

Beauty and The Beast: A Dynamic Relationship Between 3D animation and Adaption to Change

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The animation and VFX creative process is a labyrinthine riddle with unpredictable obstacles and dead ends. In a studio, a film is produced through the various collaborations between different talents with different backgrounds and disciplines. This paper investigates the gap in communication between the diverse talents in the animation studio, by exploring the gothic process as a historical design-oriented team-working model, to highlight the true nature of the animation process within the film industry and define whether it should be treated as an art or a craft.

Introduction:

Life of Pi has won numerous awards, including Academy Awards for best Visual Effects and best cinematography. At the Oscars ceremony in 2013, Bill Westenhofer, Visual Effects supervisor for Rhythm and Hues Studios, was interrupted by the theme from *Jaws* (1975) playing loudly to mask his speech at 44.5 seconds. Westenhofer's microphone was disconnected, when he began to mention the studio's struggles, whereas the film's cinematographer Claudio Miranda was able to complete his 60-second speech (Horn, 2014). Moreover, despite being the primary creative force behind the film's production, the Visual Effects artists at Rhythm and Hues were not thanked by the film's director Ang Lee during his acceptance speech (Barkan, 2014, Horn, 2014). The Box Office Statistics further highlight

the importance of the artists' work as the numbers show that 50 of the highest grossing films rely on Visual Effects where 44 of those films are either fully animated or heavily built upon Visual Effects (Barkan, 2014). Ultimately, the studio filed for bankruptcy after the unethical treatment of their artists became widely known to audiences and practitioners. Green squares (referencing green screen technology) were posted as profile pictures on social media in support of the Visual Effects artists and in protest of the abuse that they endured over the course of completing their projects.

The severity of these issues varied from exploitation complaints emerging from Rhythm and Hues, due to necessary risks taken by the studio to complete the project, such as requiring employees to work unpaid overtime hours, to the proposed "paying to work for free" business model by former Digital Domain CEO John Textor, founder of the Digital Domain Institute in Florida. Textor openly admitted his intentions to charge students tuition fees while having them work on the studio's projects (VFX Soldier, 2012). Textor's controversial statement was posted on VFX Soldier's online page in 2012:

"30% of the workforce at our digital studio down in Florida, is not only going to be free, with student labour, it's going to be labour that's actually paying us for the privilege of working on our films" ((2012).

The filmmakers of the R-rated animated film *Sausage Party* were accused of abusing the animators through fear and demotivation tactics (Zakarin, 2016, Silver, 2016). Animators complained about receiving threats of employment termination if they refused to work unpaid overtime on the film (Zakarin, 2016).

These issues did not only vary in severity but also occurred on a larger scale where multiple studios were involved. In 2010, a controversial financial statement for *Harry Potter and the Order of the Phoenix* (2007) was leaked online which resulted in a lawsuit. The investigation revealed Warner Bros. claim financial loss as an attempt to reduce taxes. The controversy further highlighted similar previously unnoticed occurrences as it was also revealed with *Return of the Jedi* (1983). Furthermore, cases regarding the "High-Tech Employee Antitrust" lawsuit (Gilardi & Co., 2018) claimed that the defendants (Adobe, Apple, Lucasfilm, Intel, Intuit, Google, and Pixar) had violated antitrust laws by collaborating to set fixed animation wages through non-poaching agreements. Another case; the "Animation Workers Antitrust Litigation" lawsuit (Kurtzman Carson Consultants LLC, 2017) highlighted defendants (Disney, Dreamworks, Two Pic MC LLC, Lucasfilm, Blue Sky, LLC, and Sony) who conspired to overturn payments by agreeing not to solicit each other's employees and violated federal and state antitrust laws by fixing compensation policies.

As a relatively new and growing medium, (the first fully computer generated film was the 1995 *Toy Story* (Avila, 2010)), the creative process in the digital film industry, has been difficult to accurately outline. Scholarly topics often investigate animation in the context of film studies, history and theory. In contrast, general-interest, 3D animation, sculpting and modelling publications, including books, magazines, and making off DVDs foreground the technical aspects with a detailed focus on software and tools, as well as superficial outlines of the production pipeline. This paper refers to Visual Effects and animation research regarding the industry, theory and practice by explaining the 3D animation process as a collaborative effort between artists and comparing it to historical processes used in previous creative fields of practice falling under the arts and crafts. It also aims to explain the effectiveness of a

specific creative process used in the production of 3D animated films regarding other approaches. Given the vast number of the creative fields in art and design, this investigation first highlights the creative process – its production pipeline and its issues – before exploring some historical creative processes to pinpoint a similar pattern to the digital film process. This paper considers the animation industry within a framework of Gothic Architectural processes. This comparison provides new insights into the nature of the Visual Effects pipeline and the need for a standardised creative process that can adapt to this.

The Animation Creative Process

A film project generally begins with an idea transcribed in the form of a script which is sent for production approval (Kelly, 2007, Sekeroglu, 2012). Once the film is greenlit, the script is translated into a visual format by storyboard artists through the initial use of sketches. Once the director and producer approve of the storyboard, the characters are further developed through more elaborate sketches while maintaining an overall unified design for the film (Willett, Lee & Castaneda, 2010). The character development process then proceeds to the construction of the 3D character models, which are rigged and animated by the specialised practitioners according to the modelled environment and the characters' lines previously recorded during sessions by voice actors (Kelly, 2007). The stages that follow include adding the Visual Effects, rendering, compositing and colour corrections (Beane, 2014).

The film process can be described as a conveyor belt where hundreds of highly-specialised skilled artists, from various backgrounds and disciplines, are involved in telling a story visually by creating its various components efficiently. The film's elements include live-action footage, animations(both digital and practical) all of which consist of the characters, props, the Visual Effects, compositing, and the environment that need to meet the criteria and the requirement of the director's vision (Mantley, 2015). Accordingly, the supervisor, usually a specialist who has mastered their craft, coordinates the creative flow between the specialised artists, offering comments on how to improve the quality of the work, (whether it is animation, design or modelling), and reports the progress back to the director. Glen Keane, for example, was animation supervisor of *Tangled (2010)* wherein he guided the animators to improve the fluidity of the characters' movements, performances and emotions (Mantley, 2015).

However, the actuality of animation's creative process is often more complicated and unpredictable than recent research suggests. The process described above implies that filmmaking begins with all the film's parameters, including storyboards, the characters, the acts, and all the shots laid out and pre-defined. However, the requirements for each shot, even the acts in the film, are often riddled with uncertainties, which become a regular occurrence in the contemporary filmmaking process (Leberecht, 2014). It is also common that a shot is sent back to the animation studio to be altered, after being submitted to the decision makers for approval. Feedback can be presented verbally or through changes in the script, both of which can be ambiguous and lack the necessary details to be translated into a visual format. This inefficient back-and-forth process is due to the digital aspect of Visual Effects which allows these changes to become frequent since the project can be edited digitally. According to Grage (2014), Visual Effects are safer and more effective in reducing costs than the traditional practical effects approaches including makeup, prosthetics, animatronics and set

building. The common misconception that digital effects are more expensive is due to the inaccurate representation of the costs through the low inflation calculations. For example, \$200 million today cannot purchase the same amount of materials and goods as it did twenty years ago (Grage, 2014). However, despite being cheaper, the digital nature of the Visual Effects and their constant amendments are time-consuming and could subsequently present costly repercussions.

In the documentary titled “Hollywood’s greatest trick” (Al-Jamea, Rizvi, 2017), Scott Ross (Former VFX executive, DD & ILM) and David Yocis (International Trade Law Attorney) clarified that the business model is flawed and unsustainable due to fixed budget contracts to which Visual Effects studios must abide, employment policies, and tax subsidies. Despite all the obstacles, films are being made, and the animation teams are playing a huge role in making it possible. However, it is unclear what the implications are for the process on the product itself. The answer could be found by comparing the animation process to processes from different disciplines of different eras. Besides its digital qualities, it is necessary to determine whether the process should be considered as an art or a craft. The clashing expectations between the industry and its practitioners are evident in the used terminology: Visual Effects practitioners often refer to themselves as artists despite being required to produce outputs that adhere to the director’s vision rather than self-expression.

Craft vs Art

In early European history, master craftsmen across different crafting disciplines commonly ensured the passing of knowledge from a specific guild or craft tradition to the new generation, through years of experience and strict sets of rules (Morelli, 2014). In a symbol of social status, it was the patron commissioning the work, who received the credit, rather than the craftsmen or the artisan. It was not until the 1400s with the start of the Renaissance period that artisans started to receive credit and merit for their work instead of their sponsor, and the term “artist” was adopted (Morelli, 2014).

Due to their use in everyday life by the people involved in the creative fields including designers, artists, modellers, sculptors, and animators, the terms “Art” and “Craft” presented many complications and ambiguities in their definition (Becker, 1978, Swale, 2015). Neither of the two terms should be considered as a higher form over the other, as they possess different emphases on aesthetics, creative processes, skill and standards of utility. However, it is not uncommon for activities categorised as “Craft” to become “Art” when practitioners attain control over their media, techniques, and organisations for creative expression. The opposite can also occur, “Art” can turn into “Craft” when traditions, rules and guild or workshop hierarchy come into play (Becker, 1978). Key factors that are often used to define craft are the knowledge and the set of virtuoso skills required to create, for a client, an object that performs in a useful way, while art gives the product its unique and expressive character (Becker, 1978). Adamson (2007) explains that craft can be more usefully perceived as a process, a habit of action and an approach of doing things rather than being classified as fixed objects, institutions and people. While Modern artwork has been autonomous and oriented towards optical effects; the work of craft has been, supplemental and organised around material experience. As Lawson (2004) suggests in *What Designers Know* (2004), crafters initially made objects, including utensils, houses, or agricultural equipment, without the significant use of drawn plans by copying or adapting previous methods. This process is

commonly known today as “vernacular”. The craft focus on function can nowadays be linked to another creative process, commonly known as design – regardless of whether the medium is digital or physical. Similarly, in Visual Effects, practitioners craft scenes and characters according to the requirements of the director, relying on experience to understand the ambiguous brief and translate it into a visual format via digital tools, makeup, prosthetics, or animatronics.

The association of animation to craft or art was explored in Swale’s (2015) research on the nature of Japanese Anime following Collingwood’s (1938, pp. 20-26) principles that distinguish craft from art. Swale summarised Collingwood’s principles into 6 criteria:

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1. *Craft always involves a distinction between means and end.*
2. *Craft always involves a distinction between planning and execution.*
3. *Means and end are related in one way in the process of planning (end precedes means); in the opposite way in the process of execution (means precede ends).*
4. *There is a distinction between raw material and finished product.*
5. *There is a distinction between form and matter (form is generated through the transformation of “raw” material).*
6. *There is a hierarchical relation between various crafts, one supplying what another needs, one using what another provides.”*

(Swale, 2015, pp. 40-41)

Following these criteria, Swale (2015) argued that Anime should be associated with craft. While the technical components of digital 3D animation and Visual Effects creative processes could be compared primarily to craft, the ambiguity of the brief/ script allows artistic freedom which gives the output its unique character. In an Visual Effects studio, a 3D animated film is the product of a collaborated effort, just as it would be in a craft workshop, where tasks are distributed to the various talents based on experience and skill. The individual products of this collaboration must complement each other to effectively visually communicate a story while retaining its unique character by incorporating some of the practitioners’ artistic influences. Even though credit should be distributed among the individuals who worked on the project rather than only to the source of funding, this is not always the case. In *Sausage Party*, for example, only 47 out of 83 animators were credited (Silver, 2016). Moreover, the client’s requirements in the project are the priority, and the studio must deliver the visuals that meet the client’s vision.

The funding of the project is based on a fixed bid that the studio must accept regardless of any possible changes in the project’s requirements. Due to this approach and the misconception of a linear process, the film-making process is usually compared to construction and architecture where all the elements have been drawn on a blueprint in

details. However, the animation creative process is very fluid and dynamic as shots can change. These changes can involve adding and removing characters, modifying simulations, colour corrections; scenes can be shortened or lengthened, all of which will have a crucial effect on the studio's budget that is already fixed and can rarely be changed (Leberecht, 2014). These changes are often trivial, time demanding, costly, and do not add any extra value to a scene, but the studio is required to comply to fit the client's vision (Al-Jamea, Rizvi, 2017). In live action films, shooting and set construction are paid for on an hourly basis; therefore, rebuilding a set or applying changes to the scene after a period of shooting is not tolerated (Leberecht, 2014). Additionally, due to the hourly pricing of the project in a live-action film, the decision maker is forced to be always present on set to make sure everything is built to specifications. By contrast, the digital nature of Visual Effects allows these changes to become more frequent, as the project can be manipulated or edited digitally, based on a fixed price. This flexibility allows the decision makers to be absent from set during the shooting, and to request as many iterations as they wish (Leberecht, 2014, Al-Jamea, Rizvi, 2017). Thus, the comparison between the filmmaking construction process is only accurate in the case of live-action footage as opposed to an entire live-action film which can still rely heavily on digital effects.

However, there is a specific case in construction where sudden changes, imperfections and the absence of a precise model were embraced and adopted in the making of the product: The Gothic This form of construction occurred during the eleventh, twelfth, and thirteenth centuries, wherein Gothic style construction, was carried out by craftsmen, and featured unique visuals and motifs.

During this period, several master artisans, renowned for their status, shifted their focus from carving stone to drawing on parchment, wood, and stone to provide descriptive feedback and instructions to their workforce on various construction locations (Spuybroek, 2016). This new form of practice which relied almost entirely on paper drawings and verbal direction from the master craftsmen, created a distance between the master's vision and the work carried out by the crafters (Toker, 1985, Spuybroek, 2016). The master craftsman would oversee the entire project remotely, and supervisors would report the project's progress to him (Toker, 1985). Unlike the drawings of a contemporary architect, which feature all the details from scales, front and side views elevations, and cross sections; the Gothic architect's drawings were more flexible and open to changes as they were mainly descriptive and showed the general look of the building. Consequently, the outcome of a Gothic building project was always different from its initial illustrations (Spuybroek, 2016, Toker, 1985).

Animation as Organic Craft

The analogy of gothic construction processes applied to animation, becomes apparent in the initial ideas, drawings, and plans which can be modified or changed over the course of the project. The size and shape of the Gothic construction varies greatly depending on exterior factors such as the location of the construction and urban density (Spuybroek, 2016). The Salisbury Cathedral, for example, grew so exceptionally long that its transepts branched out twice due to its location on an open field, while Bourges Cathedral in France had no transepts, due to its rural location, and had to grow in an elongated morphology instead. Likewise, in both cases, the ornament was confined by the "ribs" of the structure: the

extensive use of curved ornamentation express movement and growth through a variation of C, J, S, and Y shapes, which further depict the variation of the overall shapes of the two cathedrals as two animated organisms (Spuybroek, 2016). Both cathedrals, while different, were done by the same tacit “code” or rules. These iterative changes are not confined only to historical creative processes but exist in contemporary animation and VFX. A similar phenomenon occurs when shots in a movie are shortened or lengthened, depending on various factors determined by the client, the industry, copyrights, or the budget.

Unfortunately, these changes are not always beneficial to the final output. For example, the original third act of *World War Z* (Foster, 2013) was of a grimmer nature that left room for a possible trilogy of *World War Z* films, but that entire act was rewritten and reshot in post-production to have a happier ending, with the possibility of a trilogy omitted, costing the studio approximately \$25 million Specify Currency (Shepherd, 2017).

An additional term we can borrow from historical practices is the notion of “savageness.” “Savageness” was one of the key terms used by gothic supporters to describe the nature of gothic architecture (Spuybroek, 2011, Spuybroek, 2016, Ruskin, 1892). This term was initially deployed to describe the harsh conditions under which the cathedral labourers of northern Europe were forced to work. The cold, the mist and the muddy ground had an undeniably negative effect on the craftsmen. Their cold hands, slippery muddy feet, and limited vision inevitably caused them to make small mistakes that made each carving or ornament unique. This relationship between environment and craft has carried over into contemporary creative practices, particularly in mainstream studio animation. The pressure imposed on the animation staff, coupled with the competitive and fast paced nature of the industry, has forced practitioners to live a nomadic lifestyle in search of work (Dubner, 2017, Leberecht, 2014, Al-Jamea, Rizvi, 2017). Moreover, tight deadlines and low budgets are also significant factor in the negative experiences of creative practitioners (Barkan, 2014, Horn, 2014). Film studios struggle and often fail to maintain a sustainable creative process, resulting in challenging work environments.

It is noticeable that animators share similarities with the gothic craftsmen in the way that they approach ambiguous project briefs, stressful work conditions and follow instructions whilst retaining some degree of creative freedom. While the gothic process managed to fully adapt its imperfections and merge them into its product, the competitive and “savage” nature of the animation industry has had an influence on product quality and appeal that has yet to be fully resolved. Due to its unpredictability, the animation industry cannot be standardised via conventional means, but by a process of continually evolving and adapting standards. In an interdisciplinary, comparative study between the Parthenon and the automobile, Le Corbusier (1946) argued that both operate by logic, study, and analysis of a problem that has been well stated, which through experiments, lead to precise standards of style and practice. The Parthenon, for example, having reached its climax, as indicated by its unchanged style and construction, was replaced by a different form of construction with a new set of standards. On the other hand, the automobiles’ standards are still evolving to match the competition in the industry (Le Corbusier, 1946). Like the automobile, Visual Effects are a relatively new industry, responding to the incorporation of the computer in its creative process. These digital processes contribute to the accelerated pace, increased ambiguity, and obstacles to communication across the production pipeline. These apparent weaknesses can become advantages, as with the example of the Gothic.

Ruskin defended and praised the flexibility that was central to the gothic process, criticising Viollet-le-Duc's illustrations, of *Mont Blanc* and the concert hall design in *Entretiens, La Salle Voutée* (Vaulted Hall) as demonstrative of a rigidly structured engineering product. By contrast, Ruskin's approach to architectural drawing relied on the translation of natural occurring fractal patterns, such as the components of a Mandelbrot pattern, to produce a mountain's summit or a cottage's roof without copying the exact pattern (Spuybroek, 2016). This process of the gothic, therefore, translates rigid mechanical structures into an expression of the forces in nature that continuously form matter. Through this expression of forces, the gothic process heightens the object's depiction of movement and expression as an inorganic entity behaving as a living organism (Worringer, 1907/1997). Animation or Visual Effects production cannot be represented by Viollet-le-Duc's rigid method, but rather by the organic system that characterises the Gothic approach.

In the animation process, a character, an asset, and the environment must be produced with the purpose to fulfil a function that is not purely structural but also expressive of force, movement, and emotion within the context of a specific setting. A character for example, whether cartoon or photoreal, must behave and move naturally as a reaction to the forces that are applied to it which include emotions, narrative structures, and the environment (Maestri, 2006). For example, in the *Fellowship of the Ring* (Jackson, 2001) the characters are blended with their environment to create dramatic expressions of sadness, loss, and hopelessness, following the fall of Gandalf after his fight with the Balrog in Moria. The environment was constructed using a seamless blend of live-action footage and computer-generated imagery. The components of this shot act like ornament in a gothic composition: landscape, mountain range, the archways of the mine's entrance, steps, and bridge were all instrumental in reflecting the culture living in that specific environment (Lee, 2005), without which, the structural stability of the scene can be compromised.

Conclusion:

Animation, as a process, is often compared to building a house without a fixed plan or blueprint. In this fashion, the animation process should embrace those laid in place by craft traditions. Like craft, Visual Effects in a film have a specific function to support the client's requirements: the output of the process is a product with a function that contributes to a more significant entity, in this case, a movie, that would collapse without it.

This essay highlighted interesting similarities between the Visual Effects and the gothic creative process. Both begin with a descriptive brief, delivered ambiguously through a written, verbal, or basic drawing format depicting a general idea. The practitioners' responsibility is then to translate the presented criteria into coherent visuals that draws the audience into a unique cinematic (Visual Effects) or divine experience (the Gothic). The creative process of Visual Effects and the Gothic present a distance between practitioners and the director or the master craftsman who work remotely through their correspondence with allocated supervisors. Furthermore, in both cases, the practitioners are pressured to work under challenging conditions that have a significant effect on the quality of the final output. Alongside the distance between director/master craftsman and practitioners, the fast paced and competitive film industry and the harsh environments of the gothic projects were key factors in presenting the practitioners with some degrees of freedom in their creative input. Consequently, the output in both cases presents an inorganic artefact (digital algorithms or construction material) behaving like an organic and animated entity.

There is a co-dependent and dynamic relationship between a vastly growing competitive industry and the still-evolving animation process in the making of aesthetically appealing visuals that draw the attention of the audience seeking to suspend their disbelief in a visual experience. Since the VFX and the animation creative process have proven to be either non-sustainable or misleading (as presented with the altered financial statements), this paper only provides the treatment of Visual Effects practitioners as context for the exploration of the creative process in relation to craft. Despite its flaws, the process cannot be reduced to singular formulaic standards of style and practice, especially given that it is specifically designed to be able to change and adapt to the requirements of each project. The Visual Effects creative process is capable in fulfilling the requirements of the industry regarding the generating of expressive original output. However, issues of output quality inconsistency are not only rooted to the creative process, but also to perception and function. The comparison of the digital film creative process with the gothic's shows striking similarity between the two fields. However, only the Gothic has succeeded in embracing and adapting to the unpredictable and savage nature of its process to produce an expressive output. In contrast, the Visual Effects process has yet to incorporate an organic standardised process that is capable of adapting ambiguous client brief to meet the requirements of its fast-paced industry.

References

- Adamson, G. 2007, *Thinking Through Craft*, Berg, Oxford; New York.
- Al-Jamea, S. & Rizvi, A. 2017, *Hollywood's Greatest Trick*, <https://vimeo.com/213520878> edn, <https://vimeo.com/213520878>.
- Avila, M. 2010, , *What Was the First Feature-Length Computer Animated Film?* [Homepage of Life's Little Mysteries Contributor], [Online]. Available: <http://www.livescience.com/32679-what-was-the-first-feature-length-computer-animated-film.html>.
- Barkan, K. 2014, , *What's Wrong With The Visual Effects Industry?* [Homepage of ACM Siggraph], [Online]. Available: <http://www.siggraph.org/discover/news/whats-wrong-visual-effects-industry>.
- Beane, A. 2014, , *3D Production Pipeline (Pixar Vs. Dreamworks)* [Homepage of Upcoming VFX movies], [Online]. Available: <http://www.upcomingvfxmovies.com/2014/03/3d-production-pipeline-pixar-vs-dreamworks/>.
- Becker, H.S. 1978, "Arts and Crafts", *American Journal of Sociology*, vol. 83, no. 4, pp. 862-889.
- Collingwood, R., G. 1938, *The Principles of Art*, Oxford University Press.
- Dubner, S.J. 2017, *No Hollywood Ending for the Visual Effects*, Freakonomics.

- Foster, M. 2013, *World War Z*, Paramount Pictures.
- Gilardi & Co., L. 2018, *High-Tech Employee Antitrust Settlement*, Gilardi & Co. LLC.
- Grage, P. 2014, *Inside VFX: An Insider's View Into The Visual Effects and Film Business*, 2nd edition edn, CreateSpace Independent Publishing Platform.
- Greno, N. & Howard, B. 2010, *Tangled*, Walt Disney Studios Motion Pictures.
- Horn, L. 2014, , *Life of Pi's VFX Team Explains What Wong With Their Industry* [Homepage of Gizmodo], [Online]. Available: <http://gizmodo.com/life-of-pis-vfx-team-explains-whats-wrong-with-the-in-1531864103>.
- Jackson, P. 2001, *The Lord of the Rings: The Fellowship of the Ring*, New Line Cinema.
- Kelly, L. 2007, , *Dreamworks Studio Production Pipeline* [Homepage of Wordpress], [Online]. Available: <https://lewiskelly.wordpress.com/2007/10/16/3d-production-pipeline/>.
- Kurtzman Carson Consultants LLC 2017, *Animation Workers Antitrust Litigation*, Kurtzman Carson Consultants LLC.
- Lawson, B. 2004, *What designers know*, Architectural, Oxford.
- Le Corbusier 1946, *Towards a new architecture*, Architectural Press, London.
- Leberecht, S. 2014, *Life After Pi*.
- Lee, A. 2005, *The Lord Of The Rings Sketchbook*, HarperCollins.
- Maestri, G. 2006, *Digital Character Animation 3*, New Riders Press.
- Mantley, R. 2015, , *What is an Animation Director?* [Homepage of Directors UK Ltd.], [Online]. Available: <https://www.directors.uk.com/news/what-is-an-animation-director>.
- Marquand, R. 1983, *Return of the Jedi*, 20th Century Fox.
- Morelli, L. 2014, , *Is There a Difference Between Art and Craft?* [Homepage of Ted-Ed], [Online]. Available: <http://ed.ted.com/lessons/is-there-a-difference-between-art-and-craft-laura-morelli>.
- Ruskin, J. 1892, *The Nature of Gothic*, Kelmscott Press.
- Sekeroglu, G.K. 2012, "Aesthetics and Design in Three Dimensional Animation Process", *Procedia - Social and Behavioral Sciences*, vol. 51, no. -2012, pp. 812-817.
- Shepherd, J. 2017, , *7 Infamous Deleted Scenes That Cost Movie Studios Millions* [Homepage of The Independent], [Online]. Available: <http://www.independent.co.uk/arts-entertainment/films/news/most-expensive-deleted-scenes-cost-movie-studios-millions-a7653636.html>.

- Silver, S. 2016, , *Sausage Party Production Accused of Mistreating Animators* [Homepage of ScreenRant], [Online]. Available: <http://screenrant.com/sausage-party-directors-animators-abuse-accusations/>.
- Spuybroek, L. 2016, *The Sympathy of Things: Ruskin and the Ecology of Design*, 2nd Edition edn, Bloomsbury Academic.
- Spuybroek, L. 2011, *The sympathy of things: Ruskin and the ecology of design*, V2, Rotterdam.
- Swale, A., D. 2015, *Anime Aesthetics: Japanese Animation and The "Post-Cinematic" Imagination*, 1st ed. 2015 edition edn, AIAA.
- Toker, F. 1985, "Gothic Architecture by Remote Control: An Illustrated Building Contract of 1340", *The Art Bulletin*, vol. 67, no. 1, pp. 67-95.
- VFX Soldier 2012, , *The "Paying To Work For Free" VFX Business Model* [Homepage of VFX Soldier], [Online]. Available: <https://vfxsoldier.wordpress.com/2012/03/26/the-paying-to-work-for-free-vfx-business-model/>.
- Willett, N., Lee, I. & Castaneda, O. 2010, , *Animation Production Pipeline* [Homepage of Stanford], [Online]. Available: [http://physbam.stanford.edu/cs448x/old/Animation_Production_Pipeline_\(2d\)_Nora_Willett.html](http://physbam.stanford.edu/cs448x/old/Animation_Production_Pipeline_(2d)_Nora_Willett.html).
- Worringer, W. 1907/1997, *Abstraction and Empathy: A Contribution to the Psychology of Style*, Ivan R Dee, inc.
- Yates, D. 2007, *Harry Potter and the Order of the Phoenix*, Warner Bros. Pictures.
- Zakarin, J. 2016, , *Sausage Party' Controversy Highlights How Animators Get Screwed* [Homepage of Inverse], [Online]. Available: <https://www.inverse.com/article/19973-sausage-party-animators-abuse-highlights-industry-issues>.