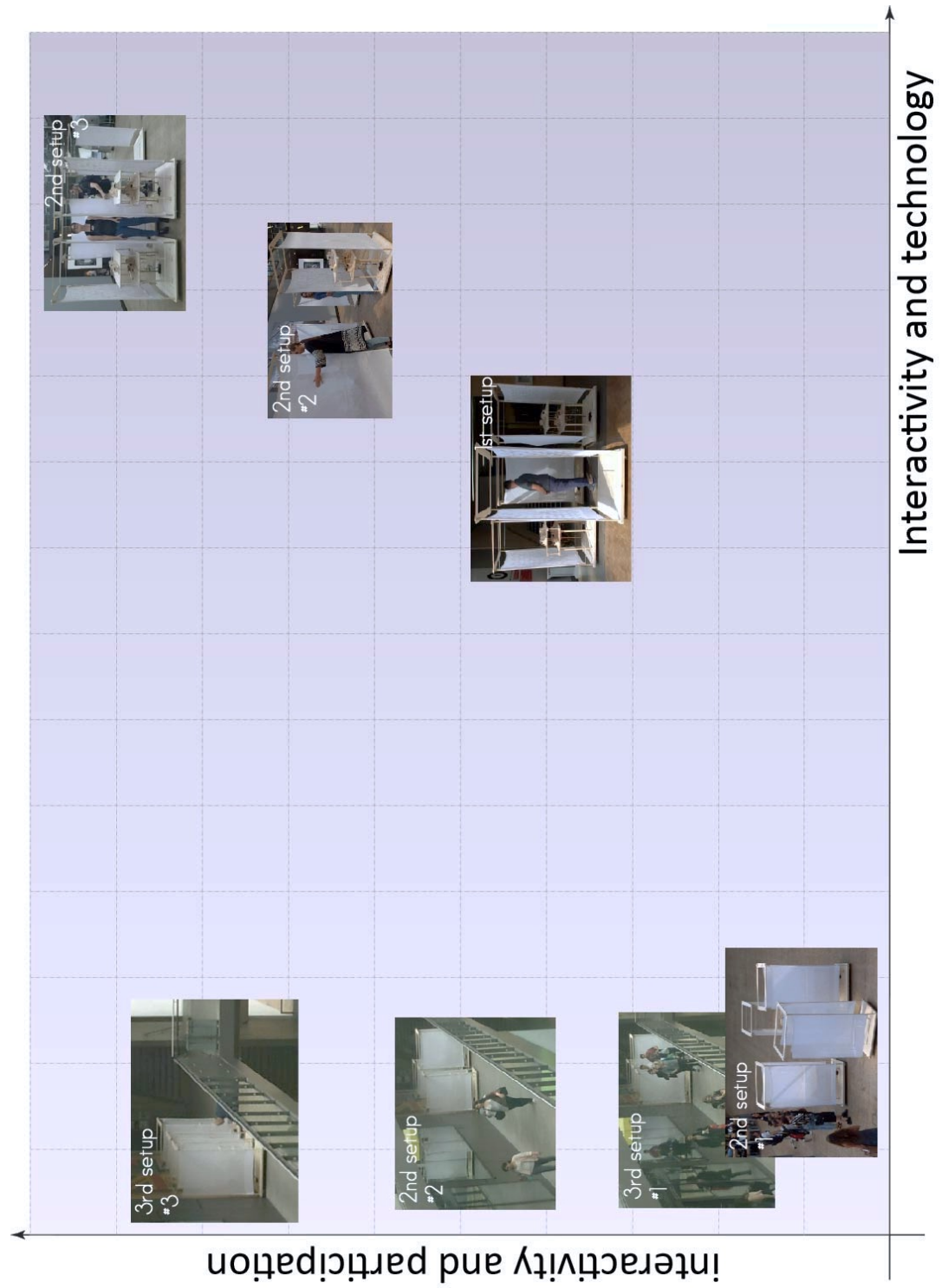
Figure 70. Practice's outcome visualisation.

Figures 68 to 70 show the evaluation of the practice's outcomes according to methods used in the research's database. As can be seen in figure 68, spatiality and narrativity are present in all the situations of the three setups, whilst the other categories are only applicable depending on the spatial arrangement and public's behaviour. This method already indicates the main differences between the three setups and their respective situations. Nonetheless, this method is still very generic and does not provide a detailed view on the practice outcome. The second method, illustrated in figure 69 and 70, compares the graphic visualisation of the main theoretical claims on interactivity with the different situations that the practice's installation created. The method aims to complement the information provided in figure 68, the categorisation of the practice's outcomes, and to visualise the different degrees of interactivity.

The methods applied to the research practice reveal the different types of interactivity of the installation and how the spatial arrangement is a determining aspect. However, in order to complete the analysis of the practice outcome, and understand the connection between performance and performativity, it is necessary to understand how each setup generates different types of public. Throughout this thesis, the terms public and audience are frequently used to describe people as art receptors. But these terms are very generic. The following sections use the analysis methods to specify the different types of spectatorship.

4.3.1. First installation setup: immersive environment.

The overall narrative of this setup does not follow the initial narrative premise of the maze as much as the other setups do, thus aiming to expand the scope of dramaturgical analysis on space as a performative language for interactive art installation. It proposes an immersive and intimate environment that individualises space from the external context of *the Street.* The installation occupies a dormant

space near *the Street* that is restricted to its functionality. This space is between one of the college's auditoriums, backdoor exit, lockers, and the lift, and stair access.

Figure 68 depicts the application of four categories that help to identify the main characteristics of the installation. These qualitative categories are: *narrativity* (pink), *spatiality* (red), *visual perception* (purple), *multi-sensory perception* (blue)*, participation* (green)*, and *interaction* (yellow). The first version of the installation is intentionally defined as a space for intimacy. Inspired by Bachelard's (1969) analysis of the house as a space for shelter, in the installation each member of the public is allowed a close and personal experience of space. Despite not following closely the narrative of the maze, the narrativity of this setup is intrinsically connected with the spatial arrangement. The spatial arrangement also highlights the multi-sensory experience, allowing the public to perceive the physical materiality, the sounds, and the visual aspects of the installation, namely the mechanical system.

The installation occupies the space as an alien body or strange object that manages to capture the curiosity of people passing by. It is, however, less intuitive when compared with the other setups. Once someone enters the confined space of the installation, it engages in an action-reaction type of interaction. Hence, this setup is marked with the category *interactive* and *non-participatory*. The combination of these two categories is essential to determine the type of spectatorship in this first setup.

The interactivity of the installation's first setup also relates with the spatial arrangement. The enclosed and intimate environment poses physical limitations for the public, and the interactivity is more introspective. Thus, the installation generates a type of public that, even though it interacts with the installation, is not physically active. Additionally, there are visible signs of curiosity and inquisitive behaviour. The public is able to perceive and assimilate the sensory input of the

installation, such as the materiality, sound and movement, and associates these characteristics with human psychological features[30].

According to the research's theoretical framework, the spectatorship of the first setup, which proposes an immersive environment, is to some extent ambiguous. The first experiment with the installation generates a type of public that is in-between spectator and participant. The angle of this research on spectatorship is aligned to Jacques Rancière's theories on the emancipated spectator, whom he claims "spectators see, feel and understand something in as much as they compose their own poem as, in their way, do actors or playwrights, directors, dancers or performers" (2009, p. 13). Hence, according to Rancière, every spectator is active. The possibility of classifying the public only as spectator is eliminated due to the fact that it interacts with the piece. The physical interaction with the textile interface and the circulation around the piece is an indicator that the role of the public is beyond an active spectatorship. But, is the public a participant?

The idea of a participant implies that the public takes part in the work of art, as opposed to being an observer or have minimal interaction with the piece. Participation also involves a form of interactivity through which the public is also able to transform the work of art. In the field of interactive media art, participation is often associated with feedback loops (Pask, 1971), responsive environments (Krueger, 1983), and playfulness (Levin, 2006b; Polaine, 2005). Therefore, the term participation is more adequate to describe high levels of interactivity.

The graphics in figure 69 shows where this version of the installation is located within the spectrum of interactivity. According to the level of interactivity with technology and as a form of participation in the artwork, which are respectively

---

[30] It is possible to see this type of reaction in the video documentation submitted with this thesis. In the video *Practice documentation July 2015*, in minute 1'10'', a person who just experienced the installation turns to the camera and says: "Is like they've got different personalities!"

represented by the horizontal and vertical axis, the version of the immersive environment is in the centre of the graphic representation. This indicates that there is not enough activity for the public in this situation to be considered a participant.

The analysis of Erkki Huhtamo's (2004) critique of *Listening post* sustains that interactivity can exist without physical interaction. *Listening post* proposes a completely different relationship between public and artwork. Yet, like the work of Mark Hansen and Ben Rubin, the interactivity of this piece does not only emerge from physical interaction. The public engages with the piece through a curious and inquisitive gaze. The public simultaneously spectates and interacts. Therefore, the public, in this setup, is defined as *interactive spectator*.

The *interactive spectator* is someone who interacts with the piece, but engages more in observation than in physical contact with the artwork. This is also a consequence of the spatial arrangement of the installation. The intimate and enclosed environment limits the public's movements; this challenges the performativity encountered in the first setup of the installation. Performativity and interactivity are not simply defined by the level of physical engagement. In Chapter 2 these two concepts are aligned with the experience of the work of art, and are defined as a complex weave of different elements – for instance, sound or movement – that are part of the artwork's composition. Hence, performativity, which in this research relates to interactivity, cannot be defined only by the intensity of the physical engagement. Even though the physical expression of the people interacting with the installation is minimal, there are obvious signs of curiosity and inquisitive contemplation, which are indicators of performative behaviour. The installation allows the public to produce associations and give a meaning to the artwork. These types of mental processes show that there is a significant transition in the public's behaviour from, and after, interacting with the installation.

To conclude, the spatial arrangement of the first setup of the installation, which proposed an immersive environment, demonstrates that there is a causal relationship between space, interactivity and performativity. The spatial arrangement determines how people perceive and experience the installation, thus defining how interactivity and performativity emerges. However, this setup poses limitations in the development of a participatory spectatorship. This is explored further in the following installation's setups.

4.3.2. Second installation setup: *the Street*.

The second setup of the installation took place in the central lobby of Central Saint Martins named *the Street.* This setup takes its inspiration from the idea of fragmentation of space associated with the maze. The spatial arrangement of this version of the installation is not only fragmented, is disordered and the modules occupy a larger space within *the Street.* The version also aims to offer the public spontaneity and to move freely, without any obstacle, within the space created by the installation arrangement.

The second setup generated three main reactions identified in figure 68. The first reaction, classified as *Situation One*, represents the moments when people, passing through the main lobby of the college, stop through curiosity of the installation. As shown in figure 68, the first situation is categorised as *narrativity*, *spatiality,* and *visual perception*. *Narrativity* and *spatiality* are obviously interconnected in this setup. The space in this second version has been arranged so as to generate a narrative of fragmented space, attempting to replicate spatial features of maze-like structures. *Situation One* reveals a lack of *interactivity* and *participation*, as the public only engages with the piece through *visual perception* marked in purple, thus one would assume, a sole interest in the inner mechanical system of the installation's modules.

As in the first setup, the mechanical components incite the curiosity of the public. With more space to circulate, the public is able to perceive and examine in greater detail this feature of the installation. The technological components are transformed into a visual spectacle. This behavioural response from the public proves the effectiveness of *machine aesthetics* as a strategy to get the public to become engaged with the installation, thus making the technological component more meaningful and not just a technical support to animate the textile interface. However, without interaction, the public cannot perceive the multi-sensory properties of the installation and, therefore, cannot be considered a participant nor, as in the first setup, an interactive spectator. This type of public tends to actively externalise emotional reactions or interpretation in regards to the artwork.

In the graphic representation in figure 70 the visualisation of the practice's outcome, *Situation One,* is found on the lowest levels of interactivity; though the curious behaviour shows that the public is not a passive receptor, on the contrary, it is an active observer. The public in this situation falls within Rancière's (2009) theoretical description of spectatorship. In order to emphasise its active behaviour, the public is here classified as *active spectator.*

The graphic in figure 69 provides an overview on how theorists understand and describe interactivity. Moreover, the analysis of the research's database of artworks shows that there is a common perspective between artists and theorist on the meaning of interactivity in artistic practice. Interactivity is often associated with participation and physical expression. Like in *Situation One,* in *Situation Two* the public is also driven by curiosity. Nonetheless, in this case, there is a clear physical expression of that emotional reaction, which results in a shift in behaviour, and leads the public to interact with the installation. The relationship between narrativity and spatiality remains the same; however, the public interacts to an extent that is considered that of *participants*.

Although the public do not show high levels of physical activity, they interact exploring the multi-sensory properties of the installation. They actively explore the spatial surroundings, and show interest and curiosity in the inner mechanical system of each module[31] by interacting with physical proximity. This research defines participation as a type of spectatorship that externalises the inner process, producing interpretations and meanings on a work of art (Pask, 1971). Spectatorship already implies an active reaction of the public, as Rancière's (2009) suggests, but with participation there must be a physical expression of those inner processes that marks the transition from curious observer to participant. The interaction, in this particular situation, challenges the common assumption associated with participation, which usually refers to physical actions such as jumping, or as Golan Levin (2006a) describes *hands up!* But curiosity has a physical expression, and it leads participants to explore their spatial environment. Hence, participation can be established through other modes of interaction rather than just the physical posture of open arms. Additionally, the curious and inquisitive disposition of the public inverts the typical logic of interactive art: instead of putting the focus on the outside, the interface drives the public's attention towards the inside where the visual effects were produced.

This reaction also confirms the effectiveness of *machine aesthetics*, which brings visibility to technology not only as a functional element, but also as aesthetic. The public interacts with the textile interface, focusing on the mechanism and examining its function. The aesthetic value of technology is materialised through the synthesis of the sculptural appearance of the mechanical system, and the way its function animates and gives movement to the textile interface.

---

[31] The curiosity of the public for the mechanical elements surpassed the initial expectation. During the practice's development, the goal was to introduce the aesthetics of the machine highlighting the mechanical components. This was a method to integrate technology within a coherent and inclusive artistic expression. However, whilst the developing the project it was not anticipated that the visual aesthetics and exposure of the mechanical system could become the protagonist of one of the experimental setups of the installation.

Situations One and *Two* represent the most common reactions to the setup in *the Street*. However, this setup also generates a third outcome identified as *Situation Three.* This situation is an exceptional behavioural reaction. It corresponds to the moment when two members of the public fully explore the playfulness and performative potential of the installation by playing with and transforming its original arrangement. *Situation Three* is classified alongside the same categories (figure 68) as *Situation Two,* but in the graphic in figure 70, this outcome is on the highest level of interactivity. In this situation, the participation of the public is reciprocally transformative. The public interacts more actively with the piece, transforming and modifying the initial spatial arrangement of the installation. Moreover, the interaction is not limited to a relationship between public and the installation, but also initiates an interaction between people, which is one of the main factors that transforms the initial narrative into a theatrical and playful situation.

The analysis methods described in figures 68 and 69 prove that performative participation is more achievable when the public engages in an active and physical interaction, and transforms the initial setup of the installation. Whilst *Situation Two* defines the public as a participant, *Situation Three* defines the public as a *performative participant*. In other words, because the public engages in a more dynamic physical interaction, altering the spatial arrangement and installation's narrative, it becomes a performer. The research classifies this type of participation as performative to emphasise the transformative relationship that the public establishes with the installation. Therefore, performative participation emerges when the public gets involved through physical action, and the behavioural effect of the interaction with the piece has feedback. In other words, it is when the public's reaction reverts back into the artwork with the transformation of the initial narrative and spatial arrangement.

4.3.3. Third installation setup: disrupting linearity.

The narrative for the final setup is also based on the idea of fragmentation that emerges from the study of mazes as architectural and symbolic structures in Chapter 3. This study reveals that mazes can have both positive and negative connotations. This setup opts for the negative side of spatial fragmentation, posing a provocative situation by placing an obstacle in a passage space. The modules of the installation are positioned in a corridor space, which is an access route to the side galleries located in the Central Saint Martins Building, and disrupts the linearity of the space.

The third setup maintains the same relationship between *spatiality*, *narrativity,* and *visual perception*. Like *the Street* setup, the installation in the corridor also generates three different situations: in *Situation One* the public barely interacts with the installation; *Situation Two* corresponds to an isolated moment when a girl takes a selfie; *Situation Three* is the moment that one assumes a member of staff pushes the modules against the wall, ending the third experiment with the installation.

The final setup for the installation presents itself as an ambiguous situation for the public. As the installation modules are placed in a corridor space in order to create an obstacle, the public either accept and adapt, or readjust and modify the space. The overall experiment with the third setup confirms these two possibilities. The first reactions show no signs of disturbance caused by the presence of the modules in the corridor. The public accepts the new use of the space proposed by the installation and, occasionally, manifest a curiosity towards the mechanical components[32]. Conversely, the reaction of a potential member of staff, who pushes the installation's modules against the wall, proves that this setup is a troublesome provocation for some.

---

[32] The reaction in *Situation Two* (figure 58) shows an unpredicted reaction when a member from the public takes a *selfie* after passing by the installation. This portrays a simple and common quotidian gesture, but it appears to be decontextualised, as it does not directly connect with the installation's intervention in space.

Disrupting the logical course of space impacts the flow in spatial circulation of everyday life. Corridors are good examples of functional architectural elements that are designed to provide access to the users of a particular space. It is a space that allows the transition from one place to another inside the college; however, it is often ignored or has little significance for the building's users. Hence, the interventional characteristic of this setup transforms the user, from someone who just circulates within the building, into a public for an artwork. The third setup also allows making a distinction between the concept of user and that of public. In the other setups, people are able to choose whether to interact with the installation or ignore it. In the final setup, people do not have that choice. In order to walk across the corridor, they have to pass through the installation. Hence, this scenario is the closest to an everyday life performance, overlapping the juncture of being an architectural user with the public. The performativity of the piece also lies in the acceptance or refusal of the logic proposed by the installation's spatial organisation.

Whilst accepting the new spatial organisation of the corridor, people readapt to the obstacles in space, at times showing curiosity for the mechanical and technological components; nevertheless, there is little reaction to the installation. The acceptance of the spatial logic imposed by the installation generates very little behavioural reaction, hence, the classification of the public as an active spectator. On other occasions, there is a clear refusal of the new spatial logic when the reaction of a member of the public reveals that the installation has become a hindrance. This reveals the performativity of the original architectural space, and the main purpose of its design. The refusal of disruptive objects in space highlights the necessity of architectural pragmatism to have a linear and easily accessible space. The refusal of the space, created by the installation, culminates when someone decides to reorganise the installation's modules, thus ending the experiment. This brief moment represents a *performative participation*. Unlike the other users, whoever it is that reorganises the installation, demonstrates a stronger and higher participatory

behavioural response to the disruptive action in space. This has been one of the main aims of this setup.

The flexibility and adaptability of the installation modular structure enable different situations, and different types of performativity. Each setup creates a *mise-en-scène* highlighting different types of spaces: intimate and immersive in the first setup, fragmented but expanded in the second, and a fragmented and disrupted space in the third setup. Technically, all three setups present the same mode of interaction based on sensing touch. The interactivity with the piece changes significantly throughout the process of testing the artwork with the public. In turn, the public relates to the piece in different ways in all three setups. The levels of interactivity shift from simple action-reaction to playful and physical interactivity.

To conclude, the spatial arrangement is fundamental in order to define the type of interactivity of the piece and performativity. It influences the way the public perceives the installation as a whole. This determines the type of public in the installation, that of active spectatorship to performative participation.

4.4. Principles for a space dramaturgy.

This thesis unfolds the development of a form of process-based *space dramaturgy* applied to interactive art installation. The investigation is defined through a dialectic relationship between theoretical investigation and practice with two different stages of divergence and convergence. This process also engenders the basic principles that form the foundation for the establishment of *space dramaturgy*. These are organised according to the various research stages: from the conceptual exploration of the dramaturgical elements to the final presentation of the practice results. This section describes these principles alongside its application within the context of this research.

First stage of divergence:

The first stage of divergence marks the beginning of the research into a *space dramaturgy*, aiming to study the relationship between body, space and technology. The guiding principles of this stage are as follow:

- **Theoretical and contextual investigation to find specific views that set parameters for the dramaturgical enquiry.**

  This principle corresponds to the theoretical investigation of the dramaturgical elements body, space, and technology. It aims to open the conceptual scope of each element in order to create a context and a relationship between these elements. The study of Merleau-Ponty, and Bachelard's phenomenological theories define the conceptual context of body and space, and how these elements relate to one another. The study also includes an analysis of site-specificity and place-identity to tackle the collectiveness of space. The third element, technology, is defined under the

concept of *machine aesthetics* supported by a review of historical examples that crossover between art, performance and technology.

- **Finding an inspirational body of work.**

  In general terms, this principle can apply to the study of other artist's work, or the investigation of a particular concept or imagery that can relate with the theoretical scope of the dramaturgical elements. The research tackles this principle with the creation of a database that gathers a significant amount of artistic work, and the investigation of the architectural concept and imagery of the maze. This type of work helps to create a particular field for the practice in which to develop and explore the conceptual framework established for the dramaturgical elements.

First stage of convergence:

The first stage of convergence marks the transition from theoretical investigation to practice. It is the first point of major convergence in which all the dramaturgical elements come together in order to create a solid foundation for the development of the practice.

- **Creating a narrative.**

  The research analyses the concept of the maze in different contexts. For example, mazes in architecture, visual graphics, arts, and algorithmic mazes. After looking into the visual properties of the maze, the focus turns its attention to the spatial qualities of mazes. The visual methods are very simple yet effective, determining the main ideas and concepts associated with mazes, such as fragmentation of space. This is applied to the practice.

- **Creating relationships: strategies to entwine the key dramaturgical elements within a conceptual framework.**

  This principle is also focused on the development of a narrative through the articulation of the dramaturgical elements and the connection between theory and practice. It refers to the first stages of planning, sketching, and building small-scale prototypes, envisioning spatial scenarios for the setup of an interactive installation.

Second stage of divergence:

This is a minor stage of divergence when practice is mainly concerned with technical experimentation.

- **Prototyping as a process of discovery.**

  This process consists of a technical exploration of materials, building structure, materiality, electronics, and mechanical design. Prototyping allows testing technical means for the creation of a solid and functional installation. In addition, it is also a form of reflexive practice that emphasises the creative process and a way of applying dramaturgical methods such as analysing, enquiring, testing, and decision-making. Whilst the theoretical framework allows finding the *motif* for a performative composition, prototyping focuses the process of that composition.

Final convergence:

This final stage corresponds to the installation staging, which involves finding a location for its public presentation.

- **Plotting final outcomes.**

  This principle consists of a form of speculative work that preambles the final version of the installation, and involves for planning the scenario and location for the installation's setup and presentation to the public.

- **Performance or public presentation.**

- **Results analysis.**

  The research proceeds with the evaluation of the public' reactions, defining its role in each presentation. This final analysis is vital for the development of an experimental dramaturgy, which enables to understand the whole process in hindsight, and how each element contributes to the final result.

4.5. Conclusion.

This chapter has analysed the practice outcomes according to two strands: firstly, it has focused on the narrativity of space determined by the relationship between architectural context and the installation's spatial arrangement; secondly, it has analysed the public's reaction to each setup of the installation, and has defined the different types of spectatorship. These two strands fulfil the essential dramaturgical purpose of bringing together the theoretical investigation and practice. This is achieved through the use of the analytical methods discussed in Chapter 2. They reflect this research's principles for a dramaturgical practice. Additionally, it underlines the impact of *machine aesthetics* in the relationship between the public and the installation.

The study of the spatial context has included a crucial analysis on the architectural space occupied by the installation. Besides the phenomenological approach, the research draws on the collectiveness of space, site-specificity, and the performance of everyday life. As a building that houses a particular creative community, and whose institutional identity is Central Saint Martins, it offers great potential for testing the performativity of the installation with respect to the collectiveness of space. Judith Rugg (2010) analyses the circumstances of communal spaces within the context of artistic intervention and performance that target social communities. She notes that performativity lies on intersections between the different layers of space, which results in the circulation of people in relation to the architectural or urban design. Within the college space, the installation integrates the specificities of the architectural design and the communities that inhabit this space. Thus, the performativity of the installation has a direct connection with the spatial context, thereby initiating different types of public. Each spatial context addresses different types of behaviour associated to the architectural background. The first setup

attempts to call to attention a space that is often ignored, and to attract people to enter into a completely new spatial environment. The second setup merges the pre-existent architecture with the installation space, taking advantage of the openness of the college's main lobby, *the Street*, allowing the public to interact spontaneously with the piece. Finally, the third setup has aimed to create a provocative situation within one of the college's corridors, and disrupt the normal circulation of people within that space. Overall, the different setups prove that the spatial arrangements and their relationship with pre-existent architecture are fundamental for establishing the installation's narrativity and performativity. Hence, the three setups demonstrate that space can be used as an artistic language with performative potential, thus supporting the research enquiry into a *space dramaturgy.*

Chapter 2 introduces analytical methods that consisted in qualitative categories, which were also applied to the research's database. This analytical work helps to reinforce the relationship between spatiality, sensory perception, and the establishment of a narrative for an interactive installation. Additionally, it helps to distinguish participation from interactivity, and how these two concepts may appear together. While participation refers to when the public plays an essential role in the artwork by taking a part in it, interactivity reflects a contact or an experience of the technology of the artwork. The application of the categories shows that these two concepts are not always considered as one. The differences between interactivity and participation are also measured through graphic representation (figure 69), showing the variation between different types of interactivity and participation.

Another key for the development of narrativity and the performativity of the installation is *machine aesthetics,* bringing a sense of spectacle and theatricality through the technological element. *Machine aesthetics* drives the public curiosity towards the installation. However, depending on the spatial arrangement, the degree of curiosity changes towards the installations. For instance, in the first setup,

which proposes an intimate and immersive environment, curiosity dominates the interaction with the piece, yet it is also constrained by the spatial dimension. Nevertheless, in the second setup, placed in *the Street*, curiosity leads the public to different reactions by simply looking, to re-organise the entire installation's spatial arrangement. Thus playing a fundamental role in the way the public decides to interact with the installation.

Performativity and interactivity become interwoven and almost indistinguishable as performativity emerges from the interaction of the public with the installation. Whilst interacting, the public performs. This phenomenon is clearly visible in the third setup in *the Street*, in which the public reconfigures the initial spatial organisation. Moreover, this reaction from the public also shows that the installation offers at least three types of interaction: interaction with the haptic interactive system, interaction with the mobility of the modular structure, and interaction with other people. These different types of interactivity come together to form a single performance[33]. From the perspective of the observer, I conclude that this is the most theatrical outcome and thus, the most performative. The performance corresponds to the playful situation created by the public. Performativity, on the other hand, is the public's playful experience generated by the different types of interactivity of the piece. Marianne Van Kerkhoven (2009a), Cathy Turner and Synne Behrndt (2008), also refer to the interwoven layers of performance as part of the dramaturgical practice.

Some complex questions on the role of the public emerge from the research process. Dramaturgy is a practice that works towards the creation of performance, and it

---

[33]The research database includes a project that presents a similar scenario, where different types of interactivity layers come together into one single performance: *Body movies* by Rafael Lozano-Hemmer (2001). This project was originally presented in a public square in Rotterdam, and is based on a computer-vision system that detects the presence of people in the square and alters the projection of portraits. This type of interaction, according to the documentation in the artist's website, appears to be almost imperceptible to the public who interact more with the shadow projection. Hence, this project presents more than one type of interaction.

aims to predict what the public will perceive or experience. In the case of an interactive installation, this question is pushed further, and it asks to what extent the public is controlled by the installation's interactive system or if it should be interacting freely and spontaneously with the artwork. The answer to this question is that there should be a degree of both. The installation offers the public a pre-defined interactive system such as the haptic interactivity and specific spatial arrangements, which are strategies of control. However, the mobility of the modules permits the public to freely change the initial arrangement and reconfigure the space. This is a strategy to give the public the opportunity to be spontaneous. The balance of control and spontaneity is also a fundamental element for the performativity of the installation.

There is another important question regarding the practice's outcome, which concerns finding appropriate definitions for the public: a user, spectator, participant, or performer? The word public is a generic term that can include different types of artistic reception and, as the installation's setups prove that spaces impact the role of the public, the term needs to be specified. The term *user* refers to someone who makes use of the space in a functional sense. This term appears in this research as a means of distinguishing between the use of space in a quotidian and artistic context. For instance, during the experimental testing of the installation in one of the college's corridor, there is an overlap between the architectural *user* and the installation's public. Unlike in the other setups, the public is not offered a choice. In *the Street,* the public is able to choose to engage or not with the installation, whereas in the college's corridor setup, whoever wants to walk through has to cross through the installation as well. As a consequence, this setup becomes disruptive, but emphasises the architectural performativity of everyday life. The public in this situation can either accept the presence of the installation modules in the corridor, or react to it and change it. The first type of behaviour is the most common reaction and the user becomes a spectator with a lesser degree of active response and

engagement than in the other setups. In this situation, curiosity is not enough to deviate people's attention, and the line that separates the role of public and user is diffused and ambiguous. However, there is one reaction that transforms the installation when a member of staff reorganises the space in the corridor, thus becoming a performative participant.

The other terms used to describe the role of the public are spectator and participant. The term of spectator usually appears in the context of an event or spectacle such as sports or a theatrical play. Thus, the term spectator is the most appropriate to describe a type of public that engages with a performative artwork; as someone who actively observes and shows interest in a performative artwork. In contrast, the word participant describes a type of public that is integrated in the artwork. According to Gordon Pask (1971, p. 178), participation corresponds to an externalisation of the mental process engendered by aesthetic experience. However, the different installation's setups demonstrate that the degree of participation might vary, depending on the impact that the action of the participant has on the artwork. The research has decided to also use the term of a performative participant when the level of engagement with the installation transforms the public into a performer.

To conclude, the chapter's analysis demonstrates how crucial the spatial context and arrangement is for the performativity of the installation. The mobile flexibility of the installation and its modular structure has allowed the staging of different situations with different reactions from the public. The outcome has been different types of public that span over spectatorship and different modes of participation. Classifying the public's reaction on each setup helps to understand the types of relationships between public and artwork. The reactions are complex as each of the setups also engenders different types of public; nonetheless, it is possible to identify a common thread: curiosity. The main stimulus for this reaction are the visual aspects of the

installation, which combined with sensing technology, spatial arrangement, and installation physical structure, is able to generate diverse types of interactivity. Depending on the public's commitment, this interactivity remains either as an intimate relationship with the spatial environment, or is taken to a further and more physical dimension, in which it is used to create playful situations with other members of the public. Hence, the performance is intrinsically connected with the different layers of interactivity and results from the weave of dramaturgical elements discussed earlier in this thesis: body, space, and technology. This analysis completes the research enquiry into a space dramaturgy, and originates a set of principles that describe the development of the process of practice. It not only brings together all the different elements from theory and practice, but it also shows the progress of the research according to the stages of divergence, when the investigation broadens and ramifies, and convergence, consisting in narrowing down concepts and finding connections between different elements.

Conclusion

The contribution to knowledge of this research has been the creation of a new dramaturgical model, *space dramaturgy,* introduced into the field of interactive art, more specifically interactive installations. *Space dramaturgy* is a practice-based methodology, in which space is the main artistic language for the creation of performative artworks. This methodology has included exploring the performative potential of spatial relationships, whether social or collective, and the performativity of spatiality, concentrating on sensory perception and awareness of space.

Dramaturgy still remains an underexplored field outside the performing arts, yet there is an emergent academic and artistic exploration of new dramaturgical models. Therefore, as well as applying dramaturgy to interactive art, the research has also positioned its contribution within the academic field of *new dramaturgies*. This field proposes a new paradigm for dramaturgy that acknowledges the diversity of interdisciplinary artistic practice. Theorised by dramaturg Marianne Van Kerkhoven (2009) (who also coined the term), Katalin Trencsényi (2014), and Cathy Turner and Synne Behrndt (2008), its focus is on emergent aesthetics and new fields into which dramaturgy is currently expanding. Some of the examples of new dramaturgies are Peter Eckersall's (2015) dramaturgy of robots, Alex Mermikides's (2014) dramaturgical study of medical science performance, and Cathy Turner's *Dramaturgy and Architecture* (2015). Although some of the dramaturgical fields associated with *new dramaturgies* are close to the disciplinary territory of this research, the idea of a *space dramaturgy* for interactive installation art is an original and new contribution to the field.

In order to expand the scope of dramaturgical practice into interactive art, this research has engaged on an interdisciplinary investigation between theatre, spatial theories, and interactive art. The investigation has had the support of the articulation of theoretical investigation, observational work involving an analysis of an artistic body of works dated from the years 2000-2014 gathered into a database,

and a practice-based investigation. These three main methods informed a reflective research cycle, followed by a dramaturgical enquiry of continued analysis that bridged theory and practice. The concept *space dramaturgy* had four stages of development, each being represented by a chapter in this thesis.

Returning to basics.

Before proceeding with the investigation of the relationship between body, space, and technology, the research returned to the basic, yet fundamental, concepts and ideas that underline dramaturgical practice. Thus, the development of a *space dramaturgy* began with the question *what is dramaturgy?*

Chapter 1 analysed the primary definition from the position of different perspectives. It did so by looking into the definitions of theatre director Eugenio Barba (2010), Marianne Van Kerkhoven (2009a; 2009b), and Katalin Trencsényi (2015). This study pinpoints the defining concepts associated with dramaturgical practice: structure, analysis, and the establishment of the compositional elements for performance. In order to clarify these concepts, the research included three brief case studies that exemplified how these ideas – associated with dramaturgy – are applied to practice. The two first case studies are major names in the theatrical field: Aristotle, with *Poetics* (1951), and Gotthold Ephraim Lessing, with *Hamburg dramaturgy* (1962). Both have contributed to the definition of dramaturgy, which is traditionally based on the rules of synthesis and unity of plot: the social function of drama. Their theories on drama informed this research on the function and importance of structure, and how it is focused on building relationships between compositional elements.

The third case study, Gordon Pask's *Proposals for a Cybernetic* Theatre (1964)advanced the intersection between cybernetics and theatre. This case study

was of particular interest for this research as it proposed for cybernetics and technology an adaptation of basic principles of drama, thus proving that the primary dramaturgical principles were flexible and adaptable to other disciplines and artistic views. It also paved the way for the practice in this research to integrate the technical requirements in a dramaturgical enquiry, thus highlighting the value of prototyping and technical planning.

Overall, returning to the basic concepts and the origins of dramaturgy enabled the research to assert that dramaturgy is a system of methods of analysis that provide performance with a structure to organise the varying compositional elements of performance. This was a necessary step to take in order to create a new model for dramaturgy, and to begin to apply the methods and strategies of this research. The three case studies exemplified these concepts, and, with Gordon Pask in particular, demonstrated that dramaturgy is a flexible and adaptable practice that aims to find contexts for performance.

Finding common grounds in contemporary practice.

Chapter 1 continued to explore the concept of dramaturgy; it found a contemporary context for the research, and a dramaturgical field to which the research could relate and make a contribution to.

The research found in Hans-Thies Lehmann's seminal book *Postdramatic theatre* (2006), a solid argument through which to contextualise the proposal of a non-text based dramaturgy. Lehmann ascertains that performance gradually distanced itself from literary text and playwriting, as a result of new and experimental aesthetic languages in performance. Moreover, he also highlights the impact of technological development in the emergence of new dramaturgical models, due to the changes

that technology caused in perception, and accelerating the rhythms and flows of information.

Although Lehmann's *postdramatic* theory created a contemporary context for this research, it is in the field of *new dramaturgies* in which *space dramaturgy*'s contribution is located.

Katalin Trencsényi and Bernadette Cochrane (2014) state that the term *new dramaturgy* presents itself in opposition to old models of dramaturgy; ones that are based, for example, on traditional Aristotelian principles. However, the simplicity of the term is composed of a complex net of dramaturgical practice and research that embraces interdisciplinarity, interculturalism, and experimental dramaturgical processes. Moreover, *new dramaturgies* reflect the current processes of the expansion of dramaturgy into other fields such as architecture (Turner, 2015).

As stated previously, the research found mutual ground in this field of dramaturgical research, for it relates to current interdisciplinary investigations into dramaturgical models, such as Peter Eckersall's (2015) dramaturgy of robots, and Cathy Turner's *Dramaturgy and architecture* (2015). Nonetheless, there is still a gap in the field in which to introduce a *space dramaturgy* that interweaves the concepts of space, body, and technology, reframing dramaturgy into the field of interactive art. In addition to finding a common academic and artistic ground, the field of *new dramaturgies* is concerned with the development of different methods and processes for a dramaturgical practice. *New dramaturgies* are not only concerned with the expansion of dramaturgy into other disciplinary fields, but are also focused on the discovery of new dramaturgical methods. Trencsényi (2015) describes a process conscious dramaturgical practice that evolves and adapts together with the creative process of building up a performance. In these cases, the dramaturgical processes merge with the creative processes. Here the research identified another

contribution to this field. The proposal of this research of a *space dramaturgy* was focused on the development of a dramaturgy that did not require a dramaturg, and this evolved alongside the creative process. The research found a parallelism with the idea of process conscious dramaturgy defended by Katalin Trencsenyi (2015), proposing a dramaturgy that transformed artistic methods such as prototyping, into dramaturgical principles, thus allowing for the investigation of the performativity of interactive art.

Perception and spectatorship.

Perception was a recurring topic throughout this thesis; it is a part of every dramaturgical practice, from the most traditional to the more experimental. Hans-Thies Lehman (2006) also identified this element when establishing a relationship between new dramatic forms and technological development. The emergent *new dramaturgies* have followed the shifts in artistic practice and the impact of technology on the change of the public's perception. Hence, perception is paramount for dramaturgical practice, since it requires continuously anticipating the public's perception of the artwork.

Jacques Rancière in *The emancipated spectator* (2009), and Marco De Marinis in *Dramaturgy of the spectator* (1987) focus on the role of the spectator in theatre and in dramaturgical practice. Rancière contends that the spectator is always active as it contributes to the work of art by interpreting and producing meanings. In contrast, De Marinis develops the concept of dramaturgy of the spectator can either be passive or active, which he also describes as objective and subjective. However, his theory in *Dramaturgy of the spectator* offers an insight into how dramaturgy defines spectatorship through the manipulation of the public's perception. In the case of an active spectatorship, dramaturgy focuses on the spectator as a subject,

acknowledging and challenging the spectator's intellectual ability to interpret and produce meanings.

The theories of Rancière and De Marinis apply to theatre. However, their theories on *active spectatorship* can also be applied to the analysis of interactivity and participation. Chapter 2 focused on the study of the academic and artistic definition of these two concepts. Interactivity and participation are often associated with the field of interactive art, but this research found that the definition of these concepts was, in some cases, controversial. This can be seen for example, in Erkki Huhtamo's (2004) critique of the project *Listening post*, and in Golan Levin's essay *Hands up!* (2006a), which suggest that the physical engagement of the public might have become mechanical, and therefore, meaningless. With the support of the theories of Rancière and De Marinis, this research asserted that participatory spectatorship was not created through the break of passivity. On the contrary, a participatory spectatorship emerges from the public's intellectual activity and subjective interpretations of a work of art. Hence, the need for a dramaturgy for interactive art to find the strategies to stimulate the public perception and to externalise its inner activity, interpretations, curiosity, and even creativity. The research concluded that, in order to establish an interactive and participatory spectatorship, it was necessary to first stimulate the public's perception, and appeal to its ability to make interpretations and, secondly, interactivity and participation was created through the physical activity or engagement by the public.

Defining the compositional elements.

Chapter 2 investigated the conceptual and theoretical framework of *space dramaturgy's* compositional elements: body, space, and technology. The Chapter began with the study of the relationship between body and space according to two theoretical strands. The first strand concentrated on the phenomenological theories

of Gaston Bachelard's *The poetics of space* (1969), and Maurice Merleau-Ponty's *Phenomenology of perception* (1962), and *World of perception* (2004). These two philosophers highlight the lived experience of space, the role of memory and imagination, materiality and sensory perception. The second strand focused on the theories of the collectiveness of space, namely the theories of Henri Lefebvre from *The social production of space* (1991), and Miwon Kwon's *From one place after another* (2002). It explored concepts such as site-specificity and place-identity to define the collective relationships and interactions within social space. The two strands complemented each other and provided different perspectives that supported the exploration of the performativity of space. The concept of space was asserted as a reality that conveys different types of interactions: individual interaction within space enhanced by the psychological dimension of users, or collective interactions between users.

The theoretical framework created a close connection between body and space. Space could not be conceived outside of its relationship with the body, which works as a bi-dimensional element. Additionally, spatial perception was mainly defined by the phenomenological theories based on the connection between sensory and psychological experience of space (included in Chapter 2). This created a link with the dramaturgical functions of creating strategies to guide the public's perception as determined in Chapter 1. This later supported the building of a narrative for the interactive installation.

After the study of phenomenology of space, the research instigated the concept *space dramaturgy*, and, how to apply it to interactive art. Firstly, the phenomenological theories of Bachelard, and Merleau-Ponty became a method through which to explore the properties of sensory perception, and how to anticipate how the installation would appear to the public. Secondly, the articulation of the phenomenological viewpoints of Bachelard and Merleau-Ponty, and the

collective theories of space, provided insights on the performativity of spatial relationships, and shed light on the creation of an interactive installation inspired by the concept of the maze. Phenomenology proposed a perspective on the subjective, individual, and sensorial spatial experience, whilst the study into the collectiveness of space – especially the concepts of site-specificity and place-identity – exposed the performative potential of social interactions in communal spaces.

The inclusion of technology in the relationship between body and space instigated two questions that determined the development of the practice: what is the contribution of technology in the dynamic relationship between body and space? And, how can technology be integrated as a form of artistic expression? The answers to these questions were found through the introduction of the concept *machine aesthetics* into the theoretical framework of the research. The concept emerged from a historical study that analysed how technology has been treated in art since the early 20th century. This study aimed to bring visibility to technology and use it as a strategy to capture the public's attention through curiosity.

Performance, performativity and interactivity.

Chapter 2 also focused on building a theoretical framework for the concepts of performativity and interactivity, and began to establish a connection between the theoretical fields included in the research.

Richard Schechner (2002; 2003), and Mieke Bal (2002) are two theorists that analyse the difference between performance and performativity. These concepts can be confused; however, performance and performativity are two different concepts with an interdependent relationship.

For Schechner performance is a *twice-behaved behaviour* (2002, p. 22) or, in other words, a type of behaviour developed through repetition or rehearsal. Performativity, on the other hand, is the unique repetition of that behaviour that generates a certain effect. Mieke Bal's argument on performance and performativity follows a similar theoretical reasoning. However, Bal's perspectives were of particular interest for this research. Firstly, her analysis on performance and performativity presents a theoretical narrative that embraces interdisciplinarity. In her book *Travelling concepts in the humanities: a rough guide* (2002), she reflects on the difference between performance and performativity. There was a common thread running between Bal's reflection and this research, i.e., transferring a concept from its origins, and applying it to another artistic field – installation art. Bal's theories created a path through which to think about performativity in other artistic contexts, which is what this research undertook. It transferred the concept of dramaturgy from theatre and applied it to explore the performativity of interactive installations.

Secondly, Bal focuses on aesthetic experience, demonstrating the need to specify and contextualise the application of concepts. This relates to the study of dramaturgy in Chapter 1. Thirdly, Bal emphasises the role of memory as the element that connects performance and performativity. The research found in the concept of memory a connection to Bachelard's (1969) phenomenology of space that reflected on experience based on past memories, thus reinforcing the performative potential of space. Memory was also a concept that supported the development of practice and relates to the ability to produce meaning and interpretations based on past experience. The idea of memory also influenced the decision to include the narrative of the maze into the practice, as mazes are structures with recognisable spatial features that can appeal to collective past memories of similar experiences of space.

This research analysed the concept of interactivity with broad theoretical and artistic grounding, which included, for example, the views of artists Golan Levin (2006a),

and Myron Krueger (1983), and media theorists such as Erkki Huhtamo (2004), Paul Pangaro (Pangaro et all, 2009), and Edward E. Shanken and Kristine Stiles (2002). The analysis of these experts within the field of interactive media revealed that there are two main points of view on the concept of interactivity. Firstly, in the field of interaction design, the discussion on interactivity concentrated on the ability of technological systems to interpret human action and respond to it, based on modes of usability, control and responsiveness. Secondly, experts on interactive art such as Huhtamo, and Golan Levin express a great interest in understanding interactivity from the point of view of behaviour and public experience.

To summarise, the theoretical investigation on performance, performativity, and interactivity, established connections that formed the conceptual framework, and the dramaturgical structure for the practice. The first connection was found in the concept of memory, which was found in Bal's reflection on performativity, and Bachelard's phenomenological analysis of space. Memory, in this instance relates to the experience of time, and its influence on the perception of the artwork. However, memory also conveys shared narratives and associations that can be used in artistic practice to create further narratives. The third connection identified was between the concepts of performativity and interactivity: the experience of the public. These two concepts were at the root of the development of the practice, as the entire creative process was focused on the creation of an aesthetic and sensory experience of an interactive spatial environment. Although the theoretical investigation identified that experience defines what performativity and interactivity are, and became the basis from which the practice evolved, the relationship between these two concepts was only determined after the completion of the practice. The study of the artworks included in the research database also revealed that the relationship between performativity and interactivity is a complex one. The relationship between these two concepts depends on how artists interpret interactivity as a means to build a performance. The association of interactivity with experience enabled the

research to suggest that interactivity is not defined only by physical response. This determined how the practice would approach interactivity, and thereby design a technological interactive system for the installation.

Database and methods of visual analysis.

As part of the methodology of the research, a database[34] was created of both interactive artworks that explore immersive environments, and spatial narratives, and artworks that focus particularly on sensory awareness of space. Due to the number of artworks included in the database – 100 art projects – colour-coded categories were created with the support of the theoretical investigation. These included: *narrative* (pink), *spatiality* (red), *visual perception* (purple), *multi-sensory perception* (blue), *interactive technologies* (yellow), and *participation* (green). These categories proved to be effective in analysing a vast number of artworks, and in producing an overview on the characteristics of the interactive art projects included in the database. The application of the colour-coded categories enabled a selection process that helped to break downs the number of artworks and to identify the most significant for this research.

The database study showed that a significant number of artworks involving interactive technologies were focused on digital and visual aesthetics such as computer visualisations or camera tracking. The technology was frequently intangible in most of these artworks, with its emphasis on the visual or audio effects instead of on the technology itself. After observing this tendency, the research opted to emphasise the technological aspects, and reinforce the concept *machine aesthetics* by integrating into the practice the materiality of technology and making

---

[34] The research database was included in Chapter 2, from figures 21 to 23 (pp. 122-124), and can also be found in appendix 1 of this thesis.

it completely visible. The public was offered full visibility of the technical and mechanical components of the installation.

The selection of the artworks was used to visualise the spectrum of interactivity[35], which was also an indicator of the performativity of interactive art. In order to analyse this selection of artworks, the research created another visual method that consisted in the graphic representation of the levels of interactivity that resulted from the interaction with technology, and interactivity from taking part in the work of art. This visual method resulted in two graphic representations (figure 24 and figure 25). The first graphic (figure 24) visualised the theoretical framework of interactivity formed through the analysis and theories of prominent academics and artists of interactive art, such as Myron Krueger (1983), Erkki Huhtamo (2004), and Paul Pangaro (2009). The second graphic (figure 25) followed the same procedure and placed the artworks within the scope of interactivity in relation to the experience of technology and artwork.

This method revealed that, in general, there is a consensus between theoretical and artistic interpretations. It also enabled the research to identify what types of interactive artworks were more performative, and observed that artists tended to focus on the technology in order to establish a performative relationship with the public. As previously observed, the relationship between interactivity and performativity is a complex one. Nonetheless, the database allowed the identification of some tendencies in the artistic approaches of performativity. The first tendency observed was the use of responsive and computer-based technology able to recognise and process human actions and generate specific effects[36], frequently proposing playful situations with the public. Another tendency observed

---

[35] Figure 24 and 25 can be found on pp. 123-127.

[36] In these cases the performance was controlled by the technology and was prone to generate a repetitive behaviour or reactions from the public. Golan Levin (2006a) puts forward a provocative analysis of the phenomenon *hands up!* in interactive installation, and questions whether the repetition of this type of interaction might no longer empower the public. Although some of these artworks appear to be a performance, the performativity, in other words the unique experience of the artwork, could become compromised.

was interactive installations that involved the participation of professionally trained performers such as dancers or musicians, in the artwork. In these cases, interactive installations became a type of interactive scenography for performance and, from the point of view of the public's experience; performativity is not only connected with the interactivity of the piece.

These tendencies emerged from artists' decisions. The database analysis also enabled to identify exceptions like in the work of by Osman Khan and Kim Beck *when laughter trips at the threshold of the divine* (2008) or, and the iconic work of by Rafael Lozano-Hemmer *Body movies* (2001). Both works by Rafael Lozano-Hemmer, which are two examples of interactive artworks where interactivity and the performativity of the pieces are not dependent on the technological systems. *Body Movies,* for example, is an interactive installation for public space and is based on a sophisticated technological system of computer vision to track people walking in a public square; however, the performativity of the artwork is more a result of the shadow play than the interaction with technology.

This study created methods of analysis that were later applied to the analysis of the practice outcome and supported the establishment of the types of spectatorship generated by the interactive installation *Space machine*.

Creating narratives, visual strategies and prototypes.

Chapter 3 was dedicated to the process involved in the development of an interactive installation. As part of a reflective practice, it aimed to employ the theoretical framework to the creation of an interactive installation.

The first strategy was to find an image or a concept that could translate Bachelard's (1969), and Merleau-Ponty's (1962; 2004) ideas on the phenomenology of space.

The maze presented itself as the perfect narrative, for these architectural structures simultaneously create both an individual, and a collective experience of space.

The spatial theories examined in Chapter 2 played an essential role in the development of the practice, helping to reveal methods of analysis. The theories of Bachelard, and Merleau-Ponty, for instance, inspired the transformation of the maze as the narrative thread for the development of the practice. Furthermore, it created a visual strategy that consisted of assembling images of mazes in different contexts: architecture, urbanism, installation art, and abstract mazes based on algorithms such as the *Truchet maze.* Through this strategy a set of images related to mazes were analysed and applied to the concepts of fragmentation and interruption. Applying these visual methods also involved my artistic subjectivity as part of the process of interpreting the research's phenomenological framework in combination with the symbolism of mazes. Supported by concepts such as memory and subjective experience, the images of mazes in different contexts, were associated with ideas of fragmentation, disruption, and discontinuity in urban spaces. This inspired creating the interactive installation titled *Space machine.*

In Chapter 1 the research situated *space dramaturgy* within the field of non-text based dramaturgies. Therefore, the visual methods and strategies used to associate concepts with each other, invoked by memory, plotted the narrative for an interactive installation without the need for a written plot or a text.

Supported by the theories of Bachelard, and Merleau-Ponty, phenomenology became a method of *thinking*, allowing me to use my own subjectivity and memory[37] as a resource for artistic practice, and as a means of discovery, through

---

[37] The concept memory emerged in this research as a 'sensory memory' that relates to images and materials I have experience in the past. This type of memory conveyed ideas and visual associations based on the maze and allowed to build awareness about the creative process and understand how the aesthetics of the installation *Space machine,* developed into an artistic language that can be apply to future projects.

prototyping, of how a public would experience the artwork. Thus, phenomenology was integrated into the dramaturgical exercise of anticipating the public's reaction.

As a method of discovery, prototyping investigated means of interweaving the compositional elements space, body, and technology. Three prototypes were developed to investigate and test mechanical functions, materiality, and the design of haptic interaction systems, in order to build a sensitive environment that stimulated a perceptive spatial awareness. Additionally, the prototyping process also defined the aesthetics of the artwork, which was especially concerned with *machine aesthetics*. The result was a modular installation with a 'machine like' appearance.

The process of creating a narrative, and of prototyping, described in Chapter 3, demonstrated how the dramaturgical practice created a feedback between all the components of the artwork, balancing the *thinking* with the *doing*. During this stage, the research turned to the theoretical framework in order to support the development of the practice. Hence, dramaturgy became a reflexive practice that analysed the creative process, also aiming to prevent that the technical requirements of the interactive installation – *space machine* – overcame the concept and the performativity of the artwork.

Defining spectatorship.

The final practice outcome was a modular and mobile interactive installation with a textile interface. The iterations of the installation were staged in the communal spaces of the building of Central Saint Martins so as to create situations located in spaces used regularly by staff and students. The mobility of the installation's modules allowed for it to be staged in different spaces and with different arrangements. This strategy was undertaken to test the dramaturgical value of space. It proved that the spatial arrangements and the architectural context were fundamental to creating a performative installation.

Chapter 4 examined the outcomes of the practice, and highlighted three essential topics for the establishment of a *space dramaturgy*: the architectural context that the Granary Building gave for the final staging of the interactive installation; and the types of spectatorship that emerged during the testing of the installation with the public. These two topics answered the research question, which was how might the relationship between space, body, and technology, create a *space dramaturgy* for interactive art installations. Each staging of the installation plotted a theatrical situation that captured people's attention and generated varying reactions from the public. The installation's modules inhabited the spaces of the college as if they were strange foreign bodies. In all three setups, two factors were vital for the establishment of the installation's performativity: the mechanical elements – the *machine aesthetics* – of the installation, and the spatial arrangement of each of the three setups of the installation.

The first and third staging of the installation – the first proposed an immersive environment, and the second an obstacle in one of the corridors of the college building – presented less variety in the response from the public. People seemed more curious of the installation's inner mechanical structure, but did not interact much with the piece itself. For example, the immersive environment installation setup did not draw as much attention as the setup located in *the Street*. The *Street* setup instigated a greater variety of response from the public, and culminated with two members of the public, a man and a woman, *performing* with the installation modules. The contrasts and variety of response from the public to the different installation stagings demonstrated that space could impact on the public's behaviour, and on an artistic language for performance. Hence, confirming the relevance of a *space dramaturgy*.

The final outcomes of the practice completed the analysis of the relationship between performativity and interactivity. Initiated at first through a theoretical investigation, it provided an answer to the second research question: "what is the link between interactivity and performativity?"

The relationship between performativity and interactivity formed the basis for the definition of the types of spectatorship that were the outcome of the practice. Chapter 4 defined four types of spectatorship – *active spectator*, *interactive spectator*, *participant,* and *performative participant* – in order to reflect and understand the relationship between the public and the artwork. The public's behaviour changed according to the spatial setup in the college's building, and the spatial arrangement of the installation's modules. Nevertheless, there were variations in the behaviours and in the reactions of the public: specifically in the setup of the installation in *the Street* in which three different public reactions were observed. The observation of this particular setup revealed that the installation did not generate one-way interactivity. That is, interactivity was not confined to the interaction of the public with the sensing system of the textile interface. The public also interacted with the installation's modules, and even used them to create playful situations with other members of the public. Thus, interactivity in this situation was a complex weave of different types of interactions between the public and the artwork.

Chapter 4 applied the analytical methods developed in Chapter 2 to the analysis of the practice. The same colour-code categories were used to analyse the overall reactions from the public, and then created a graphic representation that measured the degree of interactivity of each of the iterations of the installation. The application of these methods created an overview of the practice and identified how the spatial arrangement influenced the relationship between interactivity and performativity.

Out of all the three installation stagings, the installation set up in *the Street* was the one with the most variety of responses and, therefore, offered more information about the relationship between interactivity and performativity. This setup allowed the public to circulate freely amidst the space created by the installation's modules. There was a particular occurrence when two members of the public, a man and a woman, opted to engage more with the installation than other visitors did. This case in point demonstrated that performativity could merge with interactivity as a result of the spatial environment. The reaction of the two members of the public was defined as *performative participation* to emphasise the performativity of their behaviour, and also in comparison to the other types of public participation towards the staging in *the Street*. However, this interactivity is not a type of, or, a new form of performativity.

The two concepts of performativity and interactivity were related to the experience of the artwork. Nevertheless, this research identified differences between the two concepts, and, in the way they emerged through the public's behaviour. Interactivity was clear during the occasions that the public decided to participate in the artwork, or enact with it, from simply touching the textile interface to moving the installation modules within the space. Interactivity was determined by the unique experience of the different types of interactions that the installation offered: interactivity with the textiles interface; interactivity by moving the modules; and interaction with other people. The angle of this research on spectatorship has been a renunciation of the dichotomy of active and passive spectator. Interactivity has been considered here to be giving the public the option to express interpretations, emotions, and even impulses. In other words, interactivity has been the means of externalising the inner mental process of aesthetic experience (Pask, 1971). Briefly, interactivity, within the artistic context, is the unique experience of the contact with the artwork.

Performativity was more evident in moments when it was possible to observe a transition in the public's behaviour, resulting in exceptional reactions from the public; for example, the couple that played with the installation's modules whilst it was installed in *the Street* thus completely altering the installation's spatial arrangement. Performativity became more noticeable when the members of the public, whilst interacting with the installation, created a unique event, transmitting a sense of theatricality as well as the sense of *here and now*. The public, in this situation, *performed* the artwork without receiving any instructions to act like an actor or dancer. They became spontaneous performers. Performativity, therefore, in art also emerges from the balance between control and spontaneity created by the different types of interaction[38]. In the context of interactive art, the public, as a performer, cannot be considered the same as an actor, a dancer or any other professionally trained performer. The performance of the public, whilst experiencing an interactive installation, was born out of the spontaneous behaviour that led the public to transform the installation; not only its spatial arrangement, but also the meaning and narrative of the artwork.

Performativity and interactivity cannot be measured quantitatively, and both concepts were present throughout the three installation setups, but not always with the same degree. The term *performative participant* highlights the reaction from the public in which performativity characterised their response to the installation. This was whether through the creation of a playful situation or through a reaction to an inconvenient spatial situation such as in the corridor installation.

To conclude, during the testing of the installation *Space machine* in the shared spaces of Central Saint Martins, the interactivity of the installation was complex and

---

[38] Another example was the moment when a member of staff pushed the modules against the wall. This staging posed an obstacle in space; however it was an intervening and provocative staging that led a member of staff to take the decision to reorganise the space.

multiple, consisting of different types of interaction: interaction with the touch sensing system, with the physical modules of the installation, and interaction with other members of the public. Performativity, on the other hand, emerged when the combination of all the different types of interactions was perceived and experienced as a whole, and, as unique. The concepts interactivity and performativity were intrinsically connected; however, it was not a relationship that developed in parallel. The relationship between performativity and interactivity was a result of the relational aspects of the installation, such as how the spatial arrangement related to the architectural context of the Granary Building. This consequently influenced the public's perception of the materiality and visual appearance of the installation.

Research contributions

This thesis has contributed with a new space-based dramaturgical model, *space dramaturgy*. The development of a new dramaturgy has involved a process of transfer of the concept of dramaturgy from theatre to interactive art. In order to undertake this process, the research created methods of analysis that generated five contributions:

- The creation of general dramaturgical principles (described in Chapter 4), as a process of divergence and converge of artistic practice involving performance. Through theoretical investigation, dramaturgy diverged into other fields and broadened its theoretical scope, whereas the practice concentrated on converging these concepts into an artistic proposal.
- The research contributed to an on-going exploration of new dramaturgies, merging disciplinary fields such as performance and interactive art. This was included as the main topic of a paper presentation at the international conference *ISEA 2015,* which was integrated the panel *Expanded performance* (Capeto, 2015).

- The research also expanded the concept of performativity, and established a connection with interactivity, which also helped to understand varying types of spectatorship in interactive art.

- Focused on creating a type of dramaturgy that refuses literary text and transformed space into an artistic language for performance. It therefore created visual strategies that allowed the plotting of spatial situations for a performative artwork.

- Created a database of one hundred interactive artworks that deal specifically with performative environments, multi-sensory experience of space, interactivity, and participation. In addition, the research also created methods to analyse these artworks, and methods for a comparative study between artistic practice and theory.

Further developments

The development of *space dramaturgy* was defined by periods of divergence and convergence that articulated theory with practice. The stages of divergence represented parts of the dramaturgical process when the research built up contexts but also found materials. In contrast, during the stage of convergence, the research narrowed down concepts, and refined the theoretical material on space, body, and technology. The development of *space dramaturgy* was akin to an exchange dialogue between different disciplinary areas and between theory and practice. The theory and the practice evolved according to a cyclic process of enquiry. This created a dynamic that has unfolded two areas for further development of *space dramaturgy* beyond this research: artistic and academic.

As a process based form of dramaturgy, the dramaturgical principles only became fully visible after the completion of the practice-based research. These principles evolved alongside the development of the theoretical investigation, and the creative

process involved in the building of an interactive installation. The support of phenomenology in this process facilitated the creation of an awareness of the evolution of the artistic work, and helped establish a form of practice that not only works towards a specific artwork, but also focuses on developing a line of work for further practice. This line of work unfolded methods for artistic practice that explores the performativity of space, and it developed an aesthetic language based on *machine aesthetics*. The study of *machine aesthetics* opened an avenue for the development of further artistic exploration of the visibility and materiality of technology. For the research practice installation, *Space machine*, the concept *machine aesthetics* created a positive impact on the public by generating a sense of curiosity for the artwork. Therefore, the application of this concept to artistic practice highlights that *machine aesthetics* is a solid artistic language with potential for further exploration. Technology was not just a technical support to animate the textile interface; it became a spectacle and an aesthetic element.

This research has also found an opportunity for further development in current academic research in the field of *new dramaturgies*. Marianne Van Kerkhoven (2009a) described *new dramaturgies* as an open field for dramaturgical experimentation and creation of new forms of artistic practices. This emergent field is also currently producing theoretical investigation focused on the transformation of dramaturgical practice, and the expansion of dramaturgy into other fields. In fact, Cathy Turner's recent publication *Dramaturgy and architecture* (2015) underpins the relationship between theatre and architecture, taking the reach of dramaturgical practice beyond its confined borders. Besides making a contribution with the creation of *space dramaturgy* as a new model for dramaturgical practice, the research also identifies an opportunity to give continuity to the observational work initiated during this research. The aim is to deepen this study and the development of the methods to investigate emergent performative artworks within the field of interactive art.

To summarise, the development of the concept *space dramaturgy* offered a comprehensive interdisciplinary study on the contemporary state of dramaturgical practice and interactive art, bringing these two fields closer. It concluded in a dramaturgical practice that shifted between theory and practice, creating new paths for artistic exploration of sentient experience of spatial installations and *machine aesthetics; and* merging together disciplinary areas such as performance, architecture, site-specific art, phenomenology, and interactive media.

Appendices

Appendix 1: Research Database.

As part of the research's methodology, it was developed an observational work that consisted in the study of other practitioner's artworks. The research created a database that gathered one hundred artworks, and six categories with the support of the theoretical investigation in order to make a qualitative analysis.

Narrative:
Artworks that include storytelling strategies, or other types of narratives, for example, based on visual communication.

Spatiality:
spatial installatio, in which are included immersive environment, site-specific and other types of installation that reshape or are focused on spatial relationships.

Visual Perception

Multi-sensory Perception

Interactive Technologies:
This is a comprehensive category, in which is included a great extent of interactive works from the low to the highest levels of interactivity always involving technology.
This category does not necessarily includes participation from the public.

Participation:
Concerns all the projects that involve the participation from the public, but does not necessarily includes the use of technology.

The table bellow shows a total of 70 interactive installation projects included in the database.

Mute Room — Faulders Studio (2000)	*Scents of Space* — Usman Haque (2002)	*Chronopolis* — Chris Salter (2002)	*Deep Walls* — Scott Sona Snibe (2003)	*Frequency & Volume* — Rafael Lozano-Hemmer (2003)	*Messa di Voce* — G. Levin/Z. Liebermann (2003)	*Access* — Marie Sester (2003)	*Global Bearing* — Norimichi Hirakawa (2004)	*Hyposurface* — Mark Goulthorpe (2004)	*The Listening Post* — Mark Hanse & Ben Rubin (2004)
Son-O-House — S. Spuybroek/E. Vander (2000-04)	*Audio Space* — Theo Watson (2005)	*Daises* — Theo Watson (2005)	*Tango Virus* — Emiliano Causa, etc. (2005)	*Sound Modulate Light* — Edwin Van der Heide (2005)	*Gravicells* — S. Mikami/ S. Ichikawa (2005)	*Vinyl Workout* — Theo Watson (2006)	*Snow Mirror* — Daniel Rozin (2006)	*Interstitial Fragment Processor* — Golan Levin (2007)	*ICS-10* — Shih Chieh Huang (2007)
Theatre of Immanence — Unstudio (2007)	*Appel* — The Green Eyl (2007)	*Sustained Coincidence* — R. Lozano-Hemmer (2007)	*Sonic Floor* — Daito Manabe (2007)	*Propagaciones* — Leo Nuñez (2007)	*Augmented Sculptures* — Pablo Valbuena (2007)	*A Plaything for the Great* — Norimichi Hirakawa (2007)	*Funky Forest* — Theo Watson (2007)	*Vivisection* — Mette R. Thompsen (2007)	*There is still time...* — The Wooster Group (2007-08)
Polygon Playground — Whitevoid Interactions (2008)	*Apostasis* — R. Lozano-Hemmer (2008)	*Make Out* — R. Lozano-Hemmer (2008)	*Media Bubble* — Timo Toots (2008)	*Sustainable Dance Floor* — Daan Roosegaarde (2008)	*Hylozoic Soil* — Philip Beesley (2008)	*Abgetaucht* — The Green Eyl (2008)	*Optical Tone* — Tsutomu Mutoh (2008)	*Visitors to a Gallery* — Stanza (2008)	*Connect* — Andreas Muxel (2008)
Nemo Observatorium — Lawrence Malstaf (2008)	*Air XY* — Chris Salter (2008)	*Performative Ecologies* — Ruairi Glynn (2009)	*Labyrinth* — Jeongmoon Choi (2009)	*Liquid Space* — Daan Roosegaarde (2008-10)	*Quadratura* — Pablo Valbuena (2010)	*Sonicity* — Stanza (2010)	*MeYouAndUs* — Alastair Eilbeck (2010)	*Darwinian Mirror* — Danie Rozin (2010)	*Flow* — Daan Roosegaarde (2007-11)
Lotus — Daan Roosegaarde (2010-11)	*Lunar* — Daan Roosegaarde (2010-11)	*Body Swap* — Chris OShea (2011)	*Little Magic Stories* — Chris OShea (2011)	*A Celebration of Life* — Fieldio (2011)	*Between You and Me* — Anke Eckardt (2011)	*ShadowPlay* — Kyle McDonald (2011)	*Desire of Codes* — Seiko Mikami (2011)	*MEMOPOL II* — Timo Toots (2011)	*Me and my shadow* — Joseph Hyde (2011/12)
ScreenLabs — K. McDonald, J. Lemercier. J.G. Lewis (2012)	*On the space time foam* — Tomas Saraceno (2012)	*N.Polytope* — Chris Salter (2012)	*The Treachery of Sanctuary* — Chris Milk (2012)	*Small Global* — D-Fuse (2005-2013)	*Vanishing Point* — United Visuals Artists (2013)	*Rain Room* — Random International (2013)	*Light Leaks* — K. Mcdonald & J. Jonas (2013)	*Fuji* — Joanie Lemercier (2014)	*Momentum* — United Visual Artists (2014)

These tables contain the interactive art projects for the public space (green) and for interactive art projects for performance (pink). Although initially the research included in the database interactive artworks for dance and theatre performance, these artworks were not considered for further analysis and the research focused on interactive installations

Vectorial Elevation R. Lozano-Hemmer 2000	*Sky Ear* Usman Haque 2006	*Night Lights* YesYesNo 2010
Bump Assocreation 2000	*Laser Tag* Theo Watson 2007	*Capacitive Body* Andreas Muxel 2010
Body Movies R. Lozano-Hemmer 2001	*Dune* Daan Roosegaarde 2007	*Dancing House* Klaus Obermaier 2011
Under Scan R. Lozano-Hemmer 2004	*Primal Source* Usman Haque 2008	*Sensor Valley* Daan Roosengaarde 2012
When Laughter trips… Osmar Khan & Kim Beck 2008	*Burble* Usman Haque 2006-10	*Marble* Daan Roosengaarde 2012
Aparition Klaus Obermaier 2000	*Driftnet* D. Manabe & Theatreworks 2006	*Une reseau translucide* Prue Lang 2011
Dialtones Golan Levin 2000	*Sea Unsea* Mette R. Thompsen 2006	*ElevenPlay "dot"* D. Manabe & M. Tomo 2011
Elicit & en/traced Nathaniel Stern 2001	*Echo* United Visual Artist 2006	*Digistage* WhiteVoid Interactions 2011
Pol Marcel Li Antunez 2002	*The concept of…* Klaus Obermaier 2010	*Letterbox* (st)Age of Participation 2012
Le Sacre du Printemps Klaus Obermaier 2006	*Quadratura* Pablo Valbuena 2010	*Future Self* Random International & Wayne McGregor 2012

Colour-coded categories applied to the group of interactive art installation project.

ScreenLabs — K. McDonald, J. Lemercier, J.G. Lewis — 2012
On the space time foam — Tomas Saraceno — 2012
N.Polytone — Chris Salter — 2012
The Treachery of Sanctuary — Chris Milk — 2012
Small Global — D-Fuse — 2005-2013
Vanishing Point — United Visuals Artists — 2013
Rain Room — Random International — 2013
Light Leaks — K. Mcdonald & J. Jonas — 2013
Fuji — Joanie Lemercier — 2014
Momentum — United Visual Artists — 2014

Lotus — Daan Roosegaarde — 2010-11
Lunar — Daan Roosegaarde — 2010-11
Body Swap — Chris OShea — 2011
Little Magic Stories — Chris OShea — 2011
A Celebration of Life — Fieldio — 2011
Between You and Me — Anke Eckardt — 2011
ShadowPlay — Kyle McDonald — 2011
Desire of Codes — Seiko Mikami — 2011
MEMOPOL II — Timo Toots — 2011
Me and my shadow — Joseph Hyde — 2011/12

Nemo Observatorium — Lawrence Malstaf — 2008
Air XY — Chris Salter — 2008
Performative Ecologies — Ruairi Glynn — 2009
Labyrinth — Jeongmoon Choi — 2009
Liquid Space — Daan Roosegaarde — 2008-10
Quadratura — Pablo Valbuena — 2010
Sonicity — Stanza — 2010
MeYouAndUs — Alastair Eilbeck — 2010
Darwinian Mirror — Danie Rozin — 2010
Flow — Daan Roosegaarde — 2007-11

Polygon Playground — Whitevoid Interactions — 2008
Apostasis — R. Lozano-Hemmer — 2008
Make Out — R. Lozano-Hemmer — 2008
Media Bubble — Timo Toots — 2008
Sustainable Dance Floor — Daan Roosegaarde — 2008
Hylozoic Soil — Philip Beesley — 2008
Abgetaucht — The Green Eyl — 2008
Optical Tone — Tsutomu Mutoh — 2008
Visitors to a Gallery — Stanza — 2008
Connect — Andreas Muxel — 2008

Theatre of Immanence — Unstudio — 2007
Appel — The Green Eyl — 2007
Sustained Coincidence — R. Lozano-Hemmer — 2007
Sonic Floor — Daito Manabe — 2007
Propagaciones — Leo Nuñez — 2007
Augmented Sculptures — Pablo Valbuena — 2007
A Plaything for the Great — Narimichi Hirakawa — 2007
Funky Forest — Theo Watson — 2007
Vivisection — Mette R. Thompsen — 2007
There is still time.. — The Wooster Group — 2007-08

Son-O-House — S. Spuybroek/E. Vander — 2000-04
Audio Space — Theo Watson — 2005
Daises — Theo Watson — 2005
Tango Virus — Emiliano Causa, etc. — 2005
Sound Modulate Light — Edwin Van der Heide — 2005
Gravicells — G. Levin/Z. Liebermann — 2005
Vinyl Workout — Theo Watson — 2006
Snow Mirror — Daniel Rozin — 2006
Interstitial Fragment Processor — Golan Levin — 2007
ICS-10 — Shih Chieh Huang — 2007

Mute Room — Faulders Studio — 2000
Scents of Space — Usman Haque — 2002
Chronopolis — Chris Salter — 2002
Deep Walls — Scott Sona Snibe — 2003
Frequency & Volume — Rafael Lozano-Hemmer — 2003
Messa di Voce — G. Levin/Z. Liebermann — 2003
Access — Marie Sester — 2003
Global Bearing — Narimichi Hirakawa — 2004
Hyposurface — Mark Goulthorpe — 2004
The Listening Post — Mark Hanse & Ben Rubin — 2004

Bellow is the final selection of artworks, which gave preference to categories *spatiality* (red) and the combination of i*nteractivity* (yellow), and *participation* (green). However, it was included some exceptions such as *Messa di voce* (2003) by Golan Levin and Zachary Liebermann or *Appel* (2007) by The Green Eyl, for example, to support the analysis and reflection about interactivity and performativity.


Artwork	Author	Year
The Treachery of Sanctuary	Chris Milk	2012
N.Polytone	Chris Salter	2012
Small Global	D-Fuse	2005-2013
Rain Room	Random International	2013
Sonicity	Stanza	2010
Little Magic Stories	Chris O'Shea	2011
Between You and Me	Anke Eckardt	2011
Desire of Codes	Seiko Mikami	2011
MEMOPOL II	Timo Toots	2011
Me and my shadow	Joseph Hyde	2011/12
On the space time foam	Tomas Saraceno	2012
Sustainable Dance Floor	Daan Roosegaarde	2008
Hylozoic Soil	Philip Beesley	2008
Optical Tone	Tsutomu Mutoh	2008
Visitors to a Gallery	Stanza	2008
Nemo Observatorium	Lawrence Malstaf	2008
Performative Ecologies	Ruairi Glynn	2009
Liquid Space	Daan Roosegaarde	2008-10
Interstitial Fragment Processor	Golan Levin	2007
Appel	The Green Eyl	2007
Propagaciones	Leo Nuñez	2007
Funky Forest	Theo Watson	2007
Vivisection	Mette R. Thompsen	2007
There is still time...	The Wooster Group	2007-08
Apostasis	R. Lozano-Hemmer	2008
Messa di Voce	G. Levin/Z. Liebermann	2003
Access	Marie Sester	2003
The Listening Post	Mark Hanse & Ben Rubin	2004
Audio Space	Theo Watson	2005
Tango Virus	Emiliano Causa, etc.	2005
Gravicells	S. Mikami/ S. Ichikawa	2005
Snow Mirror	Daniel Rozin	2006

Selection of interactive installations for the public space

Vectorial Elevation R. Lozano-Hemmer 2000	*Sky Ear* Usman Haque 2006	*Night Lights* YesYesNo 2010
Bump Assocreation 2000	*Laser Tag* Theo Watson 2007	*Capacitive Body* Andreas Muxel 2010
Body Movies R. Lozano-Hemmer 2001	*Dune* Daan Roosegaarde 2007	*Dancing House* Klaus Obermaier 2011
Under Scan R. Lozano-Hemmer 2004	*Primal Source* Usman Haque 2008	*Sensor Valley* Daan Roosengaarde 2012
When Laughter trips... Osmar Khan & Kim Beck 2008	*Burble* Usman Haque 2006-10	*Marble* Daan Roosengaarde 2012

Appendix 2: Research sketchbook.

This appendix includes hand drawn sketches that are part of the process of investigation of mechanism design alongside with the technical planning.
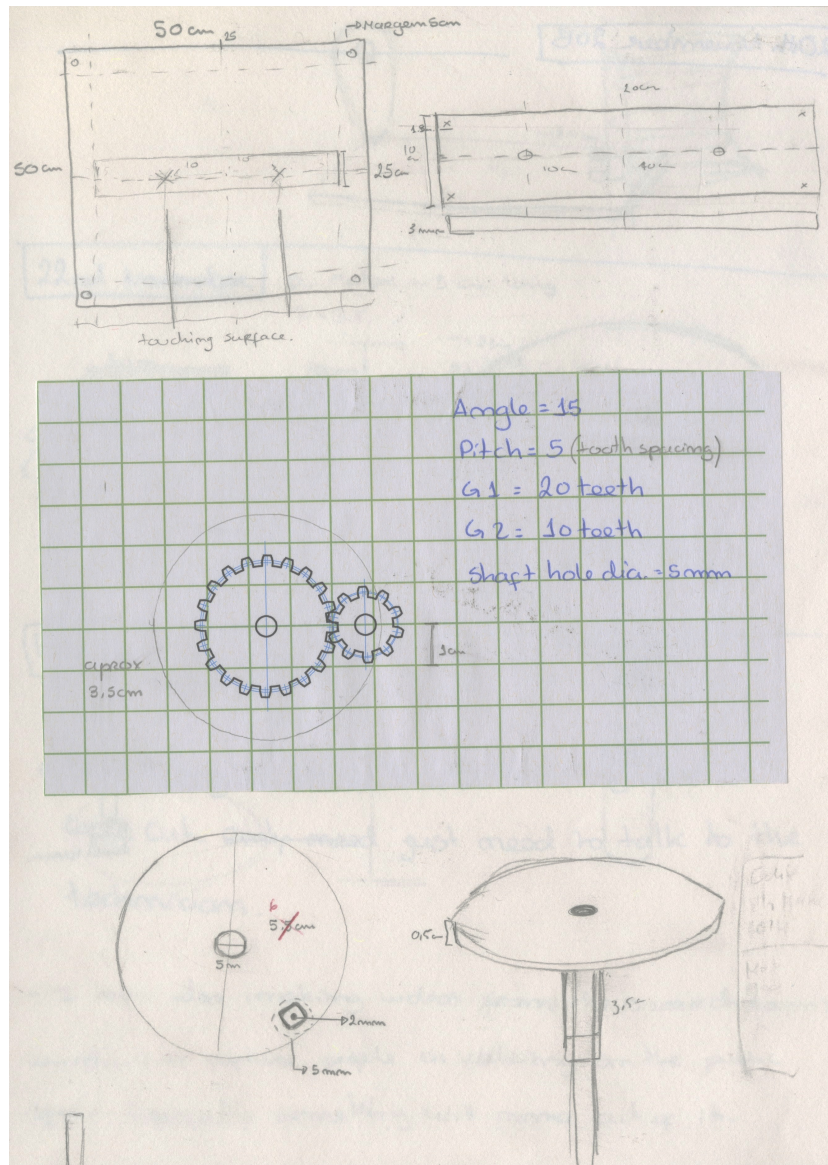
Technical planning for small-scale prototype.
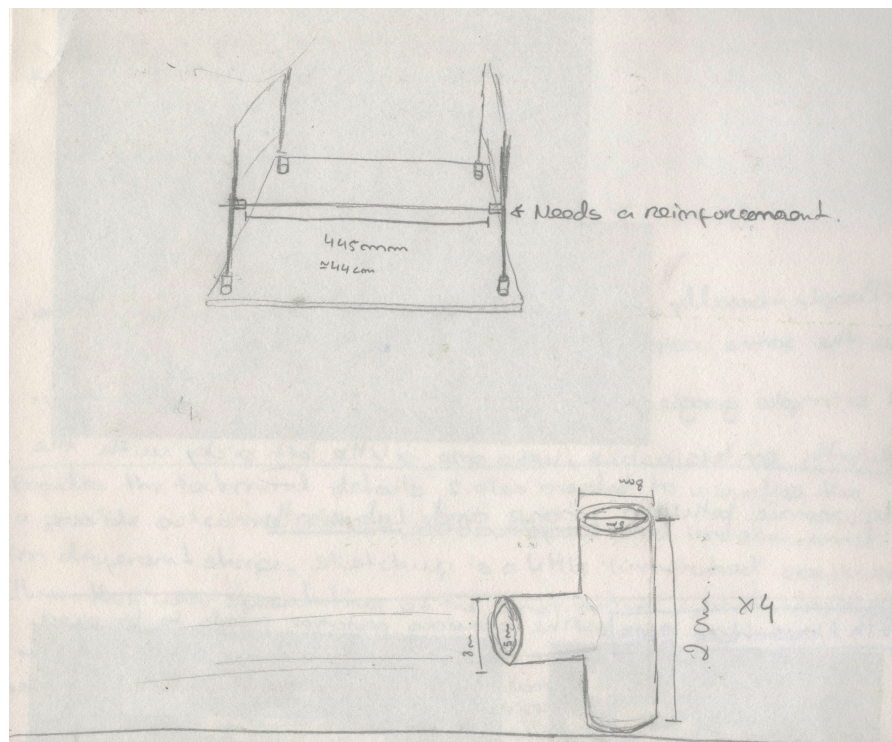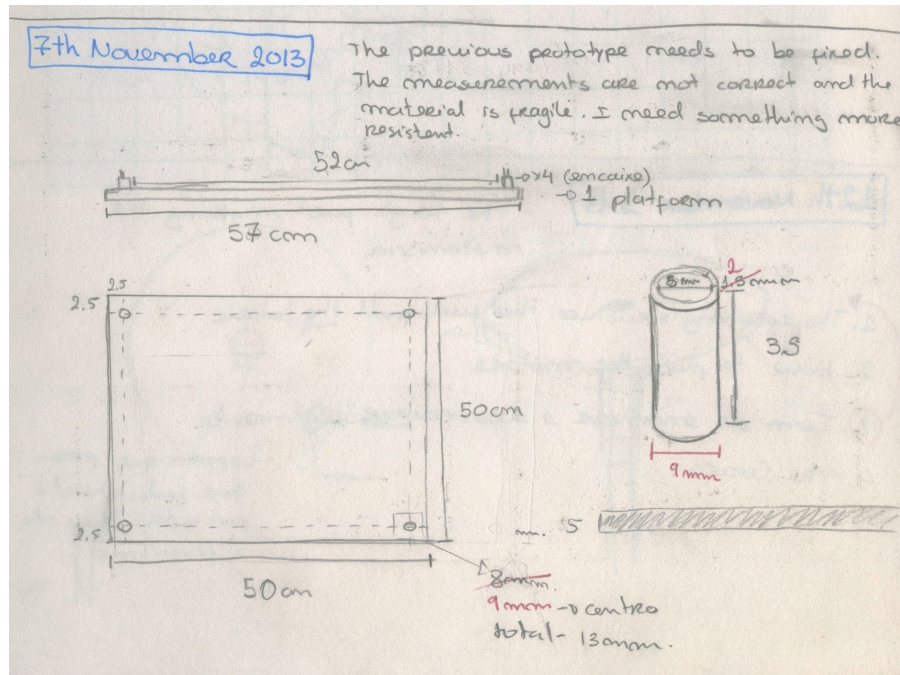
Rotating mechanism.
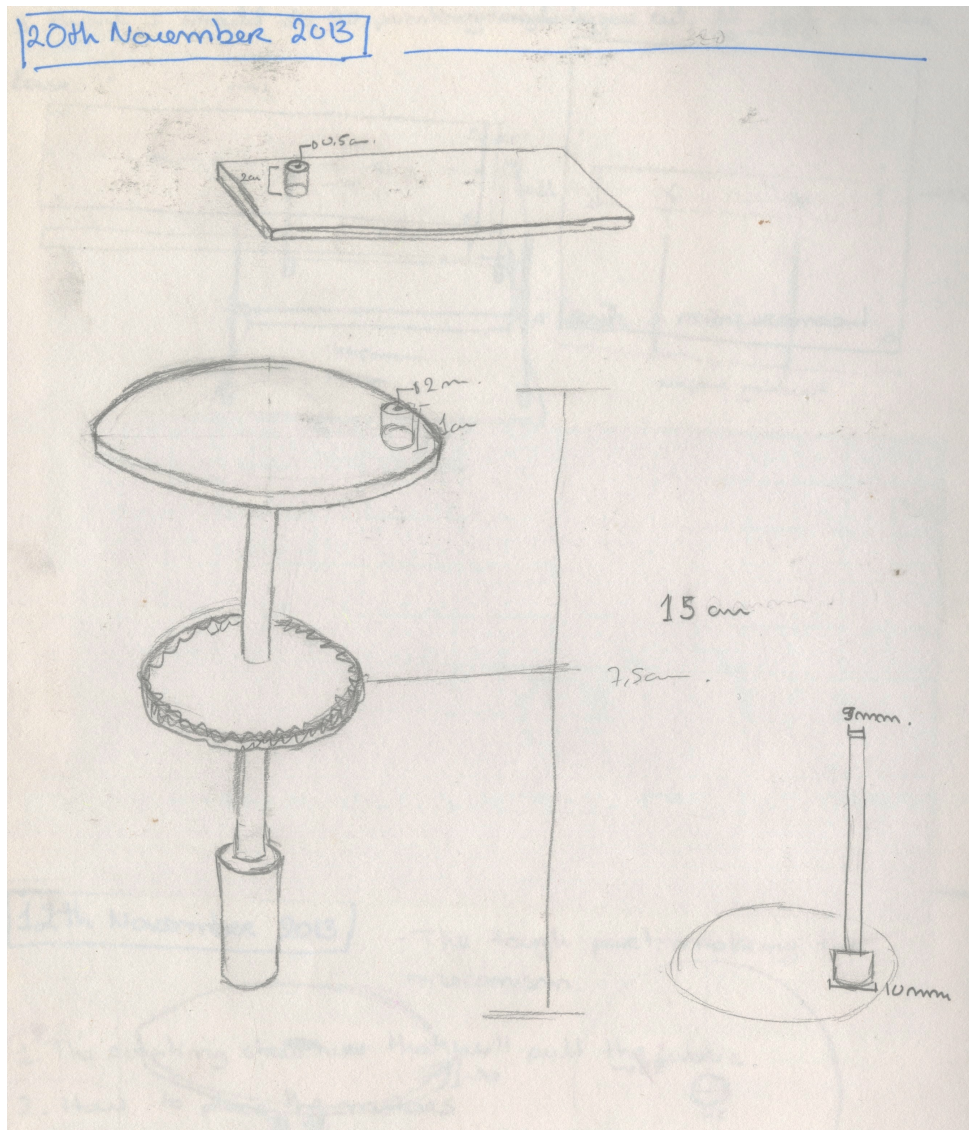
Textile interface: Net and electronics system.

←Attachment to the fabric.

←Attach

←Maybe they could be bend

Looking for organic/fluid movements? How?

└D could this be the meaningfull? for the audience?
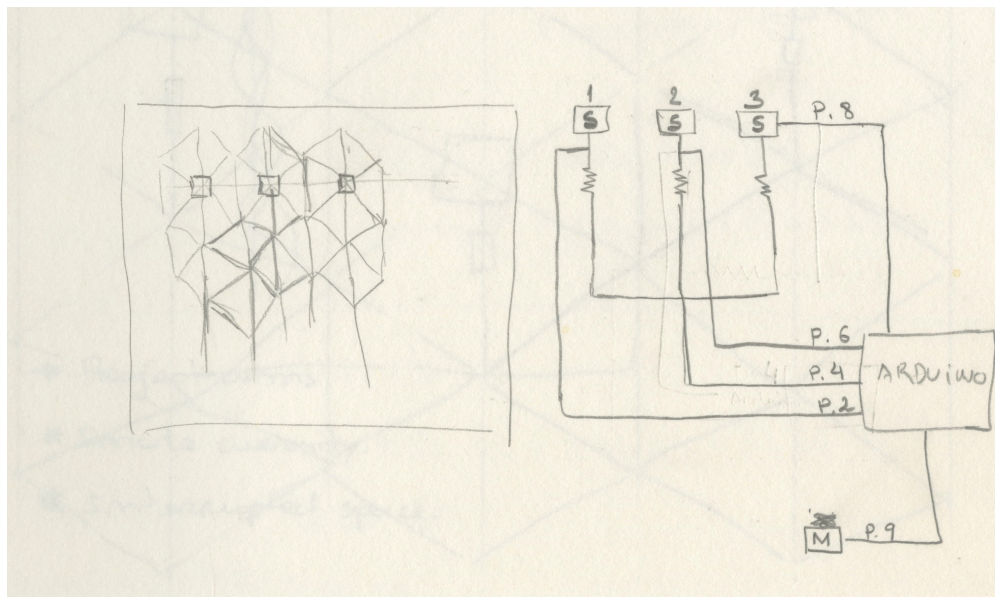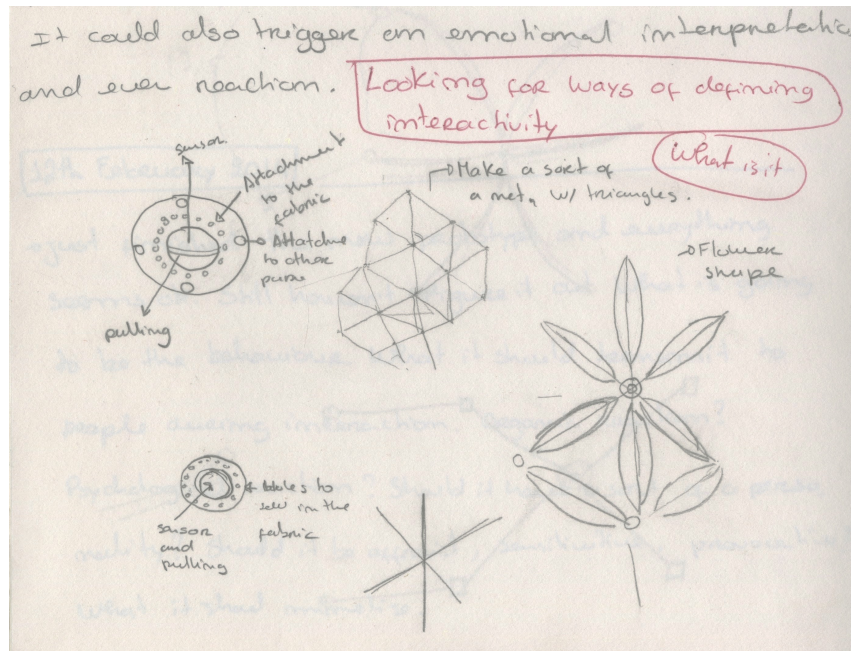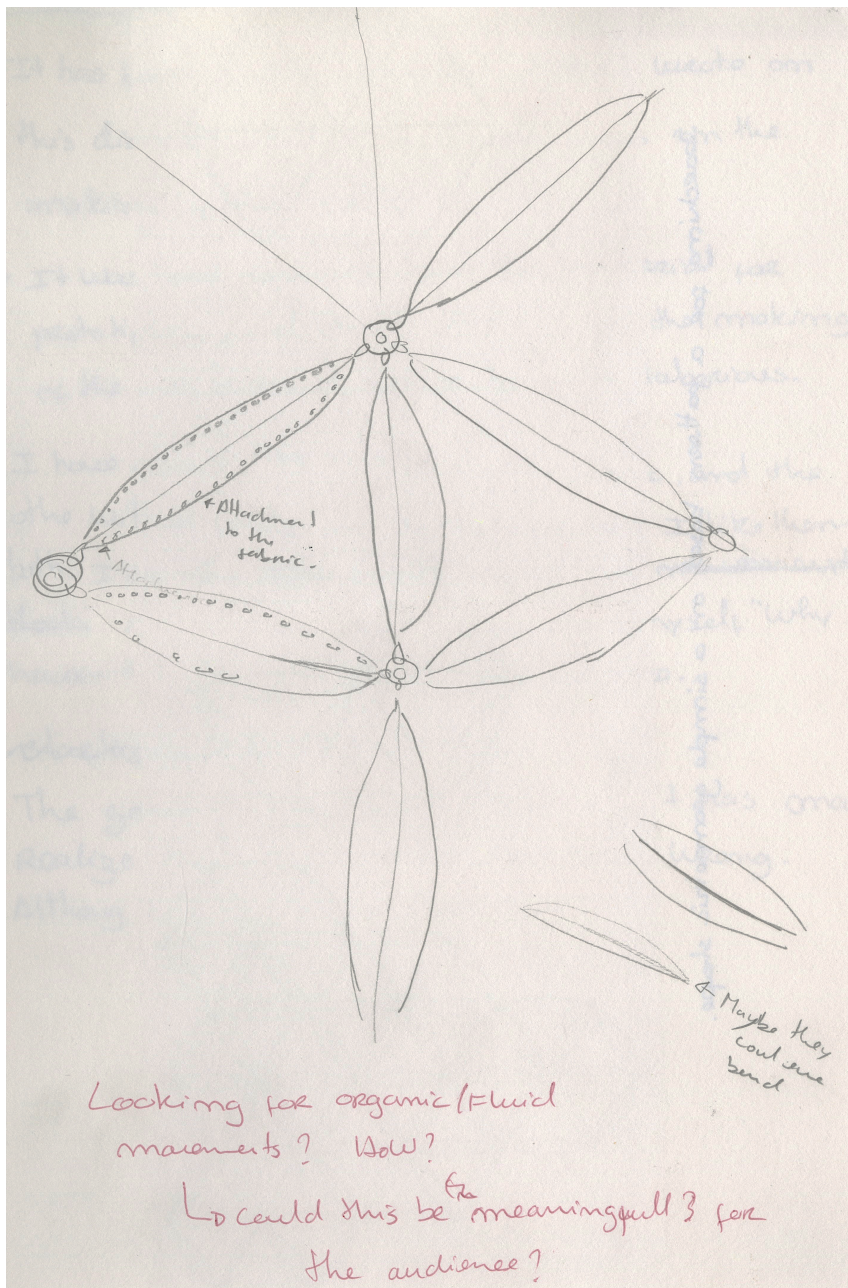
Slider-crank mechanism and textile interface's movement.
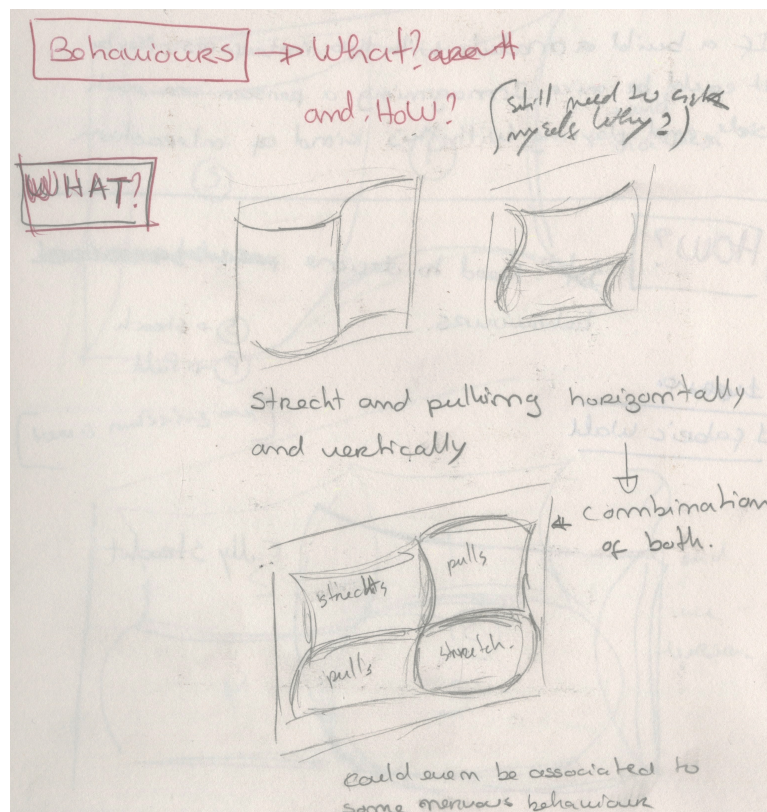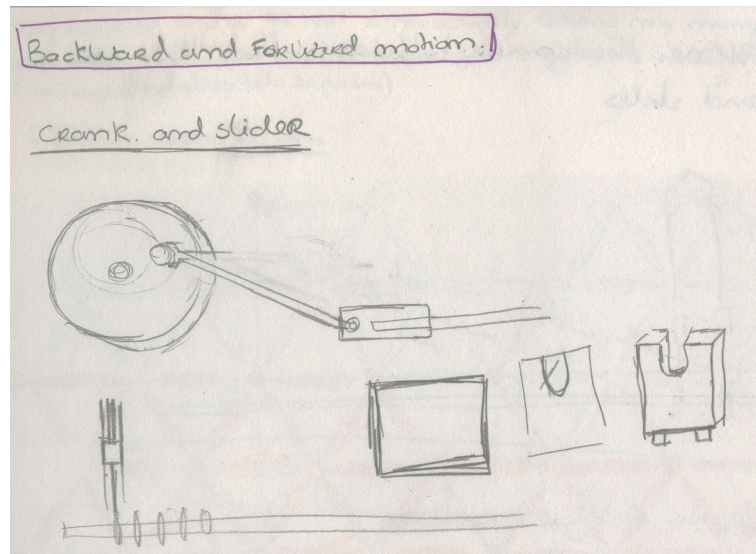
Planning the textile interface's behaviour.

- So, I have at the moment envision 5 possibities of movement, behaviour.

▷ Fabric

I think a this could be jus one. But I would not have the full arches.

How to achieve this 3 combinations in just one fabric layer.

Maybe the Fabric needs to be divided in 4 sections.

50 cm   50 cm

50c

1 motor   1 motor

1 motor

1 motor   1 motor

1 motor

1 motor

OR

1 motor

with gears Perhaps.
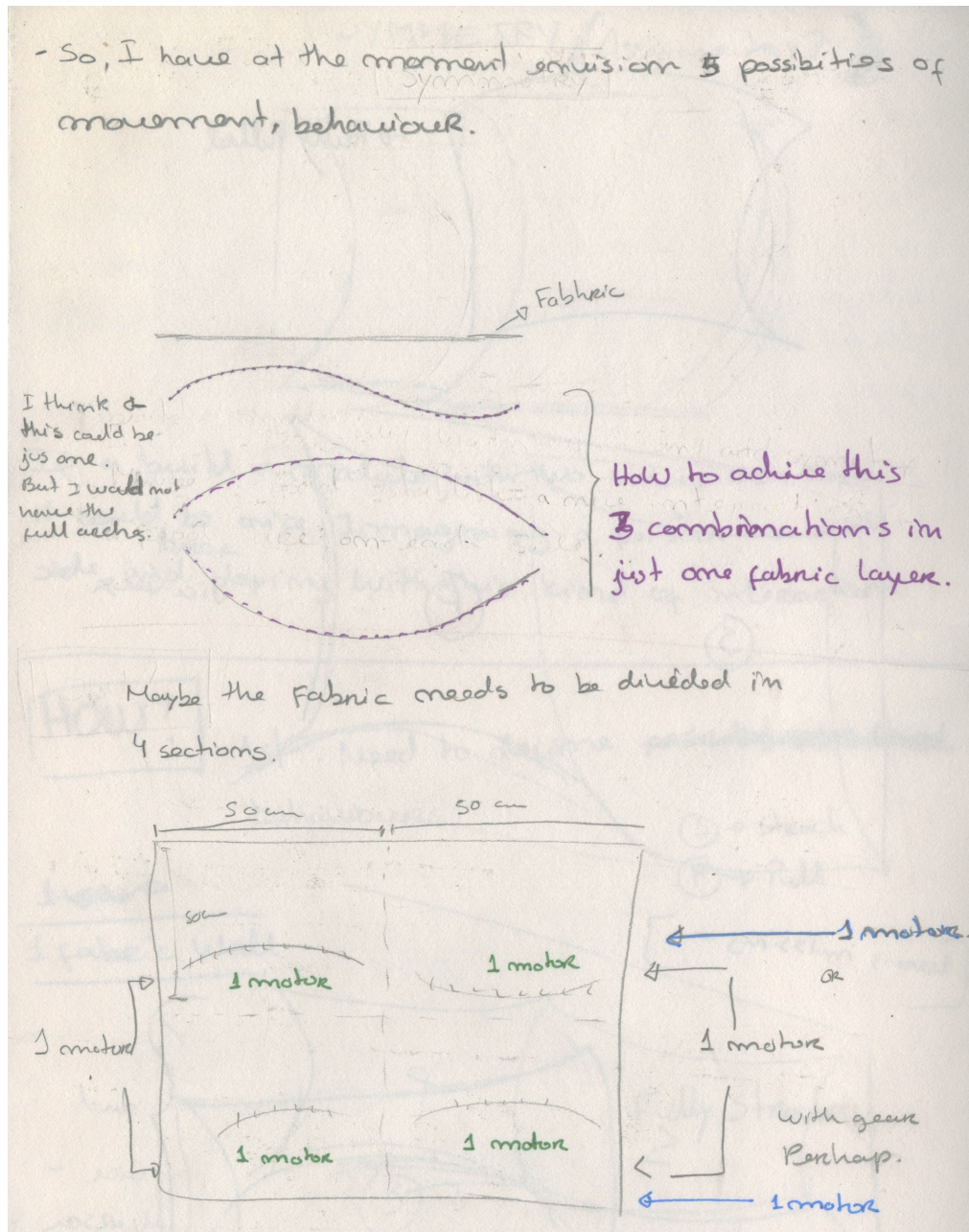
1 motor

Motor support and slider-crank measurements.

approx. the base of a servo motor
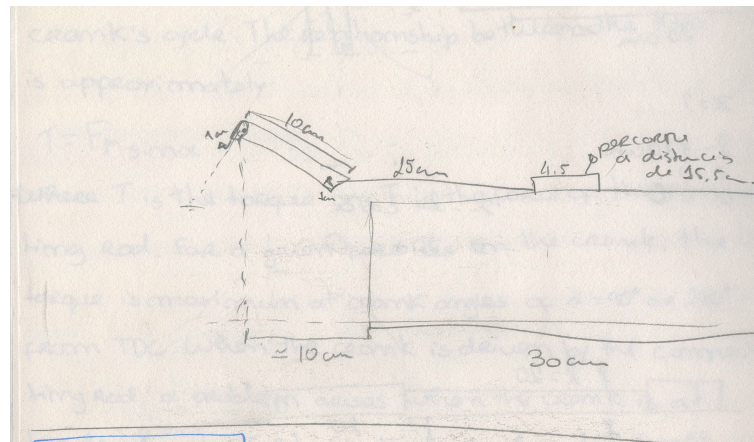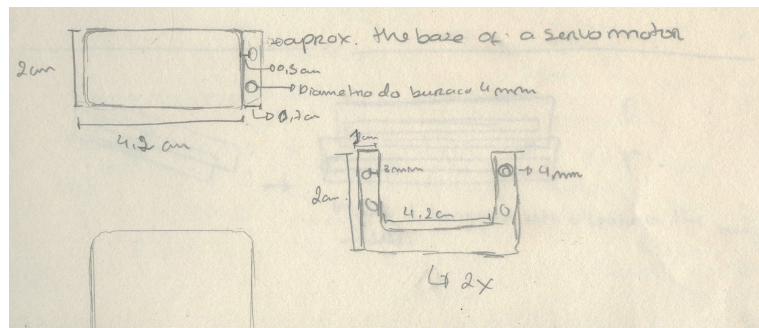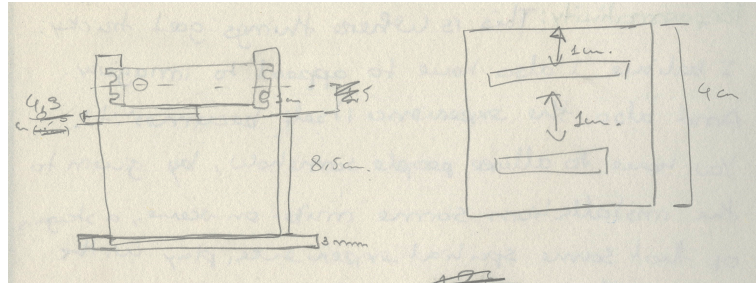
Appendix 3: Electronic circuits and code.

This appendix includes the first electronic circuits (from the research sketchbook) with conductive fabric incorporated, and the final version of the circuit with the Adafruit breakout CAP1188 integrated.
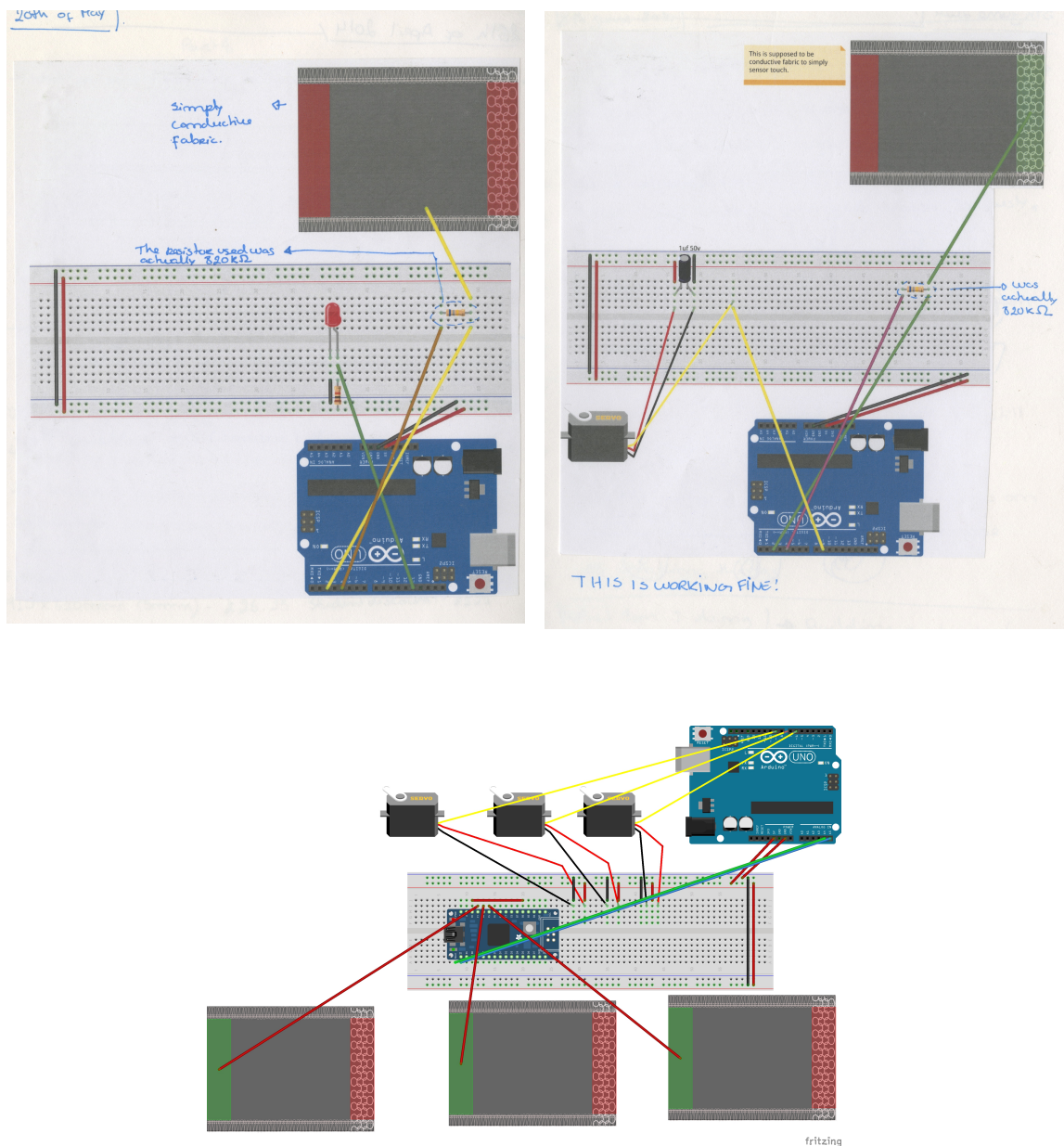
The code for Arduino that sweeps eight servo motors, generating different sequential movements:

```cpp
#include <Wire.h>
#include <SPI.h>
#include <Adafruit_CAP1188.h>
#include <VarSpeedServo.h>
#define CAP1188_RESET   9
#define CAP1188_CS   10
#define CAP1188_MOSI   11
#define CAP1188_MISO   12
#define CAP1188_CLK   13
Adafruit_CAP1188 cap = Adafruit_CAP1188(CAP1188_RESET);
VarSpeedServo myservo1;
VarSpeedServo myservo2;
VarSpeedServo myservo3;
VarSpeedServo myservo4;
VarSpeedServo myservo5;
VarSpeedServo myservo6;
VarSpeedServo myservo7;
VarSpeedServo myservo8;
int interval;
pos;// current servo position increment;// increment to move for each interval

updateInterval;// interval between updates int lastNumber = 0;// previous state of the button

unsigned long  lastUpdate;// last update of position
int number;
void setup() {
  Serial.begin(9600);
  myservo1.attach(2);
  myservo2.attach(3);
  myservo3.attach(4);
  myservo4.attach(5);
  myservo5.attach(6);
  myservo6.attach(7);
  myservo7.attach(8);
  myservo8.attach(9);
  updateInterval = interval;
  increment = 1;
Serial.println("CAP1188 test!");
  if (!cap.begin(0x28)) {
    Serial.println("CAP1188 not found");
    while (1);
  }
  Serial.println("CAP1188 found!");
}

void loop() {
  uint8_t touched =  cap.touched();
  for (uint8_t i=0; i<8; i++) {
    if (touched & (1 << i)) {
      //  Serial.print("C");
      //Serial.print(i+1);
      // Serial.print("\t");
      number = i + 1;
```

```
        Serial.println(number);
        Serial.println();
} }

if (touched & 0x01) {// n1

        myservo1.write(170,50,false);
        myservo2.write(170,50,true);
        myservo1.write(90,50,false);
        myservo2.write(90,50,true);
        myservo3.write(170,50,false);
        myservo4.write(170,50,true);
        myservo3.write(90,50,false);
        myservo4.write(90,50,true);
        Serial.println("touch 1");
  }
 if (touched & 0x02) {//n2
  myservo1.write(170,25,true);
  myservo2.write(170,50,true);
  myservo3.write(170,100,true);
  myservo4.write(170,200,true);
  myservo4.write(10,100,true);
  myservo3.write(10,100,true);
  myservo2.write(10,100,true);
  myservo1.write(10,100,true);
Serial.println("touch 2");
}

if (touched & 0x04) {//n3
myservo5.write(170,50,false);
myservo6.write(170,50,true);
myservo5.write(90,50,false);
myservo6.write(90,50,true);
myservo7.write(170,50,false);
myservo8.write(170,50,true);
myservo7.write(90,50,false);
myservo8.write(90,50,true);
Serial.println("touch 3");
 }
if (touched & 0x08) {//n4
myservo5.write(170,25,true);
myservo6.write(170,50,true);
myservo7.write(170,100,true);
myservo8.write(170,200,true);
myservo8.write(10,100,true);
myservo7.write(10,100,true);
myservo6.write(10,100,true);
myservo5.write(10,100,true);
Serial.println("touch 4");
}
}
```
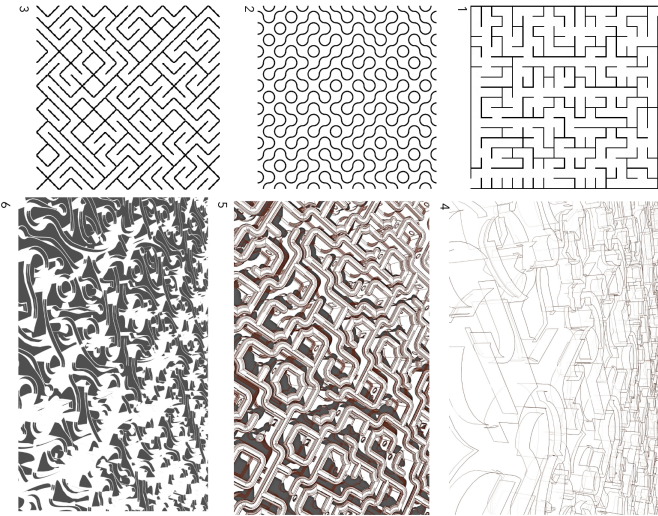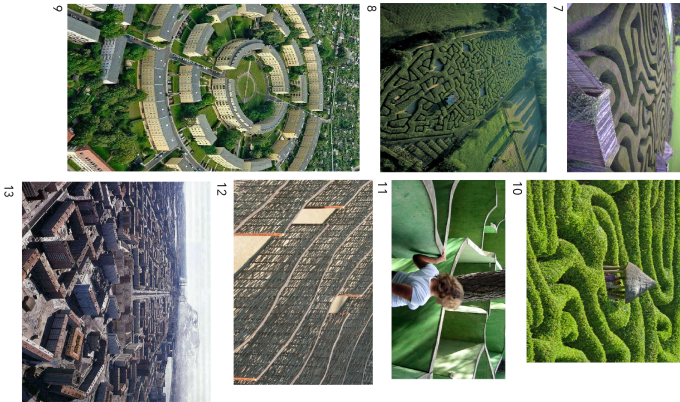
Appendix 4: Visual analysis of maze.

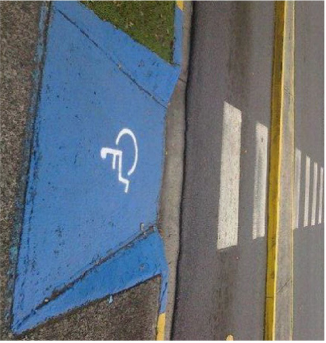## Mathematical and Abstract

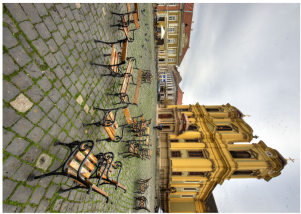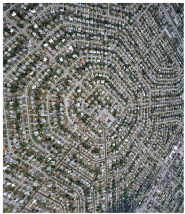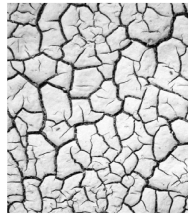## Architecture and Landscape

Installation Art

1. Prim Maze.
2. Truchet's Maze (I).
3. Truchet's Maze (II).
4. Un-named abstract maze (I).
5. Un-named abstract maze (II).
6. Un-named abstract maze (III).
7. Longleat Safari Park, Wiltshire, England.
8. Isabelle Beaufort and Bernard Ramus (architects), Cordes-sur-Ciel, France.

9. Urban Maze (unknown place).
10. Glendurgen Garden Maze, England.
11. Garden Maze (unknown place).
12. Garden Maze (unknown place).
13. Urban Maze, City of Norilsk, Siberia, Russia.
14. Claudio Parmiggiani, *Untitled* (2001)
15. Jeppe Hein, Mirror Labyrinth (2008)

16. Huabing Guan, Travel in time (2010)
17. FABRIC desing (2013), Rosenborg Castle, Denmark
18. Etta Lilenthal & Ben Zamora, Throug hollow lands (2012)
19. Michelangelo Pistoletto, Labirinto e grande pozo (1969)

Fragmentation

Behaviours & emotions
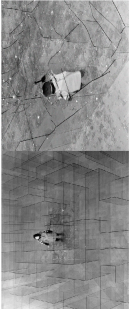
Positive

Breaking free

surprise

fun

fun

Playfulness

Theatricality

Playfulness

Playfulness

fun

Socializing

curiosity

humour

Irony   Sarcasm

Negative

frustation

Anger

imprisioment

Isolation

MAZE

Organic
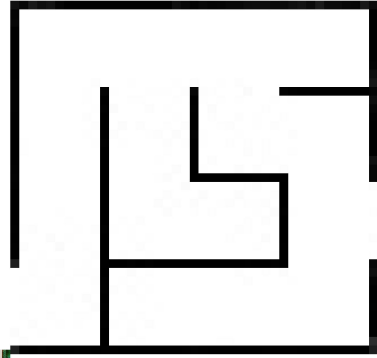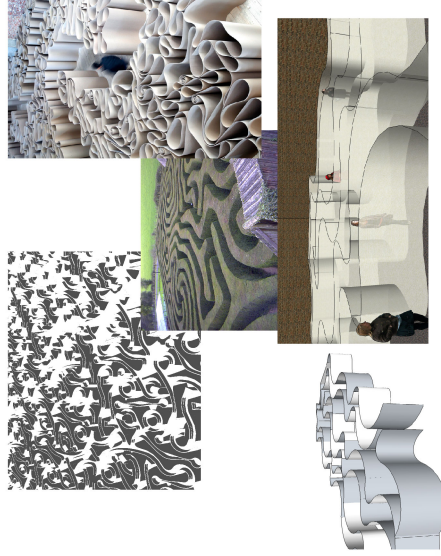
Structured and modular
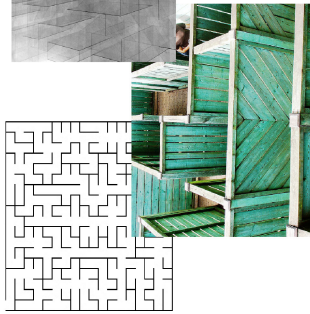
References

Antúnez, M. R (2016). *Sistematurgy*. Barcelona: Polígrafa.

Aristotle. (1951). *Poetics.* Trans. Butcher, S. H. 4th edn. New York: Dover Publications.

Augé, M. (1995). *Non-places*. Trans. Howe, J. London: Verso.

Austin, J. L. (1975). *How to do Things with Words?* 2nd edn. Cambridge/Mass.: Harvard
        University Press

Bachelard, G. (1969). *The Poetics of space*. Boston: Beacon Press.

Bal, M. (2002). *Travelling concepts in the humanities: a rough guide.* Toronto: Univ. of
        Toronto Press.

Barba, E. (2010). *On directing and dramaturgy*. Trans. Barba, J. London: Routledge.

Beddie, M. et all (2005). 'The dramaturgies project.' *Real Time.* 70 (Dec-Jan), pp. 1-8.
        Available at: http://www.realtimearts.net/downloads/
        RT70_dramaturgies.pdf (accessed: 27 September 2016).

Bowlt, J. (1977). 'Constructivism and Russian stage design'. *Performing Arts Journal*, *1*(3), pp.
        62-84

Borges, J. (2011) *El Aleph*. New York: Vintage Español.

Bourriaud, N. (2002). *Relational aesthetics*. Trans. Pleasance, S. and Woods, F.Dijon-
        Quetigny: Les Presses du réel.

Braun, E. (1998). *Meyerhold: A Revolution in Theatre*. Bloomsbury Publishing.

Butler, S. (1863). 'Darwing among the machines.' *The press*. 13th June 1863. Available at:
        http://nzetc.victoria.ac.nz/tm/scholarly/tei-ButFir-t1-g1-t1-g1-t4.html 9 (Accessed:
        26 September 2016)

Capeto, C. (2015). 'Dramaturgy as an enquiry on how to interweave space, body and technology in performative interactive installations'. *ISEA 2015 – Disruption*, ISEA, Vancouver, 17 August 2015, Available at: http://isea2015.org/proceeding/submissions/ISEA2015_submission_255.pdf (Acessed: 26 September 2016)

Carlson, M. (1993). *Theories of theatre: a historical and critical survey from the Greeks to the present*. Ithaca: Cornell University Press.

Casey, E. (1997). *The fate of place*. Berkeley: University of California Press.

Danan, J. (2014). 'Dramaturgy in *postdramatic* times'. Trencsényi, K., Cochrane, B. (eds). *New dramaturgy*. London: Bloomsbury Publishing, pp. 3-17.

De Marinis, M. (1987). 'Dramaturgy of the Spectator'. *The Drama Review: TDR*, 31(2), pp.100-114.

Diolé, P. (1959). *Le plus beau désert du monde.* London: Jonathan Cape.

Dixon, S. (2007). *Digital performance*. Cambridge, Mass.: MIT Press.

Doob, P. (1990). *The idea of the labyrinth from classical antiquity through the Middle Ages*. Ithaca: Cornell University Press.

Dubberly, H. *et al*. (2009).). 'What is Interaction? Are There Different Types?' *ACM — Interactions*, Volume XVI (1: January and February), pp. 1-10 Available at: http://www.dubberly.com/articles/what-is-interaction.html (Accessed: 25 July 2016).

Eckersall, P. (2015). 'Towards a Dramaturgy of Robots and Object-Figures'. *TDR/The Drama Review*, *59*(3), pp. 123-131.

Fisher, A. and Gerster, G. (2000). *The art of the maze*. London: Seven Dials.

Fox, M. and Kemp, M. (2009). *Interactive architecture*. New York, NY: Princeton Architectural.

Heathield, A. (2011). 'Dramaturgy without a dramaturge'. in Bellisco, M., Cifuentes, M.J. & Ecija, A. (eds), *Repensar la dramaturgia: errancia y transformación* Seminario. Murcia: Centro Párraga/CENCDOC, pp. 105-116.

Heilbroner, R.L. (1994). 'Technological determinism revisited'. in Marx, L. (ed.) *Does technology drive history? The dilemma of technological determinism*. Cambridge/Massachusetts: MIT Press, pp. 67-78.

Heidegger, M. (1993). 'Building and dwelling thinking'. in Krell, D. F. (ed.) *Basic writings.* San Francisco: Harper San Francisco, pp. 344-363.

Heidegger, M. (1977). *The question concerning technology, and other essays*. Trans. Lovitt, W. New York: Harper & Row.

Huhtamo, E. (2004). 'Trouble at the Interface, or the Identity Crisis of Interactive Art'. *ReFresh 2005!* Banff, Canada, September 2005. Available at: http://www.mediaarthistory.org/refresh/Programmatic%20key%20texts/pdfs/Huht amo.pdf (Accessed: 23 September 2016).

Hunter, W. (2013). 'London Schools Part Two: Central St Martin's by Stanton Williams.' *Architectural Review*. Available at: http://www.architectural-review.com/today/london-schools-part-two-central-st-martins-by-stanton-williams/8644717.fullarticle (Accessed: 12 August 2016).

Jensen, J.F. (1998). 'Interactivity: racking a New Concept in Media and Communication Studies'. NORDICOM Review, 19 (1), pp. 185–204.

Kern, H. (2000). *Through the labyrinth*. Munich: New York.

Kleist, H. (1989). *On a theatre of marionettes.* Trans. Wilford, G. London: Acorn.

KMODDL (2016). *Kinematic models for design.* Available at: http://kmoddl.library.cornell.edu/tutorials/01/ (Accessed: 26 September 2016).

Krueger, M. (1983). *Artificial reality*. Reading, Mass.: Addison-Wesley.

Kwon, M. (2002). *From one place to another.* Cambridge, Mass.: MIT Press.

Lefebvre, H. (1991). *The social production of space.* Oxford: Blackwell.

Lehmann, H. (2006). *Postdramatic theatre*. London: Routledge.

Lehmann, H-T. and Primavesi, P. (2009). 'Dramaturgy on Shifting Grounds'.
       Performance Research, 14(3), pp. 3–6.

Lessing, G. (1962). *Hamburg dramaturgy*. Trans. Zimmern, H. New York: Dover Publications.

Levin, G. (2006a). 'Hands Up! A Visual Essay on the Media Art Pose'. *Emoção Art.ficial*

Symposium, São Paulo, Brazil, 8 September 2006. Available at:

       http://www.flong.com/texts/essays/essay_pose/ (Accessed: 27 July 2016).

Levin, G. (2006b). 'Computer vision for artist and designers: pedagogic tools and

       techniques for novice programmers'. *Journal of artificial intelligence and*

       society. 20 (4), pp. 462-482.

Loxley, J. (2007). *Performativity*. London: Routledge.

Mander, G. (1975). 'Lessing and his Heritage'. In Hayman, R (ed), *The German Theatre* .
       London: Wolf, pp. 13-26.

Mathews, S. (2007). *From agit-prop to free space: the architecture of Cedric Price.*
       London: Black dog publishing.

Merleau-Ponty, M. (1962). *Phenomenology of Perception.* London/New York: Routledge.

Merleau-Ponty, M. (2004). *The World of Perception*. Trans. Davis, O. London/New York:
     Routledge.

Mermikides, A. (2015). 'The Appliance of Science: Devising, dramaturgy and the Alternative
       Science Play'. in Trencsényi, K & Cochrane, B. (eds), *New Dramaturgy: International*
       Perspectives on Theatre and Practice. London: Bloomsbury Publishing, pp. 125-
       141.

Moran, D. (2000). *Introduction to phenomenology*. London: Routledge.

Pangaro, P. (1993). 'Pask as a Dramaturg'. *Systems Research,* 10 (3), pp. 135-142.
       Available at: http://www.pangaro.com/published/Pask-as Dramaturg.html
       (Accessed: 30 of July 2015).

Pangaro, P. (2016). *Paul Pangaro, PhD*. Available at: http://www.pangaro.com

(Accessed: 4 July 2016).

Pask, G. (1964). *Proposals for a Cybernetic Theatre*. Privately circulated monograph. Available at: www.pangaro.com/ pask/ProposalCyberneticTheatrePask 1964r.pdf (Accessed: 30 July 2015).

Pask, G. (1971). 'A comment, a case history and a plan.' in Reichardt, J. (ed) *Cybernetics, arts and ideas.* London: Studio Vista, pp. 76-100.

Pitches, J. (2003). *Vsevolod Meyerhold*. London: Routledge.

Polaine, A. (2005). 'Lowbrow, high art: why big fine art doesn't understand interactivity.' *ReFresh 2005!* Banff, Canada, September 2005. Available at : http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.497.573&rep=rep1&type=pdf (Accessed: 26 July 2016).

Proshansky, H. M. et all (1983). 'Place-identity: physical world socialization of the self'. *Journal of environmental phsycology.* 3, pp. 57-83.

Rabinowitz, N. S. (2008). *Greek Tragedy.* Oxford: Blackwell Publishing.

Rancière, J (2009). *The emancipated spectator*. Trans. Elliot, G. London: Verso.

Rsc.org.uk. (2016). *Royal Shakespeare Company*. Available at: https://www.rsc.org.uk (Accessed: 4 July 2016).

Rugg, J. (2010). *Exploring site-specific art*. London: I.B. Tauris.

Schaubühne Berlin. (2016). *Schaubühne Berlin*. Available at: https://www.schaubuehne.de (Accessed: 4 July 2016).

Shanken, E., Stiles, K. (2002). 'Missing in Action: Agency and meaning in interactive art'. in Lovejoy, M., Paul, C. ,Vesna, V. (eds), *Context and meaning in digital art.* Cambridge/Mass.: MIT press, pp 31-54*.*

Schechner, R. (2002). *Performance studies: an introduction.* London/New York: Routledge.

Schechner, R. (2003). *Performance Theory.* 2nd edn. London/New York: Routledge.

Smuts, A. (2009). 'What Is Interactivity?' *The Journal of Aesthetic Education*, 43(4), pp. 53-73.

Stanton Williams Architects (2011). *New University of the Arts London campus, Central Saint Martins at Kings Cross*. Available at: https://www.stantonwilliams.com/assets/lib/2015/08/18/StantonWilliams_376.pdf (Accessed: 12 Aug. 2016).

Trencsényi, K. (2015). *Dramaturgy in the making: a user's guide for theatre practitioners.* London: Bloomsbury Publishing.

Trencsényi, K., and Cochrane, B. (eds) (2014). *New dramaturgy: international perspectives on theory and practice.* London: Bloomsbury Publishing.

Trimingham, M. (2011). *The theatre of the Bauhaus*. New York: Routledge.

Turner, C. and Behrndt, S. (2008). *Dramaturgy and performance*. Basingstoke: Palgrave Macmillan.

Turner, C. (2015). *Dramaturgy and Architecture.* Basingstoke: Palgrave Macmillan.

Van Kerkhoven, M. (2009a). 'European Dramaturgy in the 21st Century.' *Performance Research*, vol. 14(3), pp. 7-11.

Van Kerkhoven, M (2009b). 'Performance Research: On Dramaturgy: Notes on Contributors'. *Performance Research*, vol. 14(3), pp. 132–134.

Zumthor, P. (2010). *Thinking architecture*. 3rd edn. Basel: Birkhäuser.

Bibliography

Antúnez, M. R (2016). *Sistematurgy*. Barcelona: Polígrafa.

Arata, L. O. (2010). 'Building models of human interaction: reflections on W. Brian Arthur's The nature of technology.' *Ctheory.net.* Available at: www.ctheory.net/articles.aspx?id=655 (Accessed: 5 November 2015)

Aristotle. (1951). *Poetics.* Trans. Butcher, S. H. 4th edn. New York: Dover Publications.

Arthur, W. (2010). *The nature of technology*. London: Penguin.

Augé, M. (1995). *Non-places*. Trans. Howe, J. London: Verso.

Austin, J. L. (1975). *How to do Things with Words?* 2nd edn. Cambridge/Mass.: Harvard University Press.

Bachelard, G. (1969). *The Poetics of space*. Boston: Beacon Press.

Bal, M. (2002). *Travelling concepts in the humanities: a rough guide.* Toronto: Univ. of Toronto Press.

Barba, E. (2010). *On directing and dramaturgy*. Trans. Barba, J. London: Routledge.

Bartscherer, T. and Coover, R. (2011). *Switching codes*. Chicago: University of Chicago Press.

Beddie, M. et all (2005). 'The dramaturgies project.' *Real Time.* 70 (Dec-Jan), pp. 1-8. Available at: http://www.realtimearts.net/downloads/ RT70_dramaturgies.pdf (Accessed: 27 September 2016).

Berghaus, G. (2005). *Avant-garde performance*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.

Bishop, C. (2005) *Installation art*. New York: Routledge.

Blume, T. and Hiller, C. (2014). *Human - space - machine*. Leipzig : Spector Books.

Bonnemaison, S. and Macy, C. (eds) (2007). *Responsive textile environments*. Halifax: TUNS Press.

Bonnemaison, S. and Eisenbach, R. (2009). *Installations by architects*. New York: Princeton Architectural Press.

Bowlt, J. (1977). 'Constructivism and Russian stage design'. *Performing Arts Journal*, *1*(3), pp. 62-84

Borges, J. (2011) *El Aleph*.New York: Vintage Español.

Bourriaud, N. (2002). *Relational aesthetics*. Trans. Pleasance, S. and Woods, F.Dijon-Quetigny: Les Presses du réel.

Brett, G. (1968). *Kinetic art*. London: Studio-Vista.

Braun, E. (1998). *Meyerhold: A Revolution in Theatre*. Bloomsbury Publishing.

BRIGHAM, e., DESTEFANO, C. and KILLOY, Z. (n.d.). *Slider – Crank Mechanism for Demonstration and Experimentation*. Available at: www.wpi.edu/Pubs/Eproject/Available/E-project-042513103948/unrestricted/SliderCrank_MQP_Final_Draft.pdf (Accessed: 9 Aug. 2016).

Bright, G. (1973). *Greg Bright's maze book*. London: Latimer New Dimensions.

Broadhurst, S. and Machon, J. (2006). *Performance and technology*. Houndsmills, Basingstoke, Hampshire: Palgrave Macmillan.

Brockett, O., Mitchell, M., & Hardberger, L. (2010). *Making the scene*. San Antonio, Tex.: Tobin Theatre Arts Fund.

Bühlmann, V. (2003). *Approaches to interactivity*. Basel: Birkhäuser, Publishers for Architecture.

Butler, S. (1863). 'Darwing among the machines.' *The press*. 13th June 1863. Available at: http://nzetc.victoria.ac.nz/tm/scholarly/tei-ButFir-t1-g1-t1-g1-t4.html 9 (Accessed: 26 September 2016)

Capeto, C. (2015). 'Dramaturgy as an enquiry on how to interweave space, body and technology in performative interactive installations'. *ISEA 2015 – Disruption*, ISEA, Vancouver, 17 August 2015, Available at: http://isea2015.org/proceeding/submissions/ISEA2015_submission_255.pdf (Acessed: 26 September 2016)

Carlson, M. (1993). *Theories of theatre: a historical and critical survey from the Greeks to the present*. Ithaca: Cornell University Press.

Casey, E. (1997). *The fate of place*. Berkeley: University of California Press.

Carman, T. and Hansen, M. (ed.) (2005). *The Cambridge companion to Merleau-Ponty*. Cambridge, U.K.: Cambridge University Press.

Certeau, M., & Girad, L., Mayol, P. (1998). *Practice of everyday life, volume 2: living and cooking*. Minneapolis/ London: University of Minnesota Press.

Clarke, A. (1974). *Profiles of the future*. London: Gollancz.

Danan, J. (2014). 'Dramaturgy in *postdramatic* times'. Trencsényi, K., Cochrane, B. (eds). *New dramaturgy*. London: Bloomsbury Publishing, pp. 3-17.

De Marinis, M. (1987). Dramaturgy of the Spectator. *The Drama Review: TDR*, 31(2), p.100-114.

De Oliveira, N., Oxley, N. and Petry, M. (2003). *Installation art in the new millennium*. New York: Thames & Hudson.

Diolé, P. (1959). *Le plus beau désert du monde.* London: Jonathan Cape.

Dixon, S. (2007). *Digital performance*. Cambridge, Mass.: MIT Press.

Doob, P. (1990). *The idea of the labyrinth from classical antiquity through the Middle Ages*. Ithaca: Cornell University Press.

Dubberly, H. *et al*. (2009).). 'What is Interaction? Are There Different Types?' *ACM — Interactions*, Volume XVI (1: January and February), pp. 1-10 Available at: http://www.dubberly.com/articles/what-is-interaction.html (Accessed: 25 July 2016).

Eckersall, P. (2015). Towards a Dramaturgy of Robots and Object-Figures. *TDR/The Drama Review*, *59*(3), 123-131.

Fellows, J. (1981). *Ruskin's maze*. Princeton, N.J.: Princeton University Press.

Fisher, A. and Gerster, G. (2000). *The art of the maze*. London: Seven Dials.

Fox, M. and Kemp, M. (2009). *Interactive architecture*. New York, NY: Princeton Architectural.

Grau, O. (2007). *MediaArtHistories*. Cambridge, Mass.: MIT Press.

Grosz, E. (2001). *Architecture from the outside*. Cambridge, Massachusetts: MIT Press.

Hagebölling, H. (2004). *Interactive dramaturgies*. Berlin: Springer.

Heathield, A. (2011). 'Dramaturgy without a dramaturge'. in Bellisco, M., Cifuentes, M.J. & Ecija, A. (eds), *Repensar la dramaturgia: errancia y transformación* Seminario. Murcia: Centro Párraga/CENCDOC, pp. 105-116.

Heathfield, A. and Glendinning, H. (2004). *Live*. London: Tate Publishing.

Heidegger, M. (1993). 'Building and dwelling thinking'. in Krell, D. F. (ed.) *Basic writings.* San Francisco: Harper San Francisco, pp. 344-363.

Heidegger, M. (1977). *The question concerning technology, and other essays*. Trans. Lovitt, W. New York: Harper & Row.

Heilbroner, R.L. (1994). 'Technological determinism revisited'. in Marx, L. (ed.) *Does technology drive history? The dilemma of technological determinism*. Cambridge/Massachusetts: MIT Press, pp. 67-78.

Howard, P. (2002). *What is scenography?*. London: Routledge.

Hubbard, P., Kitchin, R., & Valentine, G. (eds.) (2004). *Key thinkers on space and place*. 2nd edn. London: Sage.

Huhtamo, E. (2004). 'Trouble at the Interface, or the Identity Crisis of Interactive Art'.

ReFresh 2005! Banff, Canada, September 2005. Available at:
http://www.mediaarthistory.org/refresh/Programmatic%20key%20texts/pdfs/Huht
amo.pdf (Accessed 23rd of september 2016).

Hunter, W. (2013). 'London Schools Part Two: Central St Martin's by Stanton Williams.'
Architectural Review. Available at: http://www.architectural-
review.com/today/london-schools-part-two-central-st-martins-by-stanton-
williams/8644717.fullarticle (Accessed: 12 August 2016).

Jackson, J. (1994). *A sense of place, a sense of time*. New Haven: Yale University Press.

Jarry, A. (1965). *Selected works of Alfred Jarry*. London: Eyre Methuen.

Jensen, J.F. (1998). 'Interactivity: racking a New Concept in Media and Communication
Studies'. NORDICOM Review, 19 (1), pp. 185–204.

Jones, J. (1968). *On Aristotle and Greek tragedy*. London: Chatto & Windus.

Kaprow, A., Meyer-Hermann, E., Rosenthal, S. and Lepecki, A. (2007). *Allan Kaprow*.
Göttingen: Steidl.

Kern, H. (2000). *Through the labyrinth*. Munich: New York.

Kittler, F., Mücke, D. Similion, P. L. (1987). 'Gramaphone, Film, Typewriter.'*October.* 41
(summer), pp. 101-118.

Klanten, R. and Feireiss, L. (2010). *Staging space*. Berlin: Gestalten.

Kleist, H. (1989). *On a theatre of marionettes.* Trans. Wilford, G. London: Acorn.

KMODDL (2016). *Kinematic models for design.* Available at:
http://kmoddl.library.cornell.edu/tutorials/01/ (Accessed: 26 September
2016).

Kreider, K. (2014). *Poetics and place: the architecture of sign, subjects and site.* London: I. B.
Tauris.

Krueger, M. (1983). *Artificial reality*. Reading, Mass.: Addison-Wesley.

Kwon, M. (2002). *From one place to another.* Cambridge, Mass.: MIT Press.

Latour, B. (1996). *Aramis, or, The love of technology*. Cambridge, Mass./London: Harvard
University Press.

Law, A. and Gordon, M. (2012). *Meyerhold, Eisenstien and biomechanics*. Jefferson,
North Carolina: McFarland & Company.

Leach, R. (2006). *Theatre Workshop*. Exeter: University of Exeter Press.

Lefebvre, H. (1991). *Critique of everyday life*. Vol. 1. Trans. Moore, J. London: Verso.

Lefebvre, H. (1991). *The social production of space.* Oxford: Blackwell.

Lefebvre, H. (2014). *Toward an architecture   of enjoyment*. Trans. Bononno, R.
Minneapolis: University of Minnesota Press.

Lehmann, H. (2006). *Postdramatic theatre*. London: Routledge.

Lehmann, H-T. and Primavesi, P. (2009). 'Dramaturgy on Shifting Grounds'.
Performance Research, vol. 14(3), pp. 3–6.

Lessing, G. (1962). *Hamburg dramaturgy*. Trans. Zimmern. New York: Dover
Publications.

Lahusen, S. (1986). Oskar Schlemmer: Mechanical Ballets? *Dance Research: The Journal Of
The Society For Dance Research*, *4*(2), 65.

Levin, G. and Lieberman, Z. (2004). 'In-Situ Speech Visualization in Real-Time Interactive
Installation and Performance.' *The 3rd International Symposium on Non-
Photorealistic Animation and Rendering,* Annecy, France, June 7-9 2004. Available
at: http://www.flong.com/texts/publications/pub_npar04/ (Accessed: 15
September 2016).

Levin, G. (2006a). 'Hands Up! A Visual Essay on the Media Art Pose'. *Emoção Art.ficial
Symposium*, São Paulo, Brazil, 8 September 2006. Available at:
http://www.flong.com/texts/essays/essay_pose/ (Accessed: 27 July 2016).

Levin, G. (2006b). 'Computer vision for artist and designers: pedagogic tools and techniques for novice programmers'. *Journal of artificial intelligence and society*. 20 (4). pp. 462-482.

Lippard, L. (1997). *Lure of the local*. New York: The New Press.

Löb, L. (1974). *From Lessing to Hauptmann*. London: University Tutorial Press.

Loxley, J. (2007). *Performativity*. London: Routledge.

Mander, G. (1975), Lessing and His Heritage. In Hayman, R (Ed), *The German Theatre*. London: Wolf, pp. 13-26

Manovich, L. (2002). *The language of new media*. Cambridge, Mass.: MIT Press.

Mathews, S. (2007). *From agit-prop to free space: the architecture of Cedric Price.* London: Black dog publishing.

McLuhan, M. and Moos, M. (1997). *Media research*. Amsterdam: G & B Arts.

Merleau-Ponty, M. (1962). *Phenomenology of Perception.* London/New York Routledge.

Merleau-Ponty, M. (1974). *Phenomenology, language and sociology*. London: Heinemann Educational.

Merleau-Ponty, M., Johnson, G. & Smith, M. (1993). *The Merleau-Ponty aesthetics reader*. Evanston, Ill.: Northwestern University Press.

Merleau-Ponty, M. (2004). *The World of Perception*. Trans. Davis, O. London/New York: Routledge.

Mermikides, A. (2015). 'The Appliance of Science: Devising, dramaturgy and the Alternative Science Play'. in Trencsényi, K & Cochrane, B. (eds), *New Dramaturgy: International Perspectives on Theatre and Practice*. London: Bloomsbury Publishing, pp. 125-141.

Meyer-Hermann, E., Perchuk, A., Rosenthal, S. and Kaprow, A. (2008). *Allan Kaprow - art as life*. London: Thames & Hudson.

Mitchell, W. (1986). *Iconology*. Chicago: University of Chicago Press.

Murnaghan, S. (1995). 'Sucking the Juice without Biting the Rind: Aristotle and Tragic Mimēsis'. *New Literary History*, *26*(4), 755–773. Available at:

http://www.jstor.org/stable/20057317 (Accessed: 25 of November 2015)

Moynihan, D. & Odom, L. (1984). Oskar Schlemmer's "Bauhaus Dances": Debra McCall's Reconstructions. *The Drama Review: TDR*, *28*(3), 46.

Moran, D. & Mooney, T. (2002). *The phenomenology reader*. London: Routledge.

Moran, D. (2000). *Introduction to phenomenology*. London: Routledge.

Mulhall, S. (2005). *Routledge philosophy guidebook to Heidegger and Being and time*. London: Routledge.

Murray, A. T. (1916). Plot and Character in Greek Tragedy. *Transactions and Proceedings of the American Philological Association*, *47*, pp. 51–64.

Pangaro, P. (1993). 'Pask as a Dramaturg'. *Systems Research,* 10 (3), pp. 135-142. Available at: http://www.pangaro.com/published/Pask-as Dramaturg.html (Accessed: 30 of July 2015).

Pangaro, P. (2008). 'Instructions for design and conversation.' in Luppicini, R. (ed). *Handbook of conversation design for instructional applications*. Hershey, PA: Information Science Reference. pp. 91-106.

Pangaro, P. (2016). *Paul Pangaro, PhD*. Available at: http://www.pangaro.com (Accessed: 4 July 2016)

Parker, A. and Sedgwick, E. (1995). *Performativity and performance*. New York: Routledge.

Pask, G. (1964). *Proposals for a Cybernetic Theatre*. Privately circulated monograph. Available at: www.pangaro.com/ pask/ProposalCyberneticTheatrePask 1964r.pdf (Accessed: 30 July 2015).

Pask, G. (1971). 'A comment, a case history and a plan.' in Reichardt, J. (ed) *Cybernetics, arts and ideas.* London: Studio Vista, pp. 76-100.

Pavis, P. (2012). *Contemporary mise en scène: staging theatre today*. London: Routledge.

Peltomäki, K. and Asher, M. (2010). *Situation aesthetics*. Cambridge, Mass.: MIT Press.

Penz, F., Radick, G. and Howell, R. (2004). *Space*. Cambridge, U.K.: Cambridge University Press.

Proshansky, H. M. et all (1983). 'Place-identity: physical world socialization of the self'. *Journal of environmental phsycology.* 3, pp. 57-83.

Pitches, J. (2003). *Vsevolod Meyerhold*. London: Routledge.

Polaine, A. (2005). 'Lowbrow, high art: why big fine art doesn't understand interactivity.' *ReFresh 2005!* Banff, Canada, September 2005. Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.497.573&rep=rep1&type=pdf (Accessed: 26 July 2016).

Psarra, S. (2009). *Architecture and narrative*. London: Routledge.

Rabinowitz, N. S. (2008). *Greek Tragedy.* Oxford: Blackwell Publishing.

Rancière, J (2009). *The emancipated spectator*. Trans. Elliot, G. London: Verso.

Reichardt, J. (1971). *Cybernetics, art and ideas*. London: Studio Vista.

Reichardt, J. (1968). *Cybernetic serendipity: the computer and the arts*. 2nd edn. London: Studio International.

Ryan, M. (2001). *Narrative as virtual reality*. Baltimore, Md.: Johns Hopkins University Press.

Robertson, J. (1965). *Lessing's dramatic theory*. Bronx, N.Y.: B. Blom.

Rsc.org.uk. (2016). *Royal Shakespeare Company*. Available at: https://www.rsc.org.uk (Accessed: 4 July 2016).

Rugg, J. (2010). *Exploring site-specific art*. London: I.B. Tauris.

Schaubühne Berlin. (2016). *Schaubühne Berlin*. Available at: https://www.schaubuehne.de (Accessed: 4 July 2016).

Shanken, E., Stiles, K. (2002). Missing in Action: Agency and meaning in interactive art. In Lovejoy, M., Paul, C. , Vesna, V. (eds), *Context and meaning in digital art* (pp 31- 54)*.* Cambridge/Mass.: MIT press.

Schechner, R. (2002). *Performance studies: an introduction.* London/New York: Routledge.

Schechner, R. (2003). *Performance Theory.* 2nd edn. London/New York: Routledge.

Scheer, E. (2015). Robotics as New Media Dramaturgy: The Case of the Sleepy Robot. *TDR/The Drama Review*, *59*(3), pp. 140-149.

Schmidt, J. (1985). *Maurice Merleau-Ponty*. Basingstoke: Macmillan.

Smuts, A. (2009). What Is Interactivity?. *The Journal of Aesthetic Education*, 43(4), pp. 53-73.

Spiegelberg, H. (1976). *The phenomenological movement*. Hague: Nijhoff.

Stanton Williams Architects (2011). *New University of the Arts London campus, Central Saint Martins at Kings Cross*. Available at: https://www.stantonwilliams.com/assets/lib/2015/08/18/StantonWilliams_ 376.pdf (Accessed: 12 August 2016).

Suderburg, E. (2000). *Space, site, intervention*. Minneapolis: University of Minnesota Press.

Tafuri, M. (1987). *The sphere and the labyrinth*. Cambridge, Mass.: MIT Press.

Trencsényi, K. (2015). *Dramaturgy in the making: a user's guide for theatre practitioners.* London: Bloomsbury Publishing.

Trencsényi, K., and Cochrane, B. (eds) (2014). *New dramaturgy: international perspectives on theory and practice.* London: Bloomsbury Publishing.

Trimingham, M. (2011). *The theatre of the Bauhaus*. New York: Routledge.

Tufnell, M. and Crickmay, C. (1993). *Body, space, image*. London: Dance Books.

Turner, C. and Behrndt, S. (2008). *Dramaturgy and performance*. Basingstoke: Palgrave Macmillan.

Turner, C. (2015). *Dramaturgy and Architecture.* Basingstoke: Palgrave Macmillan.

Seifert, U., Kim, J. H. and Moore, A. (2008). *Paradoxes of interactivity*. Bielefeld: Transcript.

Watson, I. (1993). *Towards a third theatre*. London: Routledge.

Watson, S. (2009). *In the shadow of phenomenology*. London: Continuum.

Williams, S. and Hamburger, M. (2008). *A history of German theatre*. Cambridge, UK: Cambridge University Press.

Van Kerkhoven, M. (2009a). 'European Dramaturgy in the 21st Century'. *Performance Research*, 14(3), pp. 7-11.

Van Kerkhoven, M (2009b). 'Performance Research: On Dramaturgy: Notes on Contributors.' *Performance Research*, vol. 14(3), pp. 132–134.

Zumthor, P. (2010). *Thinking architecture*. 3rd edn. Basel: Birkhäuser.