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# REFLECTIONS ON STAGE

– An Investigation of Projection as Character



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When going to a puppet theatre or other performing arts performances, one can quite often see projections on stage as part of the visuality. The aim of this thesis is to investigate whether and how a projection can be executed as character in performing arts.

The thesis tries to clarify information on projections as characters through defining terms used in thesis, collecting theoretical and historical information of projections and combining practical analyses of contemporary performances into one entirety. The thesis presents possibilities of projections in the field of performing arts through industrial product development. The methods used are mainly concentrating into puppet theatre, but can as such be applied to performing arts.

The completion of thesis resulted as a clearer view on the topic of projection as character. In order to produce a convincing and identifiable projected character, it will assist if one is conscious of the criteria of how, when and what in a projection produces a character, which can gain the recognition, acceptance and understanding of an audience. As a conclusion an elementary tool was in theory created of understanding projections in the context of character.

KEYWORDS:

Projection, Character, Puppet Theatre, Performing Arts

Ninni Finnberg

## HEIJASTUKSET LAVALLA

– Tutkimus projisoinneista hahmoina

Nukketeatterin ja esittävän taiteen esityksissä näkee lavalla melko usein projisointeja, joita käytetään osana visuaalisuutta. Tämän opinnäytetyön tavoitteena on tutkia voiko projisointi toimia hahmona ja kuinka se toteutetaan esittävässä taiteessa.

Opinnäytetyö yrittää selventää käsitystä projisoinneista hahmoina, määrittelemällä opinnäytetyössä käytetyt termit, keräämällä teoreettista ja historiallista tietoa projisoinneista sekä yhdistämällä käytännön analyysejä viimeaikaisista esityksistä yhdeksi kokonaisuudeksi. Opinnäytetyö esittelee projisointien mahdollisuuksia esittävässä taiteessa teollisen tuotekehityksen kautta. Käytetyt menetelmät keskittyvät nukketeatteriin, mutta soveltuvat sellaisenaan osaksi esittävää taidetta.

Valmiin opinnäytetyön tuloksena muotoutui selkeämpi näkemys projisoinneista hahmoina. Tietoisuus kriteereistä kuinka, milloin ja miten projisoitu hahmo esitetään, on avuksi, kun halutaan tuottaa vakuuttava ja tunnistettavissa oleva projisoitu hahmo, joka voi saavuttaa yleisön tunnustuksen, hyväksynnän ja ymmärryksen. Lopputuloksena saavutettiin alkeellinen työkalu, jolla voidaan teoriassa ymmärtää hahmo projisoituna.

ASIASANAT:

Projisointi, Hahmo, Nukketeatteri, Esittävä Taide

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# 1 INTRODUCTION

The investigation of projection as character became the subject of my final thesis after I had crossed the idea of using projections in a puppet theatre performance to company a solo-performer, who otherwise would be alone on stage. What kind of projections could be used in a puppet theatre performance and could a projection convincingly create a feeling of a character, with whom a solo-performer could have a dialogue? What forms the essence of a character, so that it can be recognized in the projection? Before I started the practical work with projections, I decided to find basic information on how it has been used and how it can be used in performing arts.

To my surprise, it was difficult to find theoretical or practical information about projections that could function as a beginning for discussion. Most of the written sources were on the technical information of projections, which was not what I wanted to disentangle. Since I could only find bits and pieces of information on projections from several sources, I decided to clarify the theoretical information into one entirety.

To get a clear picture of what I want to investigate, I first need to define the terms that will be used. What does a character or a projection mean? Can a projection become a character and how is it shown? In order to understand modern day's projections, I want to make a survey into what kind of technological history lies behind projections in performing arts and to see whether a character has appeared in performances before the age of electricity. In this thesis I would like to combine some recent performances under observation and analyse what in their projections' work as a character. Through practical analysis of puppet theatre and other performing arts performances, it might come clear, if a character of its own could live among projections. In the

end, I would like to have a short prospect into the world of projections and to see how this study has affected to my personal development and understanding about projections as a part of my professional skills.

## 2 DEFINITION OF TERMS

In order to have a common understanding, of what my final thesis is investigating, it is crucial to define the keywords used. In these definitions I started first by looking how the keywords were defined in written sources and in Internet. After finding out how my keywords were usually understood, I made conclusion whether they were defining my point of view and if not, I made corrections towards my conception. This made me open the discussion of the definitions, so that the conception is not merely defined, but also described.

### 2.1 Character

A character defined by Oxford English-English dictionary describes the noun itself firstly as “the mental and moral qualities distinctive to an individual” and secondly as “a person in a novel, play or film”. I dare say that puppet theatre could be mentioned in the second definition and can therefore have the descriptions of it: “a part played by an actor”, “[with adjective] a person seen in terms of a particular aspect of character”: she is a larger-than-life character or as informal “an unusual or amusing person”. (Character 2012.)

The definition of a character by these means is not suiting to the conception of the word in the context of what I have learned during my studies in puppet theatre. Character is an independent object, who through animation by human manipulation becomes an interactive (acts and reacts to the happenings on the stage) figure, who has a personality, that can be shown through emotions and characteristic features. Compared to a still figure of a painting, a character has the ability to move its postures and can have a monologue with its surroundings or a dialogue with another character through its rhythm, breathing patterns, focus of the sight, emotions and action-reactions (manipulation class notes. Ari Ahlholm 1.9.–16.12.2008; Rene Baker 1.10.–16.12.2010).



To ensure that my definition of a character is something other puppetry orientated people can comprehend, I made a request to the puppetry specialization line students, to define shortly for me what a character means to them. This inquiry is added in appendices. Combining all information, the short description of a character that I propose is “an animated object that has an identifiable shape that can be brought to life, through thoughts, emotions and actions”.

## 2.2 Projection

The books written about light designing and light itself, are usually the ones telling technically how to use projections, since light is essential to form a projection. However light design literature do not pay much attention, outside technical function, to define what they mean with projection, usually ending up talking projections as a scenery, like Parker & Smith, that “the most familiar and accepted application of light as scenery is through the use of projections”.(Parker & Smith 1979, 46). Bentham instead opens the use of projection more by writing:

*“The principal forms of projected effects are (a) Naturalistic scenery, (b) Impressionist scenery, (c) Slides and films (as themselves), (d) Naturalistic moving effects (clouds, etc.), (e) Impressionist moving effects, (f) Patterned or abstract lighting (Bentham 1980, 278).*

In my final thesis I will concentrate researching projections more through the impression of movement, bearing in mind that I want to know how they work on stage as a character, not as scenery or special effects.

One definition for a projection was to be found from Wikipedia web-pages describing projection as “The display of an image by devices such as: movie

projector, video projector, overhead projector, slide projector or Camera obscura” (Projection 2012a). If projection is through a device (projector) created image on stage, as also Walne defines it, there needs to be a look into what is meant by an image. The Oxford English Dictionary defines image as an “optical appearance... produced by light... from an object... refracted through a lens” (Image 2012). In other words image is “the result of the projection process rather than the item within the projector from which the result is obtained”. (Walne 1995, 121.)

Still for me this definition is lacking two important aspects. The first one is evidently that in order to show the projection, you need to have a surface where the image is projected. Secondly in puppet theatre, in my point of view, also shadow theatre is an essential to be mentioned while talking about projections.

Oxford English dictionary describes projection as “the presentation of an image on a surface, especially a cinema screen” (Projection 2012b). Although the projection surface is most commonly known as the screen, it is possible to project the image onto almost any type of surface (Parker & Smith 1979, 473). While talking in the terms of puppet theatre, I dare to suggest that the word surface is better describing the form and texture of projected image's background than a fixed and formal screen, since innovative stage designing is an essential part of the world of puppetry. Even Parker & Smith admit, though in the context of scenery, that projections has changed rapidly from large single screen background into an infinite variety of shapes, sizes, three-dimensional forms and multi-screen compositions (1979, 482).

In the end I was pleased to find one description combining shadow theatre to the world of projections. This was due to the fact that in the beginning of my research I was not aware that technically the projected image is produced by

two different methods. Both, lens projection and shadow projection, images are shadows in essence, but the term shadow projection is used to define all projections obtained without a lens (Parker & Smith 1979, 473).

### 2.3 Projection as Character

Walne in his introduction has written “Projection involves the throwing of light through an object onto a surface creating a picture or an image.” (Walne 1995, ix). Rather than creating a picture or image, I want to describe the result as a character. What I claim is that, the projection becomes a character on a surface, if it is having some of the essence mentioned in the chapter 2.1 that is defining the character. It is through the projected character's own actions and reactions and interaction with other characters, which creates a sensation, that the projection is an independent element on stage.

What amused me was that I found one sentence in Parker & Smith, where they were almost brave enough to present projection as a character: “The director and his designers soon learn that the most successful use of a projection is not as a substitute realistic background, but as a medium of its own, where it expresses itself best in abstract or thematic terms and almost becomes an additional actor” (1979, 469).

In puppet theatre, members of the audience are only too ready if not to believe, then at least to suspend their disbelief, when it comes to the question of deception. By this I mean that in puppetry a stick can become a dog, if it is introduced to the audience, so that they accept it as one. The same hopefully can be applied and executed into projections.

### 3 PROJECTIONS IN HISTORICAL CONTEXT

In order to understand how contemporary projections are used in performances, I want to have an overview into the technological history of projection devices and find out how projected images have been used in performing arts. One can claim that ever since the discovery of fire as a light source, shadow projections have been used for ceremonies or as a medium of storytelling and maintainer of ethnographic history. The lens projectors on the other hand, are combined to the history of optical, mechanical devices, and even though invented centuries before, became more developed in the industrial era. It is obvious that inventions such as lighting by Argand lamps, then gas and limelight, before the age of electricity, offered new ways to present projected images by improving optical devices and their light intensity (Rees 1978, 81–85). In the Enlightenment and industrial eras popular education and entertainment were presented through projections by combining art, science and technology. Once projections were created at will and could be controlled with lenses, projections became essential in all demonstrative forms. (Blühm & Lippincott 2000, 33.)

#### 3.1 Shadow Projection

It is hard to know when the earliest form of projection, shadow that can be performed by laying an object between a light source, has been first practised by humans. Initially shadow projection was turned into entertainment by the countries of the Far East, especially in Indonesia, China and India, where they are still very popular (Walne 1995, 13). Keller writes that Chinese shadow theatre, with its two-dimensional movable figures on sticks between a translucent screen and a light source, would have been recorded as early as 5000 BC (2006, 235). This kind of shadow puppet, often with articulated limbs, creates the illusion of a moving image that can be underlined by both moving the puppet itself without limbs and the light source. From Far East, shadow theatre was absorbed to Europe and shadow plays were performed from the

late seventeenth century in Paris and London, frequently mounted in the Punch and Judy theatre (Walne 1995, 13).

The use of silhouettes in shadow projection has a historical background that entwines it with the definition of a character. Silhouettes, introduced in the 1760's, were used by Lavater in his theory of human physiognomy and gave the term itself a certain cachet by basing the theory “on the assumption that it was possible to 'read' a person's soul or character, through certain details of her or his physical appearance” (Blühm & Lippincott 2000, 86). In nineteenth century, French entertainer, Félicien Trewey popularized shadowgraphy, by performing hand shadow silhouettes of famous personalities (Shadowgraphy 2012). Nowadays shadowgraphy is vivid in China, and a lot of performances can be found from youtube-site with search “sombras chinas”. Here in picture 1 is shown a modern shadowgraphy performer photographed by Stefan Moses.



Picture 1. A shadowgraphy performer (Keller 2006, 137).

While in the pre-Industrial Age, a candle was enough to illuminate the surface, the improvements achieved in lighting technology at the end of eighteenth century, made it possible to enlarge the projection surface (Rees 1978, 81). Some performers, like François Dominique Séraphin, performed shadow theatre with his automated figures, bringing therefore a new dimension to projections, that stirred up audience in France, whereas in London, the

audience was awed by the painter Philippe Jacques de Loutherbourg, who developed a theatre designed for the sole purpose of light projections and moving pictures, the so-called “Eidophusikon” (Altic 1978, 120,126). In the end of nineteenth century, so-called ombres chinoises (Chinese shadows) were highly fashionable, and according to Blühm and Lippincott, it was the avant-garde entertaining itself, experimenting with increasingly novel projections. At their best, ombres chinoises were experienced in the theatre district on Montmartre. (2000, 168.) In 1886, Henri Rivière started organizing ombres chinoises performances with a satirical flavour under the cabaret Le Chat Noir and was soon joined by other artists, such as Caran d' Ache. Rivière used back-lit zinc cut-out figures that appeared on surface as silhouettes. From 1886 to 1896, he created 43 shadow plays and during 1890's raised shadow projections to an art form in its own right. (Cate & Shawn 1996, 55–58.) Cate and Shawn views on, that Rivière's performance technique involved both technical and aesthetic innovations, which were done by using the space and delicate effects of light and colour:

*“Essentially, Rivière created a system in which he placed silhouettes of figures, animals, elements of landscapes, and so forth, within a wooden framework at three distances from the screen: the closest created an absolutely black silhouette, and the next two created gradations of black to grey, thus suggesting recession into space. Silhouettes could be moved across the screens on runners within the frame.” (Cate & Shawn 1996, 58.)*

Adolf Linnebach, who later became the technical director of the Munich Opera, developed a form of shadow projection in 1916 (Walne 1995, 13). The Linnebach projector is a shadowgraph device, where silhouette cut-outs can be placed anywhere between the projector and the surface on which they are to appear. (Bentham 1980, 304). The Linnebach projector commends on itself, since it is the simplest version of a projector, inexpensive, can be homemade and has a wide spread and therefore can be close to the surface. (Keller 2006, 233; Bentham 1980, 303) From the written material, I didn't manage to find any examples of its use than merely the part of the scenic projection. In my opinion

the images created by Linnebach projector are misty and slightly inaccurate and also Bentham sees that the expression is something of a misnomer (1980, 304.)

In the beginning of twentieth century Lotte Reiniger combined photographing, shadow projection and filming and created tin shadow puppets that were filmed frame by frame (Walne 1995, 13). By combining shadow projections to lens projections Reiniger pioneered silhouette animation that is still practiced. The process depending upon a direct emanation from the light source without lens, contributes to the image so, that it is not as sharp or intense as a comparable lens projection, but out of these two methods of projections, shadow projection is easier to achieve (Parker & Smith 1979, 473). The art of shadow projection declined since the new form of entertainment, cinema and later television, became more popular.

### 3.2 Camera Obscura

The 'camera obscura' (dark chamber), which seemed to make an exact reproduction of the external world, has in principle been known since antiquity, but where Blühm and Lippincott claim that as an actual optical instrument, camera obscura became known at the sixteenth century (2000, 64), there is a lot of source material indicating its use already before (Burns 1999a; Burns 1999b; Wilgus & Wilgus 2004; h2g2 2004). Camera obscura is the primitive form of photographic camera; a device, where light enters a darkened box through a pinhole, which prevents the rays from scattering. When these rays travel in a straight line, they project an image to the opposite wall – although reproduced upside down, reversed and reduced in size. (Keller 2006, 230; Blühm & Lippincott 2000, 64.) Throughout history it has been described as a pinhole camera, until Kepler used the term camera obscura in early seventeenth century (Wilgus & Wilgus 2004).

The camera obscura has been known in history through thinkers, artist and scientists. Aristotle (384 to 322 BC) has usually been named as the first to observe the phenomenon, but apparently the first known mention of the basic concept of a pinhole camera needs to be attributed with Mo-Ti (470 to 390 BC), a Chinese philosopher (Burns 1999a). The Islamic scientist Ibn al-Haitham (c. 965 - 1039) experiments provided the first scientific description of camera obscura, followed by Roger Bacon's safe observation of solar eclipses in the thirteenth century and Leonardo da Vinci's studies of perspective with it (h2g2 2004). Many of the camera obscuras were rooms, like an illustration by Gemma Frisius 1544, which was for the use in observing the eclipse. Initially full-size rooms were set up for audience to follow the phenomenon, following several attempts to improve camera obscura's technique with a lens, but not until 1620 did the first portable equipment appear. (Keller 2006, 135, 230.) The quality of an image was improved with the addition of a convex lens into the aperture (Wilgus & Wilgus 2004).

The development of the camera obscura led to the portable box device that was a drawing tool in the seventeenth and eighteenth century for many artists, like Vermeer and Canaletto. (Steadman 2011). On the other hand, in the nineteenth century as a form of entertainment, with the aid of improved lenses, that could cast larger and sharper images, the camera obscura flourished in the use of illusionists (Blühm & Lippincott 2000, 64). There is an interesting mentioning in Burns web-book of a documentation by Giovanni Battista Della Porta in his 1558 book *Magiae Naturalis*. He was enchanted by the magical potential of camera obscura and the spectacular possibilities it could contain as an aid to the theatre. Translated through the work of Zielinski, Della Porta wrote;

*"...how hunting scenes and battles and other kinds of hocus pocus can be made and performed in a room. Guest performances, battle fields, games, or what you will, so clear, distinct, and pretty to see as though it were taking place before your very eyes, for the image is let into the eye through the eyeball just as here through the window". (Burns 1999b.)*



If another source is to believe, Della Porta actually did arrange such a performance, where the audience panicked of the sight of upside-down actors and fled, with the result, that he was charged of sorcery (h2g2 2004).

### 3.3 Magic Lantern and Phantasmagoria

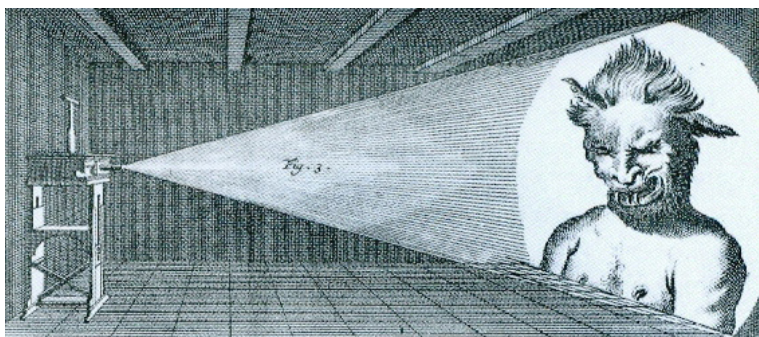
The invention of magic lantern was the start of lens-projected entertainment, since more than just copying one colour image, magic lanterns fascinated the big public by the long projection insertions, that were put together to form a pictorial record made up of several sequences of individual images (Keller 2006, 135). The history of magic lantern is complex, and quite often it has been misnamed to be invented by Athanasius Kircher, who conducted, in his *Ars Magna Lucis et Umbrae* in 1646, a study of the principles of magic lantern (Walne 1995, 1; The Magic Lantern Society 2007a). However, over two hundred years prior to Kircher's lantern, Johannes De Fontana in his book, *Bellicorum instrumentorum liber*, around 1420, shows in his illustration an early representation of a magic lantern. The illustration displays a human figure holding an apparatus with an image on the inside which is projected out in a larger than life scale. (The Magic Lantern Society 2007a.)



Picture 2. Fontana's illustration of a magic lantern, ca.1420 (Burns 1999b).

In 1515 Leonardo Da Vinci composed a manuscript Codex Atlanticus that had numerous principles within optics and also presented an illustration of a magic lantern. If from De Fontana's illustration we could not see the technical details, Da Vinci instead had in his lantern illustration clearly distinguished condensing lens, candle, chimney and an object between the candle and lens. (Burns 1999b.) Even though none of Da Vinci's writings indicate hints of him actually projecting images, it is still worthwhile pointing out that he knew how it could be used.

In the light of nowadays knowledge, it is considered that Dutch scientist Christiaan Huygens, who is famous for his wave theory of light and who experimented with double refraction and also lenses as projectors, is the biggest contributor of the development and design of the magic lantern. It is told in The Magic Lantern Society-website that Huygens "father kept pestering him to send him a lantern so he could frighten his friends with it." (The Magic Lantern Society 2007b.) From this comment comes clear, that one interesting aspect of the projected images is that magic lantern very early became an instrument to install fear in its viewers. In the pioneering years of projected entertainment, admirers of this form were commonly reminded of magic, occult powers and themes, which vary from diabolic to demonic (Keller 2006, 135; Burns 1999b) as is shown in picture 3.



Picture 3. A demonic image presented with a magic lantern (Blühm & Lippincott 2000, 50).

Kircher in his work addressed the significance of rational approach towards the demystification of projected images. In his point of view exhibitors of projected images should take care of informing the spectators that what they saw were neither; magical in its origin or purely naturalistic. (Kircher 2012.) Thomas Walgensten, understanding the technical and artistic possibilities magic lanterns, travelled around Europe in 1660s, demonstrating and selling them with a Latin name *Laterna Magica*. Supposedly Walgensten was the first person to use this term. (The Magic Lantern Society 2007b.)

The magic lantern first grew to prominence in the seventeenth century (Walne 1995, 121). In 1663 the John Reeves, an optician, started to make lanterns for sale in London. It is described by the diarist Samuel Pepys, who bought a magic lantern from Reeves in 1666, that the lantern, with pictures on glass, made strange things appear on a wall. (The Magic Lantern Society 2007b.) In principle the magic lantern was described in the mid seventeenth century according to Keller as “a light source whose beam is reflected and directed through a concave mirror with two biconvex lenses in an objective and a transparent picture is pushed in between them”. (Keller 2006,135.) Even in our times the description is still valid, even though technology development has improved tremendously in around 360 years. Willem Jacob 's Gravesande in the 1720s, introduced magic lantern to be used for demonstration lectures of natural science and philosophy (Blühm & Lippincott 2000, 35). Magic lantern united science and popular entertainment and was used to educate, entertain and mystify audiences. From the eighteenth century onwards magic lanterns were developed rapidly, as lenses, mirrors and especially light sources were improved from oil lamps into better light sources. The strengthened beam enabled its use in large public spaces, projecting the image at a distance of up to nine meters (Blühm & Lippincott 2000, 50).

In order to change an image to another or make the impression of moving images, cross-fading technique between two images was created. Keller (2006, 136) mentions that cross-fading with light source could be done by a dissolver system that “consists of a glass plate, which is graded in various shades of grey down to black, which obscures everything”. In Keller’s version it means that by pushing a dimmer slide into the beam path progressively makes the light fade out mechanically. In Rees Theatre Lighting in the Age of Gas (1978, 82) is shown a small rolled curtain that can be cranked in front of the image, to gain black-out. The mechanical cross-fading was needed with light sources like sunlight, candlelight, and oil lamps. The invention of the Argand lamp in the end of eighteenth century replaced candles and oil, only to be followed by the limelight, which were making the projected images of magic lantern brighter (Walne 1995, 2). These improvements made it possible to extinguish the light source itself little by little without the audience noticing it. The effect of fading out is nowadays done by incandescent electric lamps or other types of electric light sources attached into a dimmer. Usually magic lantern performances employed at least two projectors, whose projection beams overlapped each other exactly in the same place at the screen (Walne 1995, 121). The overlapping of two or more projection images created the sensation of apparently moving images by crossfading in between magic lanterns a developing series of slides that gradually changed. The illusion of moving image could be added by mechanical slides that had not only the image, but also a possibility to manipulate a part of the slide. Blühm and Lippincott scratch the issue of mechanical slides by telling that they were used to demonstrate the relative motions of planets (2000, 33.) The zooming in and out of an image was achieved by mounting the projectors on tracks and moving them backwards and forwards in relationship to the surface (Walne 1995, 9).

The popularity of magic lanterns only increased in the nineteenth century with public magic lantern lectures that combined popular education and entertainment by using visual and enjoyable examples (Blühm & Lippincott

2000, 33). I found it interesting and elevating to realize that magic lantern has been the forerunner of equality, by offering knowledge through projections, to anyone who was interested in it. In France magic lantern projections were used to educate the lower ranks of society already from 1839 onwards (Blühm & Lippincott 2000, 220). Usually the transparent pictures that projected the image were in a row on slides (Walne 1995, 121). Projection slides were colourfully hand-painted glass plates which were framed commonly in wood and sometimes in metal. Paul Hoffman was probably one of the best-known nineteenth century projection artist, who painted whole stories on glass plates. Around 1850 hand-painted pictures became an industry, only to be replaced by black-and white photographic pictures in projectors in the crossing of twentieth century. (Keller 2006, 135-137.) Traveling magic lantern showmen began to spread performing huge variety of themes in the nineteenth century, and also stories suitable for children was created (The Magic Lantern Society 2007 d). When magic lantern became cheaper to purchase, it found its place into private households, where people entertained themselves by creating stories, travelled as armchair tourists to see scenic views and formed magic lantern clubs in their regions (Blühm & Lippincott 2000, 33, 220).

### **Phantasmagoria**

The word magic lantern is popularly associated with the term “Phantasmagoria”, meaning ghostly apparitions, which became the description of lantern entertainment in Europe in the later eighteenth century (Walne 1995, 3-4). I see it significant to remember that phantasmagoria aroused in a time, where social changes were on their way, Romanticism was rising and the improvements of magic lanterns could work to create the sensation of supernatural. Previously the magic lantern had been placed in the middle of audience and therefore losing much of its secrecy, when the technique used was revealed. By moving the magic lantern behind the projection surface, the mystery of the technique was maintained, and the era of rear-projections started (Walne 1995, 9.) as in

picture 5 is illustrated. When audience did not see the magic lantern, only the image, they could be more lured in the performance into believing the effects of zooming, cross-fading, the use of smoke in front of the objective and superimposition slides, that could be moved on top of the base image. The themes of phantasmagoria were mainly in the categories of black magic or necromancy, creating the belief of ghosts, spirits and the ability of bringing the dead back to life in the form of dead relatives, personalities and politicians (Burns 1999c). The purpose of phantasmagoria performances was to scare people and one could claim that phantasmagoria was the early version of horror films.



Picture 4. Robertson presenting Phantasmagoria with the rear-projection system (Walne 1995, 4).

In Leipzig, Johann Georg Schröpher began to use magic lantern, in the mid eighteenth century, to conjure up dead people. Even though he's performances became very popular, Schröpher committed suicide in 1774, possibly as a result of his own delusions. (Burns 1999c.) Paul de Philipsthal had been inspired by Schröpher and refined his technique. He was one of the first known showmen to tour his performances with a success in Paris, Berlin and Vienna. (Philidor 2012.) In the revolution-era Paris 1793, Philipsthal performed the phantasmagoria making references to well-known revolutionaries, within weeks

of the execution of Louis XVI and was arrested (Burns 1999c). The first phantasmagoria was introduced in the UK only in 1802, by Philipsthal, who exhibited at the Lyceum Theatre in the Strand (Walne 1995, 4).

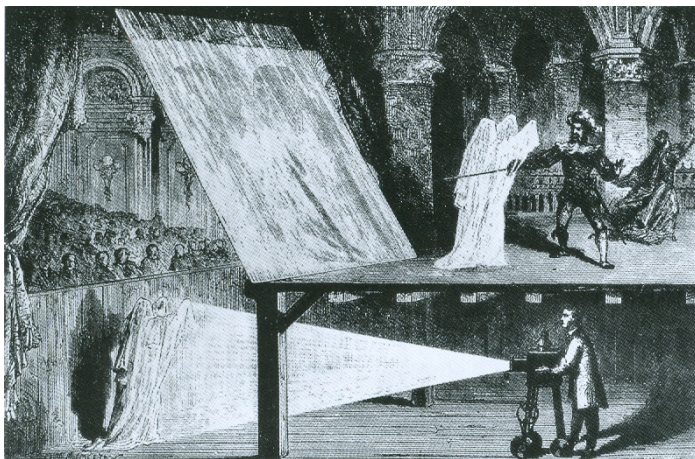
The most famous of all phantasmagoria performers was Etienne-Gaspard Robertson, a Belgian professor of physics, who was greatly found of magic and optics and gave in 1784 an exhibition of an improved magic lantern (Burns1999c). In 1797, Robertson performed his first phantasmagoria at the Pavillon de l'Echiquier in Paris, where he already used a special magic lantern on wheels, patented in his name as the Phantascope. By moving the magic lantern backwards and forwards he rapidly altered the size of the images, much like a modern zoom lens. (The Magic Lantern Society 2007c.) Burns himself described the properties of Phantascope with:

*“Robertson compensated the movement of the lanterns by changing the position of the lens and thereby was able to show a figure growing larger and remaining in sharp focus throughout the show. In this manner he obtained the compelling impression of an approaching figure.” (Burns 1999c.)*

In this presentation I can clearly state, that the character was created on stage by the means of projections. Altogether, almost everything that has been written about the Phantasmagoria showmen, comes together with the definition as a projection as character. At the Conservatoire National des Arts et Métiers, in Paris, there is a collection of Robertson's mechanical two-piece slides. From this collection it can be seen that he used one glass slide showing the face of a phantom and the other slide to present the image of the eyes, which when manipulated could roll back and forth, and as I see it, were therefore able to make gestures. Moving character as well as background for the character was created by projecting from multiple lanterns, set up from different locations of the performing space with sound effects (Barber 1989.) Robertson presented his shows in an eerie abandoned crypt in Paris, and later took it to Vienna and

St. Petersburg (The Magic Lantern Society 2007c). Former assistants of Robertson went ashore to the United States and in May 1803 the first phantasmagoria performance was held at Mount Vernon Garden, New York (Barber 1989).

Besides an enormous range of projection technique, mirror tricks were added to mystify the apparitions used. There was an interesting group called “the Professors”, who did complex magic lantern performances, since they had an access to more elaborate equipment and could afford expensive animated slides as a result of their academic scientist careers (The Magic Lantern Society 2007e). “The professors” performed in London at the Royal Polytechnic Institution until 1876 and is still known for the effect of Pepper’s Ghost that was demonstrated in 1862 (Walne 1995, 12). In Pepper’s Ghost effect the ability to reflect light many times was used, causing a reflection of an object to appear floating in the mid-air over real objects on stage (Walne1995, 120). The illustration of picture 5 shows how a real person hidden in the orchestra pit can be illuminated and projected on stage.



Picture 5. Pepper's Ghost effect: a projected character (Keller 2006, 138).



When coming to the present, it can be stated that magic lantern projections still exist, even though the invention of motion picture, dramatically reduced its use. Both Keller and Walne write that magic lantern projections can be found in variety shows and in the use of specialist collectors and projectionists (2006, 137 and 1995, 10). In 1992, Katariina Lillqvist made an animation, *Rider on a Bucket* (*Hiilisangolla ratsastaja*), which tells a story of a court maiden in the end of eighteenth century St. Petersburg. Interestingly Lillqvist has inserted a scene in her animation, where a showman is performing with his magic lantern. The use of images and the way the slides are changed, clearly shows, that Lillqvist herself has encountered with a real magic lantern. More recently, in 2008, Thomas Bloch, a classical musician, specialized in the rare instruments, and a collector Pierre Albanese premiered a live magic lantern show, including all the major themes of phantasmagoria, and showing how it was practiced in the late eighteenth century and in the nineteenth century (Bloch & Levine 2012). There are also few theatrical groups, like *Pepper's Ghost Magic Lantern Show* from Sussex, that are still performing live on request (Hat Music Films 2010).

### 3.4 Slide and Overhead Projector

The slide projector is used to view photographic slides that produce static images. In this sense the invention of modern photographic process made it possible to view images that were not present, at the moment of the actual occasion, as in *Camera Obscura*. Researchers, including Blühm & Lippincott, consider the magic lantern as a forerunner of the modern slide projector (2000, 33). The use of the lantern slides declined rapidly in the twentieth century, when slide projectors were introduced on the threshold of Second World War. During 1950s to 1970s slide projectors became common as a form entertainment among friends and families. (McKeeves 2004.) Still it needs to be bared in mind that nearly anything can be placed at the slide aperture of a projection system; a hand-painted or photographic slide, metal gobos, coloured plastic, if it can withstand the heat (Watson 1990, 47). The slide projector has usually a fan-cooled source of light that is focused by the condenser lens and the directed

beam of light illuminates the slide evenly and converges to the focusing lens. The use of focal length selected produces the desired image size. (Keller 2006, 71.) The projected image is enlarged from the original size of the slide on a perpendicular surface.

In the beginning of my investigation, I doubted whether static image produced by slide projector could fulfil the criteria of a projection as a character, since I couldn't find an example out of written sources. Here I would like to refer to what I have seen to be working on stage when it comes to projected images. If the projections are static images, the audience can understand them as a character if an interaction between a live performer and static images has been established. Therefore, as an example, if a question is asked from an image and it is changed just after a reasonable, human recognizable, time, we easily might read, that the image took time to consider. Also if the image is presenting a smiling child and after the question it is changed to a child that is hiding, we might read, that the child is afraid of the discussed topic. Keller suggests that "pictorial sequences can be presented one after the other by putting images from several projectors together and doubling the number of instruments cross fading from one group to another" (2006, 137). Done by this way, you could probably create a sensation of a character walking forwards on a surface.

The projectors can be divided into different types of slide projectors, by the means of holders for the slides, the slide aperture where slides are inserted into the projector and the size of the slide. There most common ones are straight-tray slide and carousel projectors that were commonly used in lectures, slide cube projector, large slide projector and overhead projector. Most slide projectors provide a system of changing the slides from automatic to controlled one operated with a button on the projector or a remote control (Walne 1995, 22).

One of the unusual instruments in the lens-projector category is the overhead projector. Common from the lecture room, overhead projector's large slide deck is a translucent, horizontal surface, with the light source underneath. The slide image is redirected by a 45-degree mirror onto the surface after passing through a vertically mounted objective-lens system. (Parker & Smith 1979, 479.) In my own experience, the overhead projector, even though it has limited focusing abilities and limited projection range, has an advantage prior to other projectors, since the horizontal position of the slide deck provides a potential opportunity to bring movement to the image. Both Parker & Smith and Walne comments on, that the overhead projector requires an operator to have a constant access to the slide deck and cannot therefore be used in a remote position on stage, but Walne also sees it as a benefit that the operator has the possibility to comment, to mark or point to the actions on stage (1979, 481; 1995, 123). Overhead projector offers this instant possibility to be manipulated, not just by changing images, but through a movable material, such as water, watercolours, sand, salt or plastic. From modern artists, Katrin Bethge, who gave a projection workshop in Turku during the autumn 2011, does theatre performances with overhead projector. The overhead projector has a possibility to be combined with computer technology; computer generated graphics and text can be projected via Liquid Crystal Displays sitting on the overhead projection light table (Walne 1995, 123). The use of slide projectors is in decline, as other projection methods, such as digital cameras combined with display monitors and video projectors, have become more popular. The extremely light efficient large slide projector, which is associated with the names of Ludwig Pani and Josef Svoboda's large scale scenic projections (Walne 1995, 19), is still worthwhile mentioning, for it is used by modern projection artists, both on stage and on monumental architectural buildings, because of its wide angle lenses.

### 3.5 Video Projector

Another interesting development in the history of projections, is the one from static projections to moving images, which magically seems to keep in motion, although, no one is changing the images. The film projector has the same optical structure as a slide projector (Keller 2006, 71). On December 1895, Auguste and Louis Lumiere gave their first public showing of the device cinematographe at the Grand Cafe, Boulevard des Capucines in Paris. The cinematographe was a device capable of showing a motion picture that was made with a celluloid film camera. (Burns 1999d.) The film camera is a type of photographic camera, showing rapid sequences of photographs on film strips. The Lumiere brothers used a film speed of 16 frames per second, but still the audience saw them as a continuous image (Walters 2002). This is due to the fact that film projector presents each image from the film very briefly onto the surface. If the eye is offered individual phases of movement in a rapid sequence, it appears to fuse them together and give an impression of a continuous movement, as the theory of persistence of vision dictates. (Keller 2006, 71.) As I mentioned already earlier in the context of phantasmagoria performances, the twentieth century film cameras when filming material, were using the same attributes as magic lantern, such as the ability to zoom, dissolve, superimpose and use tracks in order to move the camera.

Even though the public exhibitions of projected moving film images started in the end of nineteenth century, the history of film projection in theatrical productions only began around 1920, when it was first brought on stage as scenic projection. The most known film projections of twentieth century in performing arts are done by a theatre *Laterna Magica* in Prague, Czechoslovakia (Watson 1990, 42). The combination of film projection and live stage media is generally used to describe the entertainment which stage-designer Josef Svoboda developed for the Czech Pavilion at the Brussels's World Fair in 1958. Svoboda is usually considered as the leading spirit of *Laterna Magica* technique, involving the use of slide and film projection,

combined with simultaneous live action, including sound, dance, pantomime, lights and black theatre. (Walne 1995, 11.) Film projections can be used to present material that has been filmed before, but it has also become a permanent visual element for big events like television galas, music concerts and theatre plays, where it is used on-line.

Film projector, after receiving a video signal, projects a corresponding image on a surface through its lens system. With a film projection involved on stage, it is possible to create a character on stage, even in the most identifiable shape of a human herself. With moving images interaction, continuous movement and speech can be achieved to a character. Walne gives an example of projected characters that changes to real, by describing Forkbeard Fantasy Theatre's Chris and Tim Britton, who as actors were filmed eating in a restaurant and when can't afford to pay the bill, run through a hole in the restaurant wall and appear live on the theatre stage (1995, 99.) Even the idea of having a conversation with yourself can be done, if timing between the performer and the projection is executed well. With the technique of Chroma-Key-Colour Separation Overlay (CSO), it is possible to insert the film projection on a surface, so, that the background of the space, where the film projection has been filmed is not there.

Nowadays a common way to use projections on stage is through a video projector, since through it can be shown both, still and moving images, which exist in a digital form. If one knows how to use PowerPoint or Movie Maker computer programme, it is quite easy to do visually nice looking video projections. The advantages that I have experienced with video projector, is that the image it creates is sharp, and the light source has usually enough power. As video projectors can be used in auditoriums with lights on, it makes the work of light designer easier; the image will not disappear when you add light on stage, which quite often is a problem, when working with slide or overhead projector.

The possibilities to use projections on stage, has a lot of potential that can be touched upon, if it helps to serve the production of a performance. Moving images projected by film or video projector needs to have a reason to be on stage, and the audience need to be invited to share the reality they offer. Otherwise projections are not believed and they lose their imaginative power and function.

## **4 PROJECTIONS APPENDED TO PUPPETRY AND PERFORMING ARTS PERFORMANCES**

Reduced to its simplest elements, my short description of a character is “an animated object that has an identifiable shape that can be brought to life, through thoughts, emotions and actions”. After seeing that in overall a character has appeared in the history of projections, I want to review how a character is presented in recent puppet theatre and performing arts performances. Through observation, I briefly will analyse and discuss some of the characteristics of projections that are present.

Before going to the performances, I need to bring out the importance of placing the projector on stage. In any performance, the projector can be placed in front of an opaque surface for a front-projection, situating on the same side as audience, or at the rear stage of a translucent surface for a rear-projection (Parker & Smith 1979, 473). The source of front-projections, if not coming from a projector attached to a ceiling, is often hidden from the view of the audience to the front stage scenery. The placing of the projector is important to bear in mind, when doing a performance. The best situation is the one, where an image or object is projected on to a surface as parallel as possible, since by a clear throw to the surface distortions of the image can be avoided (Keller 2006, 138). If the back stage has plenty of space, a rear-projection solves the problem of hiding the projector and also avoid the interruptions of front-projection, since audience cannot cast their shadow by passing the light stream or moving the projector accidentally.

#### 4.1 Hapsiainen

The first performance I took as an example is originally known from television as a show for children created by Esa Pakarinen Junior (Elävä Arkisto 1987). Hapsiainen, as a television program, would not be a topic about projections, but in November 2011 Hapsiainen was performing live as a special guest at TIP-Fest in Turku. Hapsiainen is a character made out of Esa Pakarinen Junior's right hand, with attached eyes on the middle finger. TIP-Fest was the first time Hapsiainen was performing live on stage; Esa Pakarinen Junior was manipulating his hand and at the same time a video camera man was filming it.



Picture 6. Hapsiainen projected on a screen. Picture by Paula Vilmi 2011.

The filming was projected on to a surface that was a big screen behind the table where Hapsiainen was performing. If wanted audience could follow the small hand on stage or to look at the projection. Hapsiainen, a desert animal, as Esa Pakarinen Junior calls his hand, spoke out loud, walked in his habitat and met a lot of obstacles in his way. In the case of Hapsiainen, it made no sense to hide the camera man, since it was obvious that someone was filming the event online. I come to the conclusion that in the question of a character, what works as a character on stage, works also as character when projected on stage.



## 4.2 Her Cup of Tea

Her Cup of Tea was the artistic final work of Roosa Halme from Turku Arts Academy puppetry specialization in 2009, which is based on the play Uncle Vanya by Anton Chekhov. Duration of the performance is all together 25min and it is carried out by an actress doing object theatre on stage. Inside of the performance, there is a four minute long shadow theatre scene that is a fantasy imagined by Sonya, the main character on stage. In Her Cup of Tea, Sonya is hopelessly in love with Astrov and hopes to have a future with him. The performance goes to the shadow theatre scene, when Sonya rises up from the table and lifts up the table cloth as a bridal veil. After that the front lights are dimmed down a shadow lamp is switched on behind the table cloth surface.

First can be seen Sonya's profile as a shadow and a heart shape rising from the top of the head. The heart lands on Sonya's nose with little shivering movement and when it rises up again audience starts to understand it as a butterfly. Sonya is transformed as a projection character from human shape, to a heart and all the way to a butterfly. The butterfly lands on a branch and to the surface appear another butterfly, which comes closer and the butterflies fly off with a flavour of flirting and teasing. When they return audience sees two characters, one as the shape of a woman, one as a man. Here it is necessarily to mention, that audience reads them immediately as Sonya and Astrov. They keep on moving, Astrov jumping after Sonya and when Sonya disappears, Astrov is looking for her. When Sonya returns, she stays where she is and Astrov comes to her and they nervously meet face to face. They swing next to each other and the music changes to a wedding march and therefore the audience is introduced again to the wedding theme. Sonya keeps dancing around the admiring Astrov and changes a lacy wedding dress on. They come closer to each other and just when they are about to achieve togetherness by getting married, Sonya is suddenly dropped, the music changes into a dramatic one, it becomes a mess with trying to get the projection characters back together. The actress as a

shadow comes back to audience's vision clumsily arranging the objects on the table and the table cloth is lowered down.

Her cup of Tea serves as a good example of a projected character, that undergoes many transformations and is still seen and believed as the same character, since it has an identifiable intention or dream it wants to achieve. The performance also reveals how easily the audience is ready to accept the change of an actress into a projection. The tragicomedy of Chekhov is filled with frustrated hopes and the disappearance of beauty. In this shadow theatre scene, it is Sonya's hopes and dreams falling apart through projected characters.

#### 4.3 Highly Strung

The performance Highly Strung took place on the night of October 28<sup>th</sup> 2011 featuring a giant 14 meter puppet at Nati Frinj festival at Natimuk, Australia. A big industrial building, Natimuk Silo, was serving as a background for the performance. The puppet had ten manipulators and from them, as can be seen from the video, some were up from the ground with climbing equipment against the silo's surface (Nati Frinj 2011). The puppet was in the beginning of the performance pulled up into air, towards the roof of the silo with robes, where it stayed floating. Already from the beginning, the puppet is lighted from its inside with light sources, which can be detected, since the nose and tip of the fingers are more shaded. The light sources inside the puppet can change colour and at certain times are describing the puppets feeling, however mainly concentrating to add the visuality of the puppet.

There she is with her plaits, hanging in the night time, opening and closing her eyes, which are manipulated mechanically by pulling a rope. The mouth is

projected with a video projector from inside the puppet's head and is formed from children's drawings. Still images are changed after one another to create a sensation, through movement, that the puppet is talking. At the same time when audience is seeing the puppet moving her mouth, a child's voice is added through loudspeakers, which becomes the puppet's voice. The scenery in Highly Strung is a video front-projection added on the surface of Natimuk Silo and since the puppet is lighted from her inside on a dark surface, it is almost not visible, that the projected scenery crosses not only the background, but also the puppet's surface as picture 7 shows. When the puppet's legs are manipulated as she would be walking, we get the sensation of her walking forward, because of the moving scenery, even though she is doing the movement on the same spot on the silo's wall.



Picture 7. A giant 14 meter puppet with projections. (Nati Frinj 2011).

In the performance the puppet is telling about her bedtime and how she gets scared of creepy shadows, which are coming out of every hole in her room. This is linked with a moving manipulator, who is lighted on the wall with a blue spotlight, so that audience not only see him, but also his shadow-projection cast on the building's surface. Puppet seems to get up from her bed with the help of moving scenery and walks out from the house to forest, all the way to the shore, where she sits at the pier. In this example, the giant puppet herself is a character, but with projections mounted both on the ground and in the head of

the puppet itself, the puppet gets more delicate details, that take away the attention from her clumsy movements. By adding projections and colours on the surface of the puppet, she gets more depth and personality.

#### 4.4 Solo 4 Two

Solo 4 Two is an urban dance performance from 2001 combining B-boying and projections by Niels Robitzky aka Storm from Germany. Bboy Storm uses HipHop and Funk styles in his street style breakdancing. Solo 4 Two was Storm's first solo performance and is interesting in its interaction with the projection on the surface that is a whole stage size background screen. I chose here a part from the solo that starts just a bit before, there comes the text "...you fight yourself" to the screen. (Stormdance 2012.) Here we can see a character forming on to the screen and immediately Storm himself walking to the stage from the audience next to the character that has the shape of a male human and is presented as human shadow. The character is another dancer on the stage, made with rear-projection, since we don't see Storm's shadow on the screen. Here I would also pay attention to the lighting of the stage. The general lighting comes from straight up from the ceiling and front lights are cut before the screen area, so that audience don't see Storm's natural shadow on the screen. When working with projection surfaces, it always requires special adjustment from the light design, since the problem of controlling the ambient light and light spills, may fade the projection or show a leak on stage that ruins the illusion of another reality.

In Solo 4 Two, the two dancers start to have a battle, which is an informal dance competition between break-dancers. Storm in the beginning waits and comments to the audience when the projected character does his dance moves, before entering the dance. When it is the projections turn to wait he puts more shirts on and later takes them off as a reaction to Storm's dancing. The

choreography is well planned, so that both dancers with their dance turn, makes a suggestion to the dialogue between them. The turning point is when Storm goes behind the screen and starts dancing, now looking like a shadow projection also. After Storm ends, they do synchronized dance movements together, and then it is the projections turn to continue. All ends as the projection goes to the screen's side, disappears and then Storm comes out from behind the screen and the shadow, that audience thought as Storm's own still stays as a shadow.

This performance gives an example of a well-planned trick executed with projections. When Storm first goes behind the screen he does not go there in real flesh and blood. Instead it is another projected character that is added to the screen, but audience combines it as the same person. When the original projected character steps out of the screen, Storm actually just walks back on stage from behind the rear-projection equipment. The concept of this performance's projections, and how they are interacted with, is mind-blowing. It occurs to me that when performers refer to the character on the projected surface, or perform parallel or contrasted to the character, the relationship that forms between the performers and projections are both intellectual and direct.

#### 4.5 "Home Is Where the Heart Is"

The last performance I wanted to display is done by an artist Ilana Yahav, who does sand art (Sand Fantasy 2011). To perform sand art to big audience, you have to have a translucent, horizontal surface, like the one used in overhead projector. As with almost every projector, the overhead projector is nowadays replaced by a video projector that is placed underneath the drawing surface. In "Home Is Where the Heart Is" is shown a character, a man, who wants to see the world and experience adventures. The man also has a dog, which stays behind when the man is leaving from home. During the performance, the man

travels from place to place and is not paying attention that the dog is observing and following him at a distance. When he gets into trouble, the dog rescues him, and they return home together.



Picture 8. Ilana Yahav doing a sand art projection (Sand Fantasy 2012).

The interesting thing about sand art projections is that they are built on-line at the spot as shown in picture 8. One image is cultivated until it is developed into another. The result, which is seen by the audience, is projected usually on a screen on stage, behind the drawer and as in Hapsiainen, the audience can see both, the drawer and the projection at the same time. The projected characters in this performance give a good example of not being materialized. Actually the character here is two-dimensional and not existing if you collect the sand away from the drawing surface.

## 5 THE PROSPECT OF PROJECTIONS

When witnessing how fast technological breakthroughs are achieved today, one can only start to imagine what can be made with projections in the future. Keller writes in *Light Fantastic* that the forming new projector concept is an open system, meaning that technical innovations can be made to work for the benefit of the user, so that different modular systems can be adapt simply (2006, 145). From the users' point of view, it would be a relief to have projection devices, which can be connected together, understanding and adjusting to each other's software. One growing aspect of projecting is definitely the co-operation in the fields of holography and laser technology. With holography technique, it could be possible to create characters that would seem to be three-dimensional, even though at the moment 3-D is still time consuming, effort spending and expensive, if you are not a professional in the field of hologram.

While working with projections, I have found out, that the design of a projector is very important, when handling. If the projector is very massive in size, it makes a loud whir or it hasn't got a stand of its own and is therefore difficult to mount, it easily breaks the atmosphere wanted in a performance. As I see it, in the coming years can be expected a reduction to the weight, size and price of projectors. A high priority can also be seen in developing a luminous light source, which is not producing heat, while functioning inside a projector.

Even though technological development usually nowadays happens through industrial product development, it can be adapted into the use of performing arts. Good examples can be found from pocket projectors. One of them, Vivitek Qumi Q2, is a 3D-ready pocket projector that works with High-Definition Multimedia Interface (HDMI). Vivitek Qumi has a brightness level up to 300 lumens, and has a connectivity options to a variety of devices, like digital and video cameras, laptops and smart phones. (Amazon 2012.) Another projector,

that is small and detached, is Microvision's SHOWWX+ with a HDMI laser projector. Even though SHOWWX+ is detached, it is easily mounted as can be seen from picture 9. This projector has brightness with 15 lumens and it supports all iDevices and any HDMI-equipped machines (Sakr 2012).



Picture 9. A pocket projector (Sakr 2012).

The last example that needs to be mentioned in the prospect of projections is Galax Beam smart phone by Samsung, which is the first and at the moment the only smart phone available, that has an exciting feature, a built-in projector. According to the manufacturer, the phone can project images and videos with the width of 130cm and with the brightness of 15 lumens. (Siljamäki 2012.) When considered the possibilities of different software applications that smart phones have, one can considerably easy use whatever kind of projection methods while performing. In my opinion, this kind of projectors raises a question of why not to take your projections into the urban surroundings and use them interactively as part of street theatre. Projecting a character onto a public building wall and creating a dialogue with it, can be seen as one of the upcoming challenges and possibilities of puppet theatre.



## CONCLUSION

While studying the issue of projections, I have noticed that projections are used in a great level in puppet theatre, not usually as much as characters on stage, but as for their visuality. Still I am more enchanted by projected characters and the relationship between it and performer, since it is direct and intellectual, not only illustrative. In order to create and provide a dramatic interaction, a performer needs to refer parallel to or contrasted with the actions and reactions of a projected character. The conception of seeing the same performer live on stage, having a dialogue with herself, while one by one more projections of herself would appear to confront the discussion, is waiting to be tried out. With projections it is possible to encounter yourself and others, even though you would be alone on stage. A character is of course more easily identified if it has a human form, but a character can occur in any shape, both two- and three-dimensional and still gain the recognition, acceptance and understanding of an audience.

Through this investigation I have become aware of the possibilities of projections in the field of puppet theatre. Projection could be done on public building surfaces, not only as a part of architectural light design, but by giving the building a new meaning. For instance, if projected eyesight that is observing the passers-by is added on a public building, the whole building might become a character. I could imagine that collaboration with an animator, combining animation techniques with puppet theatre, could be very fruitful and give interesting results for projected characters. A lot of sources were describing the phenomenon of unwanted shadows from humans on stage, while doing projections. It would be interesting to try combining front-projection and rear-projection into one show, and make the body of a performer visible, by benefiting from the lens-projection's light source by adding the performer deliberately in front of the projection's beam, in order to create shadow projections.

Even though I was sceptical whether a projection can work as a character, I have during my investigation found an assurance that it can. Combining written sources together with practical analyses of contemporary puppet theatre and performing art performances, resulted as a clearer view on the topic of projected character. Throughout the history of projections character has appeared, although the performers themselves have maybe not been conscious of the criteria when they have presented a convincing character with projections. It is an advantage and misery of a modern puppet theatre performer to be able to learn from history and analyse existing performances, in order to understand and justify the use of an identifiable character. One has to be aware of how, when and what in a projection produces a character. As a result I achieved an elementary tool, while writing my thesis, of understanding projections in the context of character in theory, and the next aspiration is to learn how to execute it in practice when building a puppet theatre performance.

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## **Inquiry made to the puppet theatre specialization students 20.2.2012–1.3.2010.**

What makes a character is that it is recognizably living, thinking and can be identified. Here is a preliminary division of how to identify a character:

**Movement.** A character moves. It has its own way of moving or it is imitating a certain way to move. Movement can be in a relation to others. The character is movement.

**Time.** Character's presence is time. Character begins and ends or is present on all times, when everything else begins and ends. Character's presence is in relation with others.

**Space.** The character and space are in relation to each other, changes in the relation changes character or space. The character is space.

**Morphologism.** The character can be identified with similar animals, humans or with other creatures. Character has hands, feet, tails, eyes etc.

**Dialogue.** Targeted speech etc. or dialogue makes the character.