AC 2012-4772: REEL ENGINEERS: PORTRAYAL OF ENGINEERS AND THE ENGINEERING PROFESSION IN THE FEATURE FILMS

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Reel Engineers: Portrayal of Engineers and Engineering Profession in the Feature Films

Abstract

Portrayal of certain professions in the popular media has a deep and lasting effect not only on general public's understanding of these professions (with all potential misconceptions and attitudes), but also has an impact on future career choices of adolescents (teens and tweens). While movie screens and television shows put a spotlight on lawyers, doctors and policemen (and occasionally also on forensic scientists), they rarely (if at all) pick engineers as the characters of interest.

This brief study has reviewed a selected number of known and available portrayals of engineers in feature films (with an effort to clearly distinguish between images of "engineers" and "scientists"). The paper also assesses specific character and professional attributes, stereotypes (profession-, ethnicity or gender-based) and attributes known to facilitate viewer's identification with on-screen characters, of engineering professionals portrayed in selected films. In particular, the key research question of “How are engineer(s) and their work portrayed in the feature films?” was broken down to more detailed sub-questions:

- What types of engineering work are represented? How is creative component of that work shown? How successful (or unsuccessful) are the outcomes?
- Is the distinction between science and technology, and scientist and engineers depicted?
- Are any characters females or minorities?
- What are the artifacts (physical attributes) of the engineering endeavor?
- What are typical professional and personal traits of the characters shown?
- How overall depiction of engineers can be categorized (wizard/hero-tinkerer/mechanic-Frankenstein/villain)?
- How are engineers/engineering depicted through dialogue?
- Are any contributions to society shown or hinted?

The results of such analysis are presented for 2 example films. Future work involves examination of identification with specific attributes of engineer's portrayals in audiences consisting of high school students and university freshmen, and attempting to correlate the viewers’ identification with attitudes towards science, technology, gender/ethnic roles in engineering, and future interests and attitudes towards engineering and science.

Context

Modern societies are experiencing a strange paradox: on one hand, to thrive, they continuously increase their dependence on a wide range of technologies, but on the other hand, the scientific and engineering communities responsible for the invention and development of these technologies are in steady decline. Moreover, the majority of society has no understanding where the new technologies come from and who is responsible for creating them – issues that only exacerbate the difficulty of recruiting new generations of students into the ranks of engineers and scientists[20,21].

Despite steadily increasing dependency of modern societies on technology, society-wide understanding of technology (referred to as technological literacy) is usually lacking. Such understanding is necessary, for example, in informed and critical decision-making, thus the importance of inducing technological literacy and interests in younger generations cannot be overstated, as it directly impacts future supply of engineers and scientists.

In Canada, where engineering is one of the most trusted professions (score of 88% according to 2006 Angus Reid Global Scan survey), overall enrollment in engineering programs hovers around 55,000 students[7] and constitutes approximately 15% of a total university enrollment nationwide. It is worth noting, however, that a key trend allowing to maintain current student volume is a fast growing enrollment of foreign (visa) students, who now account for over 10% of undergraduates and over 30% of graduate students in engineering programs. Unfortunately, Canadian students are steadily losing interest in engineering. Similar trends of declining numbers of engineering students have been reported at universities across the US, UK and European Union. Additional concerns are related to substantial underrepresentation of females (in Canada they account for 17.5% undergraduates, although distribution varies significantly across sub-disciplines) and minorities. Another issue of concern is the attrition rate, in particular of 1st year students, who apparently have difficulty in building their engineering identity and opt-out to other non-engineering area, while students from other disciplines very rarely transfer to engineering.

The key motivation in initiating the proposed study is thus a quest for new educational solutions that will help explaining in appealing terms what engineers do and how they contribute to the well-being of society in the short term, and that will, in the long term encourage potential students to take on engineering careers.

Declining engineering enrollment trends are directly related to the public understanding of science (PUS), technology and engineering (although that relation is far from simple). PUS trends are closely monitored by a number of scientific communities and government efforts across the world[2,8,17]. The importance of public attitudes cannot be understated, considering that highly-developed economies in order to support their technological infrastructure and global marketplace position, require continuous supply of well educated and versatile knowledge workers. Thus a gradual shift away from engineering as a career choice will have detrimental impact in the long term. It has been suggested that enrollments may be linked to media-created images, as children's images of and attitudes towards scientists and engineers may affect their career choices[17]; this in particular seem to impact adolescent girls.

Overall, the general public's knowledge of engineering disciplines contributing to the well-being of society is fairly limited. For example, perception of manufacturing in particular is really outdated (usually stuck in mass production concepts), low-tech and unappealing, while computer science is considered cutting-edge and high tech. This lack of knowledge creates a strong demotivational barrier not only preventing many potential students from entering, but even considering these fields.

Nevertheless, such a knowledge gap creates an opportunity to educate the general public about what constitutes modern engineering. The trick, however, seems to be in proper crafting the message that would not scare away the target audience. Such a message, as pointed out in a recent NAE report[11], should appeal to the hopes and dreams of prospective students by emphasizing the impact engineers have in society rather than focus on particular skills in math and science (emphasis on which is usually viewed by the target audience as a deterrent).

A number of books, papers and reports have been published that explore the nature of engineering work, knowledge, education and gender studies that pertain to engineering; good overviews are provided [15,21]. Relatively little effort has been devoted to coverage of engineers and engineering in mass media. Newspaper coverage of engineering[6] is one of the exceptions, where focus is so specific; other studies typically blur the distinction between science and technology, and see no difference between a scientist and an engineer[10,12,18]. Existence of engineer's image in the film has been acknowledged[25], but not studied thoroughly, except for a gender-specific focus.

While creating a learning environment that educates about engineering and engineers in general, it is also important to leverage and apply the most recent theories of learning. Learning is viewed as an active process where students process, organize and reflect upon their personal ideas in the development of knowledge and meaning. Current models of science learning embrace the paradigm of constructivism, where students learn by constructing personal representations of knowledge instead in the idea that knowledge can be transmitted whole into the heads of students. Thus experiential, non-linear learning is widely viewed as complementary to in-the-classroom experience (which is linear and highly structured).

An idea of using feature films as an educational tool is not entirely new[5]. Both feature and documentary films have been used as teaching and learning resources in a variety of disciplines, including medicine, history, anthropology and cultural studies, law, management and others. Film as a teaching medium has also found wide use in corporate training programs.

Films are a very familiar medium to contemporary students, and that helps to maintain student interest in class subject. As argued by Johnson[14], introducing increasingly complex content in television shows and movies improves our cognitive and decision-making abilities, even though it is often difficult to evidence. Popularity of recent television shows such as *Numb3rs*, the CBS show series launched in 2005, which successfully introduced mathematical thinking and problem solving to mainstream viewers, testifies that use such a complex medium can have positive educational impact.

Films offer both cognitive and affective experiences. They can induce good discussion, assessment of individual's values, and self-assessment when viewing content with strong emotional impact. Time constraints limit broad use of film in the classroom and require well-structured session organization; some films may also require forewarning of viewers of sensitive content. Proper analysis of the films requires at least rudimentary understanding of film theory and film techniques (visual language). Non-humanities students usually do not have such a background and have to become aware of the potential emotional impact films may have on them. They also often fall short on analysis, because of their inability to express their thoughts on subjects that may be remote from their professional interests. All media materials, including films should not be used in the classroom as standalone devices. Despite all of the interesting and relevant content, any potential viewers should be aware that movies, as part of the popular culture, can operate using stereotypes, distort the truth by sensationalizing the issues or serve a political agenda.

Census of feature films and television series featuring engineers and their work

Some preliminary work has already been conducted by the lead researcher and results have been successfully integrated into teaching practice. It is suspected, however, that a pool of potential candidate films is much broader (in particular if foreign-made films are also considered) and should be better explored. Consideration of foreign movies is important considering globalization issues. The initial sources of information will be some of the references already listed in the proposal, Internet Movie Database (http://www.imdb.com) and other sources that will be identified. The work will also roughly classify the identified films into genres and develop a small database for tracking. A small sample of feature films and corresponding engineering-related themes is shown in Table 1[20].

Table 1: Examples of feature films illustrating key issues pertaining to engineering and engineer's work

Title	Director, year	Issues for discussion
Apollo 13	R. Howard, 1995	Teamwork, creativity, aerospace engineering
The Bridge on the River Kwai	D. Lean, 1957	Work organization, civil engineering, leadership, ethics
The China Syndrome	J. Bridges, 1979	Professional ethics, labor relations, leadership, nuclear engineering
The Dam Busters	M. Anderson, 1954	Innovation, problem solving, teamwork, experimental engineering work
Efficiency Expert	M. Joffe, 1992	Labor relations, work design, manufacturing
Flight of the Phoenix	R. Aldrich, 1965 J. Moore, 2004	Teamwork, aviation engineering, problem solving, innovation, diversity
Gung Ho!	R. Howard, 1985	Work organization, labor relations, clash of cultures
Metropolis	F. Lang, 1927	Work organization, manufacturing, social issues

Modern Times	C. Chaplin, 1936	Work organization, manufacturing
Real Genius	M. Coolidge, 1985	Creativity processes, graduate studies
Space Cowboys	C. Eastwood, 2000	Aerospace engineering, teamwork, mentoring, professional ethics
The First $20 Million Are Always the Hardest	M. Jackson, 2002	Business startup, teamwork, legal issues, creativity
Tucker	F. Coppola, 1988	Technology and organizations, design and manufacturing

Content Analysis Issues

Films identified as fulfilling certain general expectations, will be further reviewed and ranked for appropriateness for further study. The content of selected films (e.g. plotline, characters, artifacts, words, phrases, images, scenes, etc.) will be thoroughly analyzed, considering in particular the key Research Questions:

- How are engineer(s) and their work portrayed in the feature films?
- Which may also have a set of sub-questions:
- What types of engineering work are represented? How is creative component of that work shown? How successful (or unsuccessful) are the outcomes?
- Is the distinction between science and technology, and scientist and engineers depicted?
- Are any characters females or minorities?
- What are the artifacts (physical attributes) of the engineering endeavor?
- What are typical professional and personal traits of the characters shown?
- How overall depiction of engineers can be categorized (wizard/hero-tinkerer/mechanic-
- Frankenstein/villain)?
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The process of film content analysis is usually based on the intersection of two analytical approaches: the content analysis and the discourse analysis. The traditional content analysis methodologies, which is a study of recorded human communications, have been in use in humanities and social sciences for over three decades[23] and are well developed and documented. Their use, however, in this project has to be adjusted to take into account the visual nature of the researched materials. Recent advances in visual communication analysis[24] offer some guidance on how these approaches can be used in analysis of a dynamic medium, such as film.

While the traditional content analysis provides a summarizing, quantitative assessment of communication, further interpretation of these processes is necessary. Since the character of the medium has a broad social impact, the concepts of the cultivation theory, originally developed for the analysis of content and its impact of television programs, also needs to be taken into account. The methodological basis for proper interpretation of the content can be built upon the discourse analysis approach[9], which is a transdisciplinary approach to analyzing how discourses (ways of representing social practices) construct social life. The results of the analysis will be summarized in a developed taxonomy, reflecting commonly occurring themes and symbolic representations. Discourse analysis is based on the connection between language and knowledge and the ways in which they are constituted through representation. Critical discourse analysis systematically investigates and reveals dialectic relationships between representations (text, image) and social practices, and how representation plays a role in furthering the interests of particular social groups[22]. Film is a 'communicative event' which contributes to the construction of social identities and social relations, and to systems of knowledge and meaning.

Contextualizing discourse within social groups and temporal and cultural locations is essential to determining the meaning making between speaker and audience. Thus, the analysis and interpretation of films will look at the period when the film was produced, and its relationship with and continuing place in film discourse in contemporary culture. Establishing a taxonomy and typology of representations and an analysis of 'talk' will guide the development of guiding questions for the following tasks. Questions are formulated within a discursive practice and can influence the answers[22]. It will be crucial to the analysis of subsequent research tasks to take into account how questions have been formulated for surveys; and to treat language as not only a tool for analysis but also an object of ongoing analysis[13] while developing and carrying out educational activities and eliciting and interpreting student response.

The First $20 Million Are Always the Hardest

The main character (an electrical engineer by education) gives up a cushy marketing job to pursue more fulfilling R&D job. He is assigned to lead a doomed-to-failure project developing a PC that will sell of $99.Not having available necessary resources he puts together a team of unassigned (read: difficult to deal with personalities) employees and partially succeeds only to see his effort stolen away by his envious boss, who trapped him to sign a non-exclusive patent waiver. Neverheless, the team does not give up and comes up with a number of breakthrough solutions (eliminating the need for hard drive, RAM, and other peripherals). A prototype is created, but it crashes, is ugly and the price is still too high. More innovations are needed and the team stands up to the task, creating a computer operated by virtual glove and new look designed by the next-door artist.The three words that are repeated in the movie The First $20 Million are "simplify, clarify, and economize". This helped reach a solution for the project given to a team of workers: to make a $99 computer.

The team's original idea to make a holographic computer came from a hologram one of the members owned, which displayed a person. This original hologram is displayed in Figure 1 below. It is the raw material or product from where the holographic computer idea originated from.

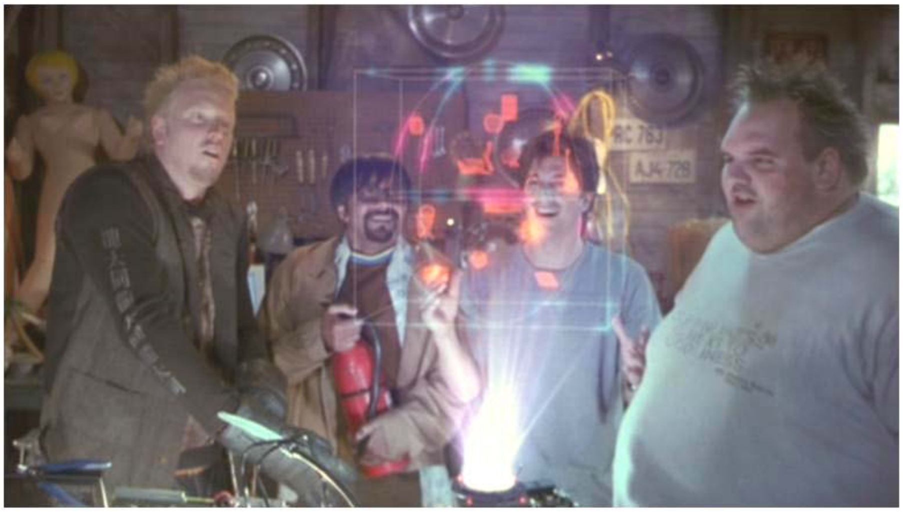

Figure 1: An idea originated here to use a hologram as the basis for a $99 computer

After much brainstorming, a prototype is created. This prototype, Figure 2 below, is controlled with internet monitor gloves which allow the user to control the projected 3-D screen by rotating it, clicking certain buttons and even opening documents and internet pages. It also has a voice that projects through speakers to communicate to the user. The team came up with “E-Magic” as a name for their product. With the prototype complete, the team travels to various companies to present the proposal of their product for possible investments. Unfortunately, the meetings did not go as planned and the prototype malfunctions many times. One of the malfunctions involved not displaying the proper interface on the screen while the other problems with the prototype had to do with its appearance. Figure 3 shows the appearance of the first prototype. Appearance is often times a selling point for a company looking to invest in a certain product. If a company is not impressed with the look or how the product functions, they will not be willing to invest their money in its success. This was one major aspect that the team has to improve on before presenting their product further.

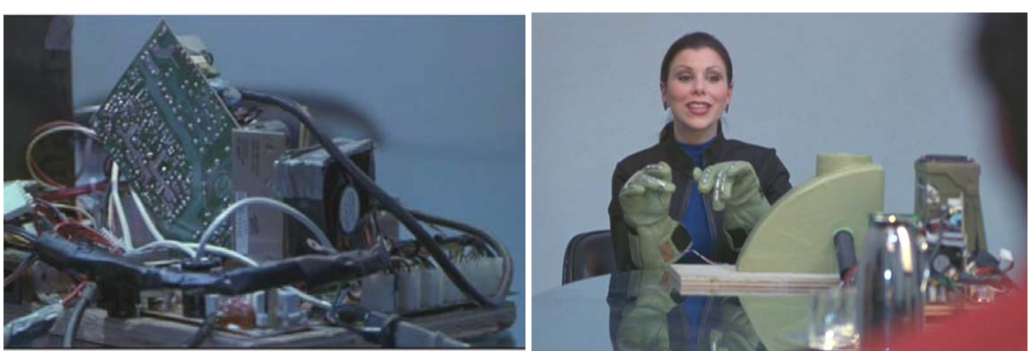

Figure 2: The computer prototypes: initial mess and mid-grade solution

Improvements made to the original prototype were done to simplify, clarify and economize the product. In order to achieve this, the appearance is improved by eliminating the unappealing wires and the internet monitor gloves. The gloves are eliminated to create less material so that there is less chance of breaking, malfunctioning or misplacing. To clarify the product, a new exterior design is made to make the computer more pleasing to the eye: a wider base, flatter base, more ventilation available and access points for both power and internet are all added.

From this second prototype, a newer and final prototype was created. This idea is faster, smaller, simpler and overall a better appearance than the other two prototypes. It is the next generation "E-Magic" which is more powerful and portable than the previous prototype. This newer model also has the advantage of being one tenth of the price of the second prototype. Figure 6 shows the final prototypes in use with the 3-D screens clearly visible.

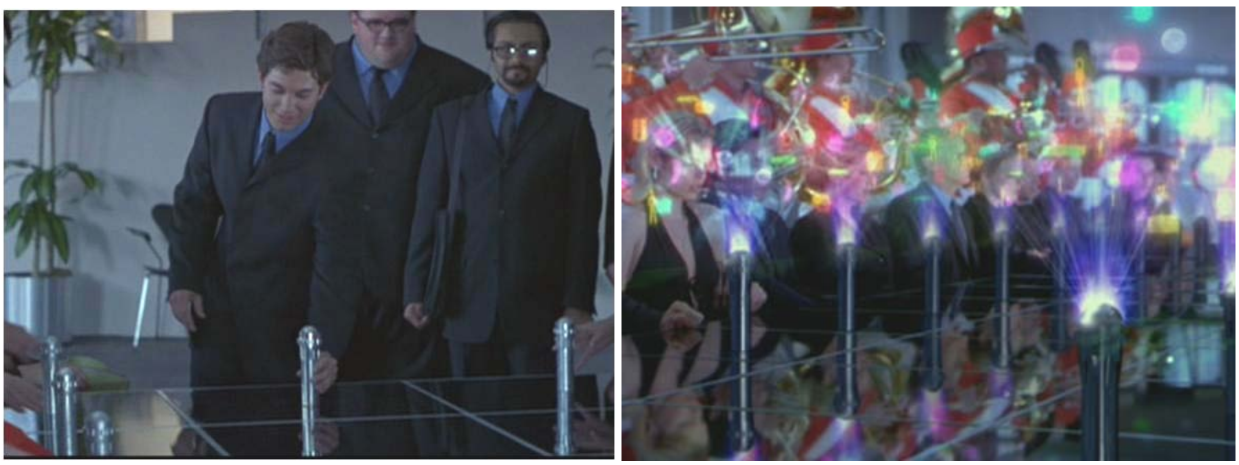

Figure 3: The final elegant solution in action

The final model or prototype successfully satisfies the three words stated at the beginning of the report. The words are "simplify, clarify and economize". It is simplified because of its size and easy-to-use design. It is clarified because there are no excess parts that distract the user or takes away from the actual product. Finally, the final product is economized because it can be sold and still gain a profit, for only $99.

The Flight of the Phoenix

The film tells a story of a group of passengers of a cargo plane that has evacuated closed oil well. The plane crashes amid the sandstorm. The survivors initially wait to be rescued, but eventually realize that their location is unknown, hindering their chances to be found. They start looking for alternative solutions. One is to walk through the desert. Another one appears as their water starts to run out. An arrogant aeronautical engineer proposes radical solution – to build a new aircraft out of the wreckage, using remaining working engine and adding skids to take off. The group overcomes various obstacles and makes many sacrifices, but eventually succeeds and flies out, traveling lying on the wings. It has also been revealed that the engineer was designing model aircraft, not the full-scale ones.

The making of the original movie actually involved building a flying prototype, and is well documented. The movie's remake in 2004 offers a chance to compare not only technological changes over the span of 40 years, but also social sensitivities that changes over that period (issues of national stereotypes, gender, etc.).

The film Flight of the Phoenix focuses on a crash-landed plane in the Gobi Desert carrying just over a dozen passengers. Teamwork, motivation and problem solving are key areas that the stranded passengers must focus on in order to remain alive and live through the obstacles that come their way. Luckily, an aeronautical engineer is one of the passengers. Since he specializes in designing planes, he convinces the other members that the plane can be rebuilt and that they will fly to safety.

Once the passengers accepted the help and leadership of the aeronautical engineer, the engineer began giving out orders and saying what needed to be done. He notices that by examining the plane, that the twin boom design and the starter boom were not damaged. With noticing this, he makes a decision that the starter boom will become the main component of the plane. He also says that since the tail section is only partially the same, it must be redesigned.

The design suggested by the engineer was possible to complete because there were no component problems and all the parts used for construction were on board already. Some constraints that were present however, were knowledge, food and water supply, staying well rested, working together as a team and coping with the storms and unpredictable weather. To stay cooler while working on the plane, they decide to work at night and sleep during the day when they are more likely to get worn out faster because of the heat. This would save on the amount of water consumed per person because of the lack of sunlight which requires more water. The passengers all worked throughout many nights to separate both wings from the original body of the plane, as seen in Figure 3 and Figure 4.

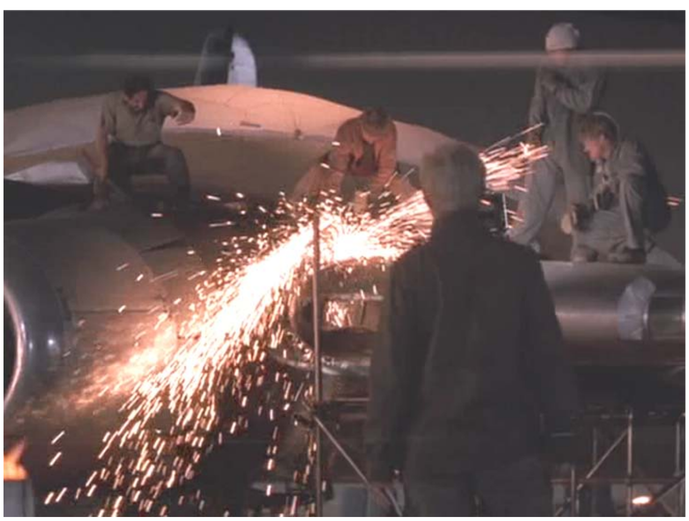

Figure 4: Cutting one wing off the main body of the plane.

As the construction of the plane continues, an unforeseen explosion occurs at night which is most likely the result of using gasoline or some type of fuel to burn and make light to see while doing work. There was not much damage to the plane, but unfortunately a large loss of fuel, which is needed to fuel the finished plane to safety. Because of this explosion and loss of a valuable resource, they decide to work during the day. This is because that way they will be able to see better using the sunlight. Another reason behind this decision is that if more work will be able to get done in the daylight, the passengers will be more productive, but unfortunately will consume more water. A phrase used in the film is “drink more, finish sooner”, even though water is not an abundant resource.

After recovering from the explosion, the two separated wings were put together. The port wing (left-hand side) was fed downwards to join with the starboard (right-hand side), as seen in Figure 5. The passengers only have one chance to do this or else the plane will not be able to fly.

Figure 5: Structure built to join the two wings together.

Other obstacles that the passengers have to overcome before the final plane is complete (Figure 6) come up along their way. A sand storm passes through and almost lifts the plane off the ground. They had to secure the plane to the ground so that it would survive the storm and not blow away. Another major problem is that that the engineer who was the leader throughout the construction process has never built a life-size plane before; he has only built model-size ones. The engineer argues that aerodynamics applies to scale and full size airplanes, lift and drag coefficients are comparable and the same pattern is used for heavier than air construction. He also states that since model planes fly themselves, a full size airplane will be more efficient. The rest of the passengers are not pleased with this new information they have received because they have spent possibly weeks on building a plane with the guidance of someone that has never built a full size plane before. The passengers feel betrayed by the engineer and feel they never should have trusted him. After much arguing with each other and the engineer, the passengers decide to finish the plane because at this point it is their only hope of escaping the desert. The film ends with all passengers aboard the plane and flying to safety at last.

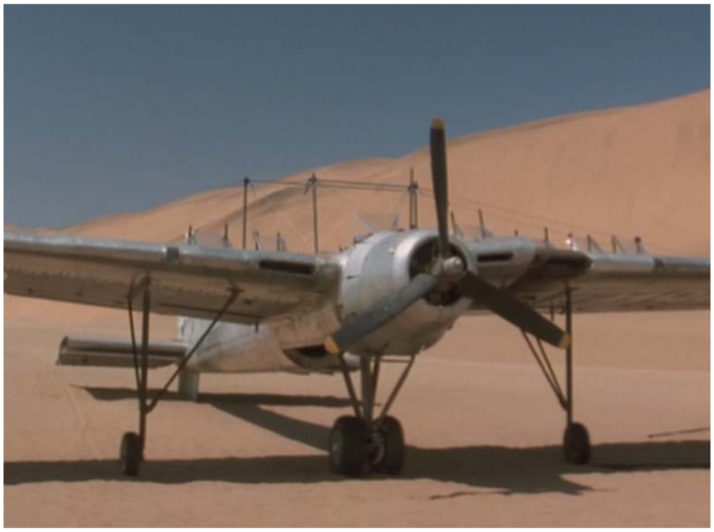

Figure 6: The rebuilt plane.

It is easy to see the type of challenges the passengers, engineer and captain had to face in their challenge to escape the Gobi Desert after a surprising plane crash. The redesign and construction of the new plane was well thought of and resources left on the plane were well utilized (saws, hammers, welders, extra fuel, food and water). It is important for these resources (especially the water and food) to be used efficiently and effectively. It was also interesting to see the designs the engineer came up with and how the passengers worked together to build a functional plane to bring them to safety.

The original version of the film “The Flight of the Phoenix” was released in 1965 and a re-make of the same film was released more recently in 2004. After viewing both films, it is easy to see their differences and few similarities. Both films are based on the same story: a group of passengers and their captain crash land a plane in the middle of a dessert. Their task is to brainstorm and work together to somehow escape the dessert. A valuable passenger in both versions of the film is the aeronautical engineer (2004 version) or aircraft designer (1965 version). The main differences between the different versions of the films are: the differences in each time’s society, the technological differences and the different methods of engineering used.

Since there is a time difference of almost 40 years between the two films, each film’s society behaves differently as well as there is a difference in the way each film is set. In the newer version, it is important to note that there is at least one woman who is on board the plane. However, in the older version, there are no women aboard the plane. This clearly shows the changes that have occurred in society and how woman are treated and thought of. In the older film, women were probably not thought of as to be able to help rebuild a plane. Now, women are seen as more equal to men; they can do mostly any task a man can do. This is also a key point for women in engineering. Currently, there are more and more women who enroll in engineering programs because the programs are promoted to women especially to show that women can do anything men can do. Another aspect to do with the changes in the film’s societies that I noticed in the older film is that on the plane, the men were allowed to smoke cigarettes and drink alcoholic beverages. These actions even occurred in the cockpit right next to the pilot! If these actions were in films today, they would not be accepted by the public because these actions are not part of today's society.

Another difference is the technological differences. The materials used in the older version of the film were more worn out, and for example, the material of the plane itself was less shiny and again, looked older, as seen in Figure 7. The equipment to build the plane in both films was all on board of the crashed plane. In the older film this equipment included welding torches and steel cables. In the newer film, some equipment that was used was a more updated welding torch or gun, and better cutting equipment to separate the wings from the main body. In the older film, discussion of the center of gravity concludes that in order to maintain a balanced center of gravity, the load of the passengers must be spread out on the wings in order to take away the majority of the weight from the center of the plane. These technological differences and aspects discussed are important because they show again, that between the two films, there have been advancements in the technological field.

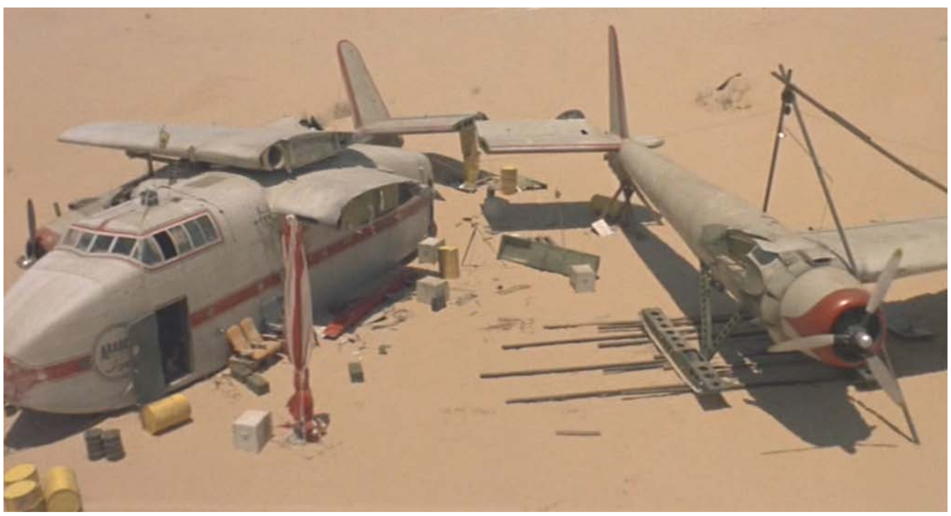

Figure 7: Full shot of plane in construction

A final difference between the two versions of "The Flight of the Phoenix" is the manner the two films performed the methods to build the new plane. In both films, one boom is damaged and the other is not. In the 1965 version, the port boom is undamaged and will become the main component to start building from. In the 2004 version, the starter boom is undamaged and therefore will become the main component of the new plane. In each case, the opposite wing must be removed from the original main component and attached to the new main component. In the older film, the engineer has decided to add an under-carry to the plane so that the plane can glide across the sand and have a smoother landing. They perform this by using the H-section located in the cargo to build the under-carry. The methods that the passengers and engineer choose to assemble the new plane in the older version of the film are a lot more work and manpower than in the second version of the film. For example, in the older version, the tools used to move the heavy wings are winches, wedges, levers and constructing an A-frame to support the unfinished parts. All of these processes require intense manual labour and therefore need as many passengers that are at full health as possible. This is the difference from the second version of the film. In the second version of the film, an A-frame is used, but not as much manual labour is required. This is the result of greater technological advances in the equipment used in the second version to rebuild the plane.

Along with the differences between the two films, there are similarities between them as well. When building the new planes, both films use the same designing technique: to remove one wing and attach it to the new main component that is already attached to the other wing. This will create a new and aerodynamically sound structure. It is also common throughout both films that the passengers prefer to work at night because the air is so much cooler and therefore they would consume much less water.

At the end of both films, it is revealed that the engineer designing the new plane and directing the tasks for the other passengers, has never built a life-size plane before in his life. The engineer only works on power model planes. He believes, however, that the principles for model size airplanes are the same for full size airplanes and that they can be built using the same knowledge he already has. The passengers seem to have no choice but to trust his judgment and finish building the plane. The finished plane, in Figure 8, takes off the ground successfully and brings the passengers to safety.

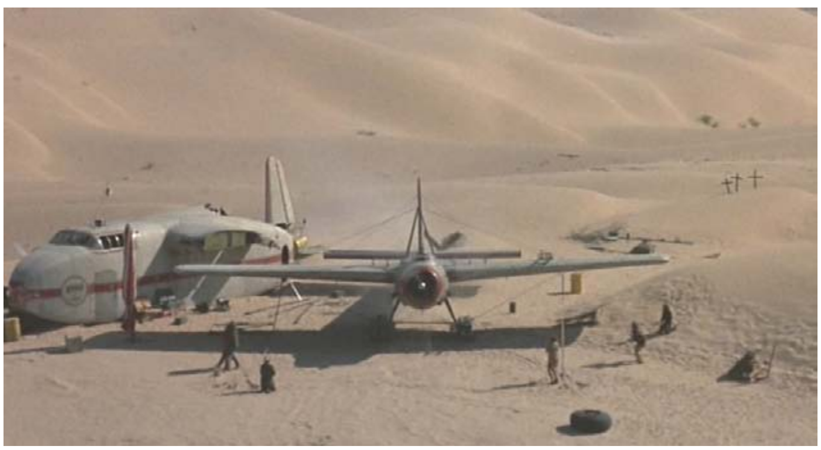

Figure 8: The final plane design.

With both versions of the film “The Flight of the Phoenix” having roughly the same story, there are many differences between them. The first is the differences between the societies, in that there is no presence of women in the older version as well as behavior in the older version that is not accepted in today’s world. The second is the technological differences because the newer version of the film uses more up-to-date, efficient and effective tools to rebuild the plane than the older version does. The third and final difference is the methods of rebuilding the plane. This difference is similar to the technological difference as it is the equipment that is available that will determine how the plane gets rebuilt and at what speed.

Table 2: Summary of the content analysis – key themes

Theme / Film	The First $20 Millions	Flight of the Phoenix (1965/2004)
Types of engineering work represented	-analysis of existing technology -prototype construction -programming -iterative design	-analysis of available materials -not much teamwork in design -other considerations (limited water, food…)
Technology	-cutting edge computer technology	-mostly hand tools (1964) -powered tools (2004)
Creative component	-brainstorming -big change from existing technology	-main idea of constructing new plane from old -innovation in construction process
Success of outcomes	-many prototypes built -project was successful -legal constraints on success	-yes, plane flew
Distinction of engineering	-used existing science and technology -economic constraints emphasized	-no scientists to compare -drawings and calculations -no economic constraints
Presence of female or minority characters	-female artist (not technical) -one of the four team members is a visual minority	-no females or minorities (1965) -one female passenger present on the flight, but did not play a major part
Professional and personal traits of engineers	-teamwork -perseverance -determination -communication during sales pitch to investors	-no teamwork -gave orders -arrogant -national stereotype (German
Depiction of engineers	-inventor and team member -leader -introvert -engaged -knowledgeable	-designer -dictatorial -not fully disclosing his real job experiences
Contributions to society	-more affordable computer -not much about use of computer	-solve problem in different (resource-deprived) environment

Summary

Analysis of the feature films where engineers and their professional activities play key roles is a fertile ground for analysis. Such endeavours, on one hand providing entertainment, are also at the same time expose the general public to the details of engineering profession and results of work done by engineers. While in general it may always be appealing enough to the filmmakers to make an engineer a central character, such portrayal carries potentially a lot of impact.

From the analysis point of view, however, understanding the details of the screen image of an engineer poses is rather challenging. One reason for that is that is that the tools for analysis of visual materials are, on one hand not sufficiently developed yet, and on the other that it is quite interdisciplinary endeavour.

Acknowledgments
The author would like to acknowledge assistance in preparing the paper of Ms. Carly Hensaw, supported by the Outstanding Scholars Program at the University of Windsor.

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