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In Search of Doom. Tracking a Wandering Character Through Data

Abstract

This paper will describe the process of generating a corpus of comics for an examination of the transmedial development of the character Doctor Doom during the period known as ›The Marvel Age‹. It will briefly define what ›The Marvel Age‹ means in these terms, and describe the rationale for choosing which items should be included in the corpus. It will then go into some detail about the use of online comics databases, notably The Grand Comics Database, and describe the many difficulties inherent in the use of a dataset that has been collaboratively generated over a long period of time without clear editorial guidance, and suggest data-cleaning methods by which these issues can be mitigated. Finally, it will discuss how this corpus will be used in future to analyse the progress of Doctor Doom’s characterisation through this period.

1. Introduction

Ever since he was created in *The Fantastic Four* #5 (1962) Doctor Doom has been a recurring character in every aspect of Marvel’s transmedia universes. He has been the main villain in all four live action Fantastic Four films, including the unreleased Roger Corman movie (1994), featured in almost every Marvel cartoon series from *The Marvel Superheroes* (1966) to the current *Avengers Assemble* (2013), and has appeared in video games, trading cards, toy ranges, and even hip-hop tracks. In the core Marvel comics universe he has appeared in over a hundred separate series, but until the recent *Infamous Iron Man* series



(2016), he has only ever headlined one, short-lived, ongoing series of his own, set in the ›Marvel 2099‹ universe (2013). My research examines the idea that the shared ›universe‹ of Marvel comics in the so-called ›Marvel Age‹ period 1961–1987 was an early example of the shared-world, multiple author storytelling which has become the source material for the hugely successful ›Marvel Cinematic Universe‹ of the 21st century.

As part of this I propose Doctor Doom as a key case study, very different from the more usual subjects such as Batman or Spider-man, in that ›his‹ largely unsupervised transmedial and transtextual wandering through Marvel storyworld(s) making ›him‹ an excellent example of what Jan-Noël Thon has described as a »Global Transmedia Character Network« (2018: n.pag.)—an assemblage of character-versions that can be constructed from single and serial works across media and media types. My research will examine how Doctor Doom’s fictional personality developed in these conditions by assessing its coherence over different media through different periods of history, and under different creators, through an analysis of every authored appearance made by the character during this period. In order to conduct such an investigation, a clearly identified corpus of texts is required, and this paper will therefore describe the process of defining, collecting, and investigating such a corpus.

2. Defining the Corpus

It is important to note that many of the decisions made about which texts to include within my corpus were based on the needs of my own research into Doctor Doom’s emergence as a transmedia character during the period 1961 to 1987. The term ›text‹ was used in the literary theory sense to mean any object that can be ›read‹ (interpreted) in order to receive a meaning or a message, with a specific focus on texts with a pre-determined (›authored‹) narrative such as a comic, television series, or radio show (cf. EAGLETON 1996). Other items, such as clothing, dolls, or branded gifts, would, of course, be vitally important in a wider assessment of Doom’s place in the history of transmedia, but their lack of a pre-authored narrative (as opposed to ›narratives‹ devised ad hoc in play by their individual owners) meant that they could not be considered as part of the character’s development within any of Marvel’s own storyworlds.

The process of selecting texts was similarly restricted by the date of publication for comics, as well as by the date of release or broadcast for other texts. My research focuses on Doctor Doom’s presence during what I have termed ›The Marvel Age‹ elsewhere—a period characterised by the growth and eventual decline of Marvel’s pre-eminence, commercially and creatively, within the American superhero comics market, bookended by the editorial reigns of Stan Lee and Jim Shooter (cf. HIBBETT 2018). According to this definition, ›The Marvel Age‹ begins with the first modern Marvel Superhero comic, *The Fantastic Four* #1, cover dated November 1961 and edited by Stan Lee, and ends



with the last month of comics to uniformly name Jim Shooter as Editor-In-Chief, i.e. those cover dated October 1987.¹

Stating the cover date, rather than the actual date of publication is necessary because the two are not the same, and the difference in time between them may vary. The standard practice in magazine publishing is to use a cover date that is some weeks or months ahead of the actual on-sale date, in theory to give the publication a longer shelf-life before the news vendor removes it from sale (cf. ADAMS 1990). During the 1960s, US comics publishers tended to use a cover date two to three months ahead of the on-sale date (cf. LEVITZ 2010). In order to ensure that other media items were available to consumers at the same time as the comics in the corpus, any text published, broadcast, or otherwise issued between August 1961 and July 1987 was thus included.

An apparently obvious criterion for inclusion in the corpus is that all texts should feature an appearance of Doctor Doom, although this was not quite as straightforward as it may appear at first. The original approach for selection was to only include appearances of Doctor Doom within the contemporary timeline of the story, excluding non-narrative ›pin-up pages‹, flashbacks, or other representations, such as on a television screen in *The Fantastic Four* #18 (1963, cf. fig. 1) or in a gallery of statues in *The Fantastic Four* #10 (1963).



Fig. 1:
The Fantastic Four watch Doctor Doom on television in *Fantastic Four* #18

¹ For reference, Mike Voiles informative online database Mike's Amazing World serves as a good starting point, cf. <http://www.mikesamazingworld.com/mikes/features/comic.php?comid=40952> [accessed April 17, 2018] and <http://www.mikesamazingworld.com/mikes/features/comic.php?comid=48885> [accessed April 18, 2018].



However, it soon became clear during the selection process that, although these ›non-actual‹ appearances or representations are not part of Doom’s own fictional ›life experience‹, they do provide evidence of his existence within the storyworld at that time. They would thus need to be examined as part of any analysis of the character’s transmediality, and so all texts with any mentions or appearance, however slight, were included.

An important caveat to the above is that all the items included were either published or licensed by Marvel. Images of Doom appeared in numerous fanzines and underground publications during this period, and although an analysis of the character’s existence in such publications would be important for a broader investigation of the transmedial history during this period, these images were used as illustrations, rather than for storytelling, and thus did not contribute to any form of storyworld narrative. They were consequently excluded from the corpus.

During the 1970s, Marvel themselves published a range of reprint series and collected editions, such as *Origins of Marvel Comics* (LEE 1974), which gave new readers an opportunity to catch up with older stories as continuity grew in importance for the fictional universe (cf. HOWE 2004). These collections did not, however, include any new material as part of the narrative, and so they were excluded from the corpus. Foreign editions and translations of the stories were also excluded for the same reason. Very occasionally, foreign publishers would make amendments to the reprinted stories. For example, Oldhams, the publishers of *Fantastic* in the UK, would make changes to costumes in order to maintain the continuity of their own, slightly different, publishing timeline (cf. STRINGER 2007)—but otherwise these were simply reprints and thus excluded.

The final inclusion criteria for texts to be included in the corpus were thus:

1. Part of a pre-authored narrative
2. Appeared during ›The Marvel Age‹
3. Featured Doctor Doom
4. Published or licensed by Marvel
5. Not a reprint or translation

3. Collecting the Corpus

The vast majority of Doctor Doom’s appearances during this period were in comics, and although reading through 25 years of Marvel Comics might be quite enjoyable, it would probably increase the length of my PhD by several years. Luckily for me, several groups had already catalogued these comics and made the results of their research publicly available and, for the most part, searchable.



Several Doctor Doom fan sites exist online, such as Fuck Yeah Dr Doom,² Ask Doctor Doom,³ and Doomfans,⁴ but for the most part these concentrate purely on humorous memes of the character, links to other (mostly defunct) supervillain sites, or lists of the authors' favourite Doctor Doom stories. One fan site, The Latverian Embassy does feature a chronological list of the character's appearances,⁵ but it has not been updated for at least eight years. This need not have been a problem, as the texts required for this corpus are much older, but initial investigations showed that the list drawn up by the site administrator was only partially complete. When comparing the site's list of 1960s comics to other, more complete reference sites (detailed below) it was found to have missed 28% (10 out of 36) of Doctor Doom's appearances in that decade alone.

Online comics databases proved to be a much more useful source of information. These are websites which draw on databases, rather than being purely textual, offering quantitative as well as qualitative information. The content of these databases varies, but it would generally include the title, publication dates, story titles, creators, publishing companies, covers, character appearances, and a brief synopsis of each publication. Unlike a fan site, these online databases contain information about thousands of comics, usually aiming to cover all those published within its historical remit, rather than focusing on a few favourites as fan sites tend to. The Marvel Chronology Project has a mission to place every story from Marvel comics into an in-universe chronological order.⁶ This means that it places, for instance, the six issue mini-series *Books Of Doom* (2007) first in a list of Doom appearances, interspersed with flashbacks to sections from other stories such as *Fantastic Four Annual* #2 (1964) and *Marvel Superheroes* #20 (1969).

This concentration on chronology within the Marvel comics diegesis makes The Marvel Chronology Project unique amongst comics database, which otherwise focus on the order of publication. It also differs from other large sites by not allowing users to directly edit or update the underlying database which generates its content. Other major sites link directly to their databases, so that the most up to date information is instantly available and, in most cases, users can perform simple queries in order to access the specific information they are looking for. The Marvel Chronology Project does not allow this level of access, presenting static reports with the option to email the site administrator, Russ Chappell, to suggest amendments or to request specific, limited, additional information. This latter function has been utilised by other research projects looking at the interactions between characters (cf. ALBERICH/ROSSELLO/MIRO-JULIA 2002), but the lack of accessibility to the main dataset, and

² <http://fuckyeahdrdoom.tumblr.com/?og=1> [accessed September 2, 2017].

³ <http://ask-doctor-doom.tumblr.com/?og=1> [accessed September 2, 2017].

⁴ <https://doomfans.dreamwidth.org/> [accessed September 2, 2017].

⁵ <http://www.angelfire.com/zine2/drdoom/> [accessed 17 November, 2017].

⁶ <http://www.chronologyproject.com/> [accessed January 7, 2017].



the absence of open data about publication dates, severely limited its usefulness for this project.

The other major online databases are community-based and, to different degrees, allow direct access to their data so that simple queries can be used to extract customised datasets. They also use online data entry forms that allow anybody to suggest changes or updates to the data, although they are not completely ›open‹ systems and still require moderator approval before going live. This ›peer review‹ of the data makes it, theoretically, more comprehensive and reliable than those set up by single enthusiasts, although it is still possible for different biases to arise between communities. For instance, conventions might develop differently as to whether background glimpses of characters should be included, or whether to categorise alternate universe versions as the same character.

Four of these databases were consulted, each with slight differences in the data they held. The oldest of these was The Grand Comics Database,⁷ which was set up as a successor to the paper-based *Amateur Press Alliance for Indexing* (BOTTORFF 2001). The Grand Comics Database allows users to download their entire database as an SQL database file. It is a relational database containing all of their current data in a format which can be uploaded to the user's own computer server, so that new queries can be run, and reports created, without needing internet access or further interaction with the site owners (cf. DALE 1986). This made it a much more flexible tool than its competitors, which allowed querying only via API (Application Programming Interface), a means of giving users the ability to pass simple queries to the online database and receive datasets in a format which can then be used to display customised information (cf. CHRISTENSSON 2016).

One such is The Comic Book Database,⁸ which has been described as cataloguing »every comic book, graphic novel, manga, illustrator, publisher, writer, and character [...] ever« (HOOVER 2013: n.pag.). It claims to be »the largest database of its kind«, while its competitor Comic Vine similarly calls itself »the largest comic database online«.⁹ Comic Vine, first established in 2006, requires registration to allow queries and edits, and its customisable data outputs are formatted in a way that makes it more difficult to ›scrape‹ data. ›Data scraping‹ is a way of extracting data from websites or legacy computer systems, sometimes with automatic programs but often by simple human interaction, such as copying information from a webpage into a text editor and then manipulating it into a format whereby it can be used in a database (cf. CHRISTENSSON 2011). This was the main method used to extract data from Comic Vine, The Comic Book Database, and also The Marvel Database,¹⁰ another online system similar to the others. Data scraping provided all of the data required without the need for setting up complex API queries or complying with

⁷ <https://www.comics.org/> [accessed January 10, 2017].

⁸ <http://www.comicbookdb.com/> [accessed January 10, 2017].

⁹ <http://comicvine.gamespot.com> [accessed January 10, 2017].

¹⁰ http://marvel.wikia.com/wiki/Marvel_Database [accessed January 10, 2017].



the limited number of allowable data interrogations (which these sites enforced).

By using this methodology, basic listings of comics featuring Doctor Doom were extracted from The Comic Book Database and The Marvel Database, although the formatting of information on Comic Vine meant that very little was practically available from there. In all of these cases, the data extracted was less rich and less adaptable than that which was available by uploading The Grand Comics Database SQL file to a personal server. The eventual strategy was then to use The Grand Comics Database as the base of the corpus, to check it against the less rich datasets scraped from The Comic Book Database, Marvel Database, and (to a much lesser extent) the Marvel Chronology Project, with Comic Vine used as a tool for manually checking individual cases. In this way, the biases inherent in using the results from any single community were avoided, while also increasing the likelihood of including every relevant appearance.

This is a similar approach to that used by Bart Beaty's *What Were Comics?*,¹¹ a database-driven project sponsored by the Social Sciences and Humanities Research Council of Canada which seeks to develop a data-driven history of the American comic book by indexing formal elements such as story length, page layout, and creator credits in a database structure. *What Were Comics?* also uses The Grand Comics Database as its main data source, and then ratifies the dataset using two other sources—in their case *Overstreet Price Guide*, and *mycomicshop.com*. Their approach differs from the one used for this project in that they require a comic to appear in all three datasets before including it in their corpus, whereas here it was required to only appear in one. This was to ensure that every possible appearance of Doctor Doom was included, in contrast to the objective of *What Were Comics?*, which was to generate a much more general random sample of 2% of all comics published between 1934 and 2014.

When The Grand Comics Database was queried using the previously defined inclusion criteria, 243 comics were discovered which, apparently, featured Doctor Doom during this period. The next stage was to link this database to those scraped from Comic Book Database and Marvel Database to see if any stories had been missed. But before this could be done, a great deal of data cleaning was required, a process whereby datasets are cleaned of any errors, and coding schemes are standardised to enable linkage and analysis (cf. VAN DEN BROECK et al. 2005).

The databases used in this research had many issues with data being recorded in non-uniform ways. There were several differences, for instance, between the way series titles were recorded. The use of the definite article was not uniform, within databases or across them, so that some databases referred to a series as (for example) *The Fantastic Four* while others referred to it as just *Fantastic Four*, making linking databases by name very difficult. Some series

¹¹ <http://www.whatwerecomics.com/> [accessed May 14, 2018].



also changed names over time, such as *The X-Men* becoming *The Uncanny X-Men* and then *New X-Men*, and each dataset dealt with this in a different way, too. Similar problems occurred around the use of hyphens, volume numbers, and how to catalogue special editions and annuals.

The data cleaning policy used was to edit the information in all datasets to conform to the conventions of The Grand Comics Database, using Comics Vine as an independent adjudicator where The Grand Comics Database had no data available. This was mostly done by hand, and took considerable time, but when it was finished, the datasets could be linked together, revealing 22 stories listed in other databases as featuring Doctor Doom that were not present in The Grand Comics Database. However, further checks reduced this number to three, as, on closer examination, the other 19 cases were all either mistakes, where Doom did not appear at all, or incorrectly listed reprints.

The remaining three cases definitely featured Doctor Doom, including a very enjoyable guest appearance in *Marvel Comics Super Special* starring the band Kiss (1977, cf. fig. 2). Hence, these were added to the first draft of the actual corpus, bringing it to a grand total of 246 comic books.



Fig. 2:
Doctor Doom battles Kiss in *Marvel Comics Super Special* #1

My overall corpus was not restricted to comic books, however, and further investigations were required to identify other texts featuring Doctor Doom during this period. This process was primarily based on internet searches using Google. A variety of search terms were used, combining the variant versions



of the character's name (›Doctor Doom‹, ›Dr Doom‹, ›Dr. Doom‹ and ›Victor Von Doom‹) with words describing media types (such as ›television‹, ›radio‹, ›film‹ and so forth). Similar searches were run using variations of ›Fantastic Four‹, under the assumption that any media featuring Marvel's ›first family‹ might also feature their archenemy.

Other items took a little more digging. Doom's appearance in *The Marvel Superheroes*-cartoon was widely known, but there was only one mention on a single blog of a long deleted, live action segment featuring the character created by WNAC-TV in Boston, Massachusetts, to promote the series.¹² Several texts were only discovered by accident while researching others. For example, the Power Records-album *The Way It Began* (1974, cf. fig. 3)—an audio adaptation of *The Fantastic Four* #126 in which Doctor Doom briefly appears—was discovered when it appeared in search results for an episode of the similarly titled Hanna Barbera-cartoon episode »The Way It All Began« (1967).

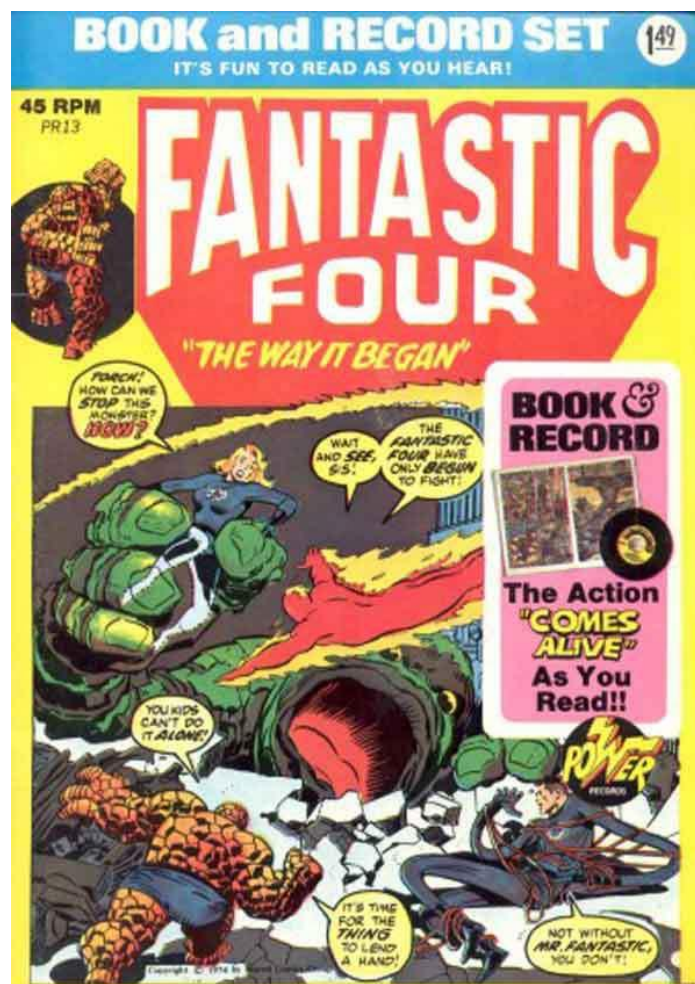


Fig. 3:
Power Records' book and record »The Way It All Began«

¹² [https://lostmediawiki.com/The_Marvel_Super_Heroes_\(lost_live-action_segments_from_WNAC-TV_in_Boston;_1966\)](https://lostmediawiki.com/The_Marvel_Super_Heroes_(lost_live-action_segments_from_WNAC-TV_in_Boston;_1966)) [accessed May 13, 2018].



In this way, a total of 23 additional texts have (so far) been discovered, from the obvious, such as episodes of the two *Fantastic Four*-cartoon series, to the obscure, like the Bill Murray-starring *The Fantastic Four Radio Show* (1975). The less straightforward and methodical nature of this part of the research meant that the process of updating the corpus would of necessity require a flexible cataloguing methodology beyond that supplied by the basic datasets and system architecture downloaded from The Grand Comics Database. In order to create a dynamic, updatable system of data collection an online content management system was developed. It was based on the .SQL file from The Grand Comics Database, with additional fields and tables added to suit the wider texts that would be entered.

Data entry forms were built using the PHP language, originally developed by Rasmus Lerdorf in 1994.¹³ This allowed the system architecture to be easily customised and for data to be updated remotely whenever new facts came to light. For instance, whenever a reading of the actual comics showed that incorrect credits had been entered in The Grand Comics Database it could be easily changed by logging into the online repository. Similarly, newly discovered appearances of Doctor Doom could be added to the corpus quickly by using the data entry forms. Another benefit of this 'bespoke' system was that it meant the system could be developed further to meet needs identified during the actual analysis of the corpus.

4. Cleaning the Data

Upon examining the actual texts identified, it quickly became clear that just because The Grand Comics Database listed a comic as featuring Doctor Doom, it did not necessarily mean that the character was featured within the narrative itself. The different criteria for inclusion used by the many contributors to the database meant that, occasionally, comics would appear in the dataset that did not fit my own criteria, despite having passed through the initial data checking. *Journey Into Mystery* #125 (1966) is a good example of this issue. According to The Grand Comics Database (though to none of the other databases) it does feature an appearance by Doctor Doom, but upon reading the text I found that he is entirely missing from the story. Most of my reading was done via the Marvel Unlimited platform,¹⁴ an App which gives subscribers access to over 20,000 digital comics, scanned from Marvel's archives. This is an excellent resource, but it does have one significant limitation in that it generally only contains story pages. Sometimes letters pages are included, but never anything else, such as adverts or additional editorial content. After extensive internet searching, a scanned copy of the entire issue was tracked down, which

¹³ Cf. <http://php.net/manual/en/history.php.php> [accessed February 9, 2018].

¹⁴ <https://marvel.com/comics/unlimited> [accessed July 12, 2018].



showed that Doctor Doom *did* appear, in an advert for an Incredible Hulk-sweatshirt (cf. fig. 4)



Fig. 4:
Advertisement for Incredible Hulk-sweatshirts

This short strip may or may not take place within the main storyworld of Marvel's comics output, but is clearly a pre-authored, narrative-based version of Doctor Doom, and so should be included within my analysis. Interestingly, this was also not only the character's first use in advertising, but was also his first appearance written by somebody other than Stan Lee—Marie Severin. As the heading of the ad itself said, »this time you can't blame Stan!«

Another example could be found in *The Fantastic Four* #15 (1963, cf. fig. 5), which featured a ›next time‹ teaser for the following issue, heralding the return of Doom.

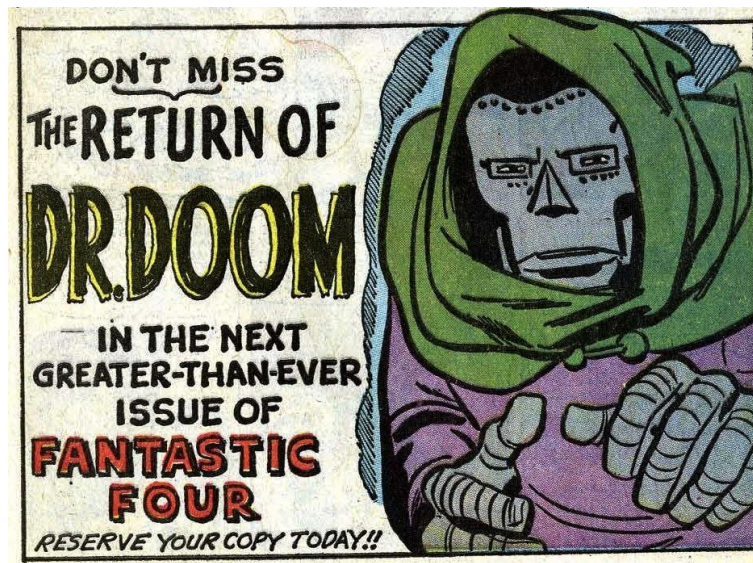


Fig. 5:

»Next time« teaser featuring Doctor Doom in *The Fantastic Four* #15

This teaser was not recorded by any database and was only spotted by chance as part of an internet search for other texts. These examples highlight the importance of using multiple data sources, as well as the benefits of a flexible dataset which can be updated in tandem with an issue by issue examination of the texts.

The lack of consistency with regards to logging advertisements caused other problems. As part of the research process, I attempted to create a graph comparing Doom's appearances to those of other villains (cf. fig. 6), and was surprised to find that it showed The Red Skull appearing in almost every single Marvel comic in either July or August 1976.

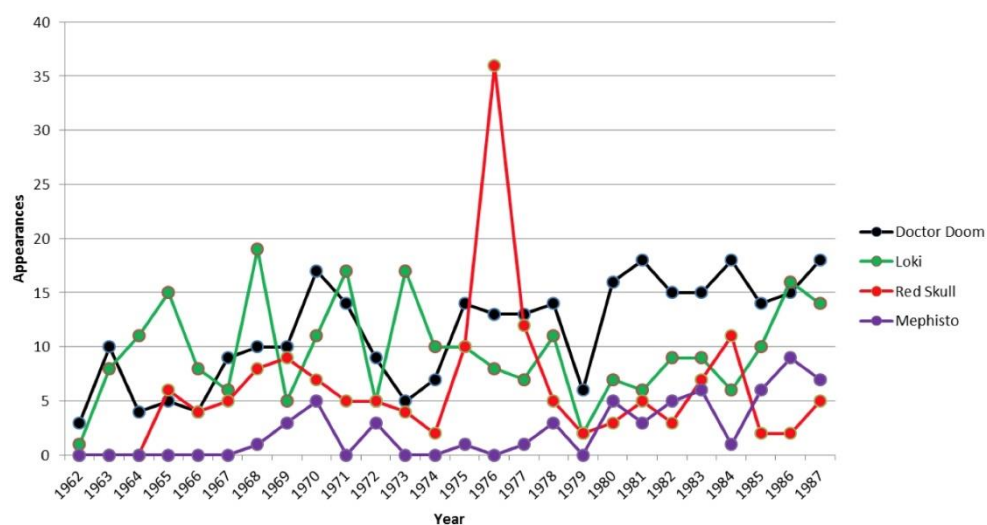


Fig. 6:

Graph showing appearances of super-villains in Marvel Comics by year



Further research showed that this was due to an advertisement in that month's comics for the fast food snack Hostess Twinkies, featuring Captain America and The Red Skull (cf. ROACH 2007, fig. 7). Adverts such as these appeared on a regular basis, with the same strip being featured in most comics published in a given month. Usually, these were not added to any of the databases, but, clearly, at some point a contributor had decided to enter this particular advertisement into the database every single time it had appeared. This demonstrated the importance of thoroughly cleaning the data before attempting to undertake a quantitative analysis.



Fig. 7:
Twinkies advertisement featuring Captain America and The Red Skull



Reading the texts also unearthed further narrative appearances that were not listed in any of the databases. For instance, the splash page of *The Avengers* #25 (1966) featured Doctor Doom and appeared to be a continuation from a previous issue which was not included in the database. A check of *The Avengers* #24 (1966) showed that Doctor Doom *did* appear, in silhouette, in the final panel of the issue (cf. fig. 8), and so the issue was added to the corpus. This demonstrates how useful a chronological reading can be in identifying such additional texts.



Fig. 8:
Doctor Doom appears in silhouette on the final page of *Avengers* #24

As I read my way through the corpus the analysis of each issue was uploaded to a blog, *Marvel Age Doom*.¹⁵ The use of a blog had three main purposes: to encourage the progress of the textual analysis by setting weekly deadlines for new updates; to allow the analysis of individual issues to be directly linked to the corpus database in order to simplify data searches; and to disseminate the work, encouraging others to engage with it and offer thoughts and criticism.

In order for this dissemination to succeed, a twitter account—@marvelagedoom—was set up to announce the upload of a new blog, which was promoted at conferences and other networking events for comics scholars and fans. However, the most effective way of drawing attention to the blog proved to be using the twitter account to ask questions of the comics community. One particularly effective instance of this was regarding the previously mentioned ›next time‹ advertisement in *The Fantastic Four* #15.

The image did not appear to have been drawn by Jack Kirby, but I was unable to find any information about who else it might have been—until I sent out a tweet asking for help. This request was retweeted by several people who

¹⁵ <http://www.mjhibbett.com/doom/> [accessed 1 May, 2018].



follow the account and was soon mentioned on the Facebook group London Loves Comics.¹⁶ A member of this group identified a blog entry from several years ago which discussed the image and suggested that it had been drawn by Sol Brodsky (cf. CAPUTO 2013). Thus, not only was the twitter account a means of gathering information, it also disseminated the research to a wider audience and introduced me to new resources.

The blog itself was not only used for the analysis of the individual issues, but also for the ongoing curation of a view of Doctor Doom's development over time. By depositing the findings on individual comics in a database, however, I hope to be able to conduct what Franco Moretti calls a ›distant reading‹, where, by stepping back from individual texts, one is able to »focus on units that are much smaller or much larger than the text: devices, themes, tropes—or genres and systems« (MORETTI 2000: 57).

This will require a completed, checked, cleaned, and validated database, which will not be available until the end of the reading process. However, when this is done, it will enable the running of quantitative analyses of the entire corpus with the added ability to link to individual qualitative appraisals of every comic, cartoon, advertisement, radio show, or other media format in which Doctor Doom appeared during this time period.

5. Conclusion

The definition of clear selection criteria allowed an initial dataset to be created, using various methods of data extraction, which purported to feature every appearance by Doctor Doom in comics during ›The Marvel Age‹. Other media items were added through a process of internet searches and further research. This dataset was then checked through a process of a chronological reading which was enabled by the development of an online database and linked to an ongoing blog. This not only facilitated further data cleaning but also assisted in the discovery of additional items. In addition, the dissemination of the research via a blog and twitter account encouraged the assistance of fans and academics as the project progressed.

From this research, it is clear that although online databases such as The Grand Comics Database can be very useful for transmedia research they must, at all times, be used with caution, applying stringent cleaning procedures before any conclusions can be drawn. Even when a corpus is identified in this manner it must be recognised that it is an iterative process, with the distinct possibilities of new items appearing, and others being ruled out.

Conducting this process has been vital to my own research, drawing attention to items which I was previously unaware of, and illustrating Doctor Doom's wandering journey through Marvel's various storyworlds. The next stage of the project, the analysis of the corpus, is ongoing and available to view

¹⁶ <https://www.facebook.com/groups/1451400028437800/> [accessed 15 June, 2018].



at www.mjhibbett.com/doom, with all comments and ideas actively encouraged on the blog.

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