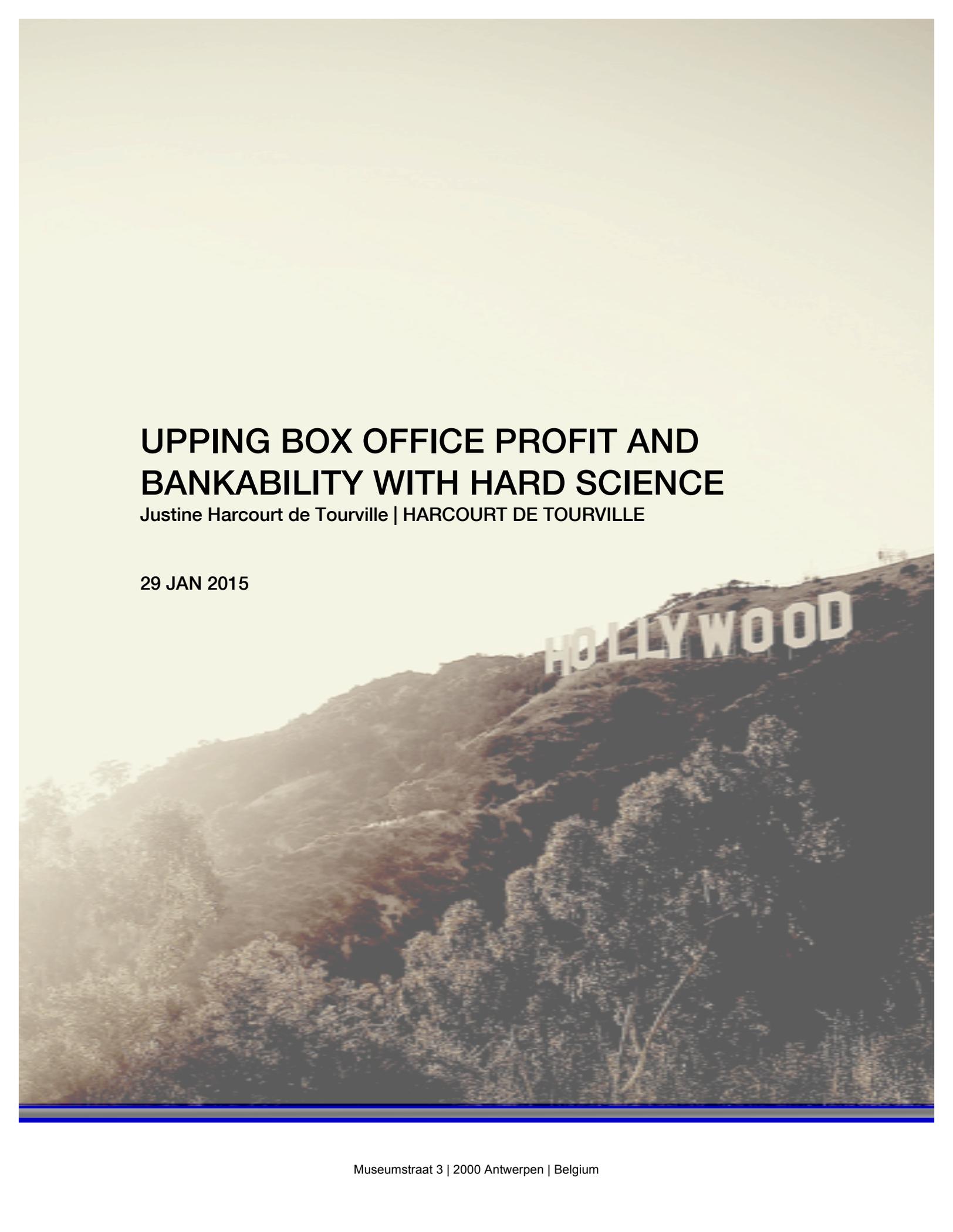


UPPING BOX OFFICE PROFIT AND BANKABILITY WITH HARD SCIENCE

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A photograph of the Hollywood sign on a hillside, with the word 'HOLLYWOOD' in large white letters. The hillside is covered in dense, dark green trees and shrubs. The sky is a pale, hazy yellow, suggesting a bright, overcast day. The overall tone is warm and slightly desaturated.

HOLLYWOOD

DEMAND FOR FILMS CONTINUES

Despite a weak economy in 2013, the global box-office reached a record high of nearly \$36 billion.

According to PriceWaterhouseCoopers, the global box-office will hit \$45.9 billion in 2018, in part due to expanding markets in China, and sustained growth in the US, UK and Japan.

In total, worldwide filmed entertainment revenue is projected to surpass \$100 billion in 2017.

MAKING FILMS REQUIRES SIGNIFICANT RISK

Deciding which script to greenlight carries tremendous financial responsibility—**average cost to produce, make and release a film is \$74.9 million** (MPAA 2011).

Box office disasters can be felt across the industry: movie studio stock prices fall, studio executives and literary agents are fired, actors & directors lose bankability.

Gigli, a 2003 film that cost \$75.6 million to produce, only earned \$7.2 million:

"This is not just ordinary bad ... but a hypnotic, black hole of a movie that sucks reputations, careers and goodwill down its vortex." —Liam Lacey, *The Globe and Mail* of Toronto

The Lone Ranger, which came out ten years later in 2013, had to pare down the budget to be made for \$215 million. It failed miserably garnering scathing reviews (projected loss between \$160-190 million). The chief analyst for Boxoffice.com, Phil Contrino, called it "the kind of bomb that people discuss for years to come."

BLOCKBUSTERS SHOULDER THE BURDEN

Studies by DeVany & Walls have shown:

Overwhelming majority of films are bad bets: 87% lose money.

Few subsidize entire industry: 80% of Hollywood's total profit earned by a mere 6.3% of the films.

THE SCRIPT FACTOR

Many factors can contribute to films failure to earn a profit: Bad acting, bad directing; high production, distribution and/or marketing costs. But one of the better predictive factors to a film's success is the screenplay.

In his book, *Great Flicks: Scientific Studies of Cinematic Creativity and Aesthetics*, Dean Keith Simonton demonstrates statistically how an Oscar-winning screenplay has the highest correlated factor ($r=0.63$) to positive critical evaluations than any other element: directing, acting, picture, song, etc.

In other words, scripts have an inherent predictive value.

FINDING THE SCRIPT

The film industry relies on outdated and error-prone methodology when considering scripts.

In 2012 in the United States, a total of 677 movies were released in theaters (MPAA 2013). That figure compares to—using the best guess of industry insiders—the yearly “25,000 to 40,000 of scripts that filter through the studio acquisition system.” (Scott Meyers 2012)

The predominant method of acquiring a script involves literary agencies; they in turn employ story analysts to read scripts and make recommendations in what is known as "coverage." Scripts with positive coverage are then forwarded to the film studio or production company for consideration.

Whether a script should be pursued starts with a subjective decision based on the story-analyst's personal preferences. Some high-potential scripts never make the cut, while others (which will eventually bomb at the box office) are recommended.

*“The most famous dictum about Hollywood belongs to the screenwriter William Goldman. ‘Nobody knows anything,’ Goldman wrote in Adventures in the Screen Trade ... ‘Not one person in the entire motion picture field knows for a certainty what’s going to work. Every time out it’s a guess.’ One of the highest-grossing movies in history, Raiders of the Lost Ark, was offered to every studio in Hollywood,...and every one of them turned it down except Paramount: ‘Why did Paramount say yes? Because nobody knows anything. And why did all the other studios say no? Because nobody knows anything. And why did Universal, the mightiest studio of all, pass on Star Wars? ... Because nobody, nobody—not now, not ever—knows the least goddamn thing about what is or isn’t going to work at the box office.’” — from Malcolm Gladwell's article "The Formula" in *The New Yorker* 16 October 2006*

HOLLYWOOD'S PATCH

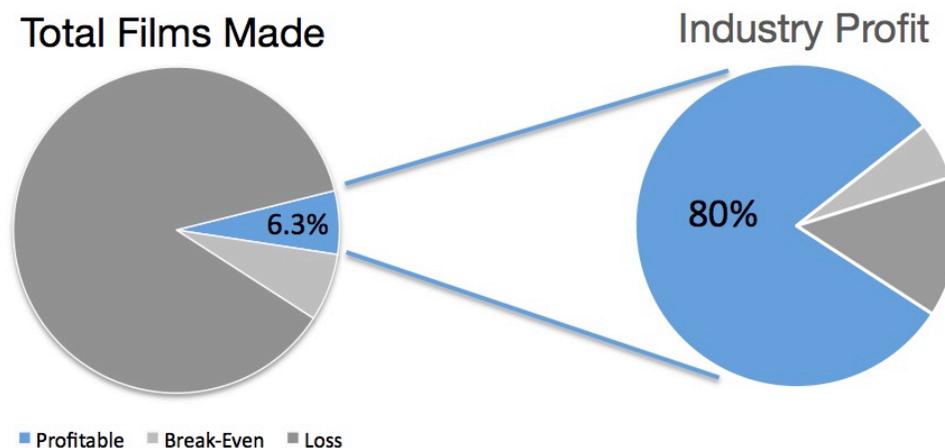
In 2005, an executive with Leonard diCaprio's production company asked development executives about the best script (not in production) they read in the past year. The results were tallied; "The Black List" was launched, creating an internal industry ranking system among those with the expertise—and capacity—to greenlight a script and put it into production.

The Black List has grown in size and reputation (up to 500 executives participate in the tally). It has its own official blog and script-reading service. But as Indiewire.com reports, The Black List's track record is the same as chance: "scripts near the top have been made into terrible movies, and those in the lower reaches have proven to be among the best."

A TECHNOLOGY SOLUTION

Movie star Will Smith is a believer in pattern. According to a MIT paper on prediction and customer wants, Smith methodically reviews the box office top performers to look for patterns and identified trends that helped him choose movies. His strategy paid off. His 2007 film *Hancock*, suffered terrible reviews but still earned \$625 million worldwide. Smith attributed his selecting films according to trends in high box office performance: special effects, special effects with creatures, and special effects with creatures and a love story—and chose films with these elements with grand success. (Davenport and Harris MIT Sloan Review Winter 2009).

Similarly, film production companies & studios need a decision support tool for scripts in the greenlighting stage. In order to capture more of the commercial potential between what is made and what is successful, increasing the odds of an investment return begins with better scripts.



Most academic research focuses on forecasting box-office performance *after* a film has been produced and sunk costs have already been incurred. The industry needs an objective tool to assess a script's commercial potential *prior* to production, investment and sunk costs.

PREDICTIVE SUCCESS

Other creative industries have already looked to predictive intelligence to deal with subjectivity in finding commercially-viable work with success. With revenue diminishing by 50% over the past 15 years, the music industry had to explore other channels to find hit music. MusicXray created a web application that performs multivariate analysis on a song based on elements like beat, melody, harmony, etc. MusicXray can predict hits with 80% accuracy. For the music industry, minimizing the subjective guessing of A&R executives in charge of locating talent, as well as the risk of signing unknown artists, was an economic advantage in lean times.

FIRST ATTEMPTS IN FILM

Epagogix a U.K. company led by Nick Meaney relies on neural networks to make predictive analyses about films that should or should not go into production by looking for script elements that correspond with either success or failure at the box office. They try to assess risk, for example, by looking at factors such as cast and location. **Epagogix has found that A-list actors and directors are for the most part irrelevant to a film's bottom line.**

The highly successful *The Pirates of the Caribbean* and the ill-fated *Lone Ranger* films illustrate this finding. Both films were produced by the same studio (Disney), same director (Gore Verbinski) and boasted the same star (Johnny Depp). While the same writing team from Pirates worked on the Ranger film in the development at the mid-point, the *Lone Ranger* was subjected to numerous and substantial rewrites. The script was considered significantly weaker.

One problem with neural network analysis, however, is the immense need for input. Outcomes are rooted in data generated from screenplays past—problematic for cultural evolution. Data from neural networks, for example, would predict James Bond needs to be a white male to perform successfully at the box office; yet, the black actor Indris Elba is currently the subject of a public petition promoting his selection as the new 007.



LOWERING RISK FOR HIGHER REWARDS

Concentrating exclusively on storyline, with highly accurate predictive success, Nadira Azermai and Bart De Maesschalck founded ScriptBook in Belgium. Spearheading the effort to develop premium decision support for filmmakers, agencies, and studios, ScriptBook uses artificial intelligence, machine learning and natural language processing to remove subjectivity from determining a screenplay's box office potential.

At its core, ScriptBook's predictive system relies on textual information, but integrates screenwriting expertise so it is able to distinguish characteristics between genres. A comedy will not have the same considerations as a drama, nor an indie-cult film the same as an action thriller; creative features are incorporated into the evaluative process. ScriptBook is a product designed to be a tool for the numbers-centric studio heads, in addition to filmmakers.

ANALYSIS

Just as every sector has been challenged by technology, creative industries are not immune to the shifts and change instigated by the digital world.

With funds tightening, studios either cut back or hedge bets with franchises. Either way, investors are increasingly careful about the size and frequency of their investments. Even though formulaic films are viewed as "safe" (the story has already been proven), film franchises steadily decrease their box office return over time (witness: *Indiana Jones*, *Star Trek*, *The Hangover*, and *The Pirates of the Caribbean*)—ultimately leading to "franchise fatigue," which *The Hollywood Reporter* attributes as the source of 2014's poor year in film:

"The only thing the theater business needs is more movies; big four-quadrant movies [meaning appeals to all demographics, ed.], quiet dramas, niche comedies — you name it," says Patrick Corcoran, V.P. of the National Association of Theatre Owners. "There were 45 percent fewer \$100 million-budgeted movies in the summer, and box office was off 15 percent. That's the entire difference between 2013 and 2014." —from Pamela McClintock's article "What's Behind 2014's Box-Office Slide: Franchise Fatigue, Fewer Big Movies" in *The Hollywood Reporter* January 7, 2015

Demand is there, but originality and breadth are missing.

Jeffrey Katzenberg remarked "the movie marketplace is very different today than it was three or four years ago," as he stated in *Variety* magazine, 'It's much more competitive,' in terms of playability, marketability and the availability of release dates." (Graser *Variety* 22 January 2015)

But with 87% of movies failing at the box office, it's easy to understand the reluctance to change—no industry wants to lose *more*.

How can hard science help?

Already in use within the creative-based industries in the form of artificial intelligence and behavior prediction, content-filtering is used by Amazon and Netflix to suggest products, books, and movies based on customers' previous purchases. The music industry has adapted to using predictive intelligence by parsing song components in order to scout artists. Both Will Smith and some major film studios already look at data-driven analyses to forecast box office performance. Data science in film would be neither novel nor unwarranted in this financial climate.

Implementation remains tricky, however. Capitalizing on his background in actuarial science, Nick Meaney has positioned Epagogix as a process that offers film investment risk mitigation with predictions extracted from massive data inputs that can save studios money. Epagogix still has two challenges:

- 1) The inability to forecast future shifts in cultural mores, i.e. the outdated tendency to cast villains who are dark-haired or foreign, for example, will automatically suggest that future films continue to typecast villains along these lines.
- 2) Technological tools feel threatening to Hollywood insiders because it renders hard-earned human expertise and insight obsolete. Bankability, box office points, and perks (like invites to the important parties) stem from having power and knowledge. A tool perceived to eliminate creative—*human*—input, such as pointing out that movies, where the hero-wearing-a-blue shirt has greater box office potential, is going to ruffle creatives, who envision the hero in a red shirt.

Still, studio heads are increasingly engaging Epagogix to find ways to save—often discovering that they will make *more* money *without* a certain mega-star attached, which dispels conventional wisdom that stars are box office draws and essential to movie success.

More friendly to stars and creatives, their teams, and ultimately the studios, ScriptBook focuses on the storytelling metric. Stories—the backbone of a script—are time-tested; the three-act structure is found in the writings of Ancient Greeks and Shakespeare.

Not only are agents given a reprieve from reading scripts late into the night because there is a subjective tool to separate the good from the bad, ScriptBook has the ability to position itself as a support tool to creatives. Since outcomes are derived from creative elements like story structure, language, and genre, ScriptBook generates data unaffected by social mores—and well-before the investment and greenlighting phase, too. Using story alone, ScriptBook can predict that a Hitchcock thriller ranks high, *Gigli* and *The Lone Ranger* do not; an analysis that could have saved hundreds of millions of dollars—and Jennifer Lopez and Johnny Depp some credibility.

A story-based predictive system benefits actors, directors and agents, in addition to film studios, because not only investment loss is averted, but stars' bankability remains intact. ScriptBook steers users away from a bad script allowing an actor or director (agents and production companies) to avoid being attached to box office bombs, or worse seen as overpaid or lackluster. Investors win because bad stories, the best predictor of success, go unmade.

Like Epagogix, ScriptBook's predictive prowess improves with more data, though ScriptBook only requires a simple input—screenplays. ScriptBook's biggest challenge will be developing product awareness and connecting with Hollywood players from their tiny offices in Belgium. Epagogix has done fine from London, proving that there is both a demand and need for big data in the film industry, irrespective of headquarters. Whether creatives embrace either hard-science product, however, remains to be seen.

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THANK YOU.

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