

Scientific Progress Goes ‘Boink’:

A systematic study in page layout of Calvin and Hobbes



Page layout in Calvin and Hobbes

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Abstract

Page layout is a very important aspect of comics that can make comics more or less creative. However, in the course of time, artists who drew comic strips for newspapers got restricted in designing their own layout. As one of the first, Bill Watterson stood up against these determinations and gained freedom to fully and individually design the layout of his newspaper Sunday comic strip '*Calvin and Hobbes*'. In this study, it was hypothesized that the layout of these *Calvin and Hobbes* Sunday strips changed over time, especially after Watterson gained more artistic freedom. In order to investigate this, the entire collection of *Calvin and Hobbes* newspaper strips (1985-1995), both dailies and Sundays, was coded and analyzed. On the whole, an increase in the use of decorative page layout features like whole row-, inset- and wordless panels, was found, especially after Watterson's sabbatical. Also, more decorative gutters like 'overlap' or 'no gutter' were observed to be used more after his sabbatical. In addition, evidence was found that the reading direction in *Calvin and Hobbes* deviated more and more from the Z-path, suggesting a more decorative layout. Overall, the results of this study support other studies' assumptions of the existence of different visual cultures and languages.

Keywords: visual language, page layout, newspaper comics, *Calvin and Hobbes*, Bill Watterson, corpus analysis

Contents ABSTRACT

.....	3
CONTENTS	4
INTRODUCTION	8
THE HISTORY OF THE COMIC STRIP	8
<i>The first comic strip.</i>	9
<i>The Katzenjammer Kids.</i>	10
<i>Little Nemo in Slumberland.</i>	11
<i>Krazy Kat.</i>	12
<i>Shrinking space in newspapers.</i>	13
BILL WATTERSON: A REVOLUTIONARY	14
CREATIVE LAYOUTS	15
IN THE FIELD OF PAGE LAYOUT	17
<i>Cross-cultural differences in page layout.</i>	17
<i>Page layout over time</i>	18
THIS STUDY	19
<i>Directionality.</i>	20
<i>Panel arrangements.</i>	20
<i>Gutter space.</i>	21
<i>Panel shape.</i>	21
METHODS	21
MATERIALS	21
AREAS OF ANALYSIS	21
<i>Directionality.</i>	22
<i>Panel arrangements.</i>	22
<i>Gutter space.</i>	23
<i>Panel shapes.</i>	25
DATA ANALYSIS	26
RESULTS	28
DIRECTIONALITY	30
PANEL ARRANGEMENT	32
GUTTER	34
PANEL SHAPE	35

<i>Panel shape.</i>	35
<i>Other panel shape features.</i>	37
DISCUSSION	38
DIRECTIONALITY	38
PANEL ARRANGEMENT	39
GUTTER TYPE	40
PANEL SHAPE	41
CONCLUDING	41
REFERENCES	43
APPENDIX	45
APPENDIX 1: CALVIN AND HOBBS CODING GUIDE FOR PAGE LAYOUT	45

PAGE LAYOUT IN CALVIN AND HOBBS 6 *“It’s a magical world, Hobbes, ol’ buddy.
Let’s go exploring!”*

- Calvin

Introduction

One very important feature of comics is page layout (Harvey, 1994; Pederson & Cohn, 2016). With a decorative layout, comic artists can influence readers in what they focus on and for how long (Harvey, 1994). This 'customizing' by creative panel arrangements is very common in superhero comics (Pederson & Cohn, 2016), but in newspapers, it is a bit more complicated. Because many newspapers publish the same comic strips, all those strips should be rearrangeable to fit the constraints of every newspaper's page layouts more broadly. Artists are therefore restricted to certain layout choices. However, it has not always been this way. At the time of the first comic strips around the 1900s, artists were granted freedom to design a full-page comic exactly the way they wanted (Gordon, 1998). As comic strips gained more popularity and spread over newspapers all throughout America, this artistic freedom was restricted by syndicates (Watterson, 1995; 2001). Although many artists just accepted it as something they had to deal with, there was one man who stood up against the established order: Bill Watterson. He fought hard for his creation '*Calvin and Hobbes*' and gained freedom to design his strips the way wanted them to be (Watterson, 1995; 2001). This paper is about him and about the page layout of *Calvin and Hobbes*. But, before looking at *Calvin and Hobbes* more closely, it is necessary to explore the history of newspaper comics and their layout.

The History of the Comic Strip

Before the time the first comic strip appeared in a newspaper, there were illustrated humor magazines containing political and social cartoons (Gordon, 1998). Initially, the one-panel cartoon was a standard in these magazines, but in the mid-1890s Howarth as one of the first began drawing his strips with sequential narratives and in separated panels (Gordon, 1998, combining them with conventions adopted from the German artist Busch, who placed text underneath the images (Gordon, 1998). Because of this division of the story over multiple panels, it was now possible to mark time changes in a strip and to draw real sequences. These early comic strips set the stage for developments of character continuity, the regular word balloon use, and a place and title in a medium with a large, daily or weekly reach (Gordon, 1998).

In the meantime, newspapers were developing as well. The use of illustrated material became more usual. In 1889, the New York World even added a one-page illustrated humor section to their Sunday edition: '*The World's Funny Side*' (Gordon, 1998). Apart from the colored plates, this page looked comparable to the pages in the humor magazines (Gordon,

1998). Later on, in 1894, the World started to publish its Sunday edition in color (Gordon, 1998).

The first comic strip.

About this time, Richard Felton Outcault joined the New York World, which published Outcault's '*Hogan's Alley*' (Gordon, 1998; Boyd, 2010). It is this strip that is generally acknowledged as the first comic strip in a newspaper (Gordon, 1998; Hemels, 2006; Ndalianis, 2011; Jackson, 2016). What made this comic so special was that it was different in two ways. First of all, '*Hogan's Alley*' was the first strip containing continuing characters (Gordon, 1998; Boyd, 2010; Jackson, 2016). Secondly, one of its characters, The Yellow Kid, was the first character to become enormously popular among the people (Gordon, 1998; Boyd, 2010; Jackson, 2016).



Figure 1. The very first *Hogan's Alley* comic strip, published May 5, 1895 (Outcault, 1895).

It was not long before the commercialized world noticed Outcault's success. The New York World tried to use The Yellow Kid's popularity by depicting him almost weekly in

Sunday edition advertisements (Gordon, 1998). And not without success: '*Hogan's Alley's*' enormous popularity showed that comic characters had the potential to increase the number of sold newspapers: compared to 1891, there was an increase in circulation of the New York World's Sunday edition of almost a hundred percent in 1895 (Gordon, 1998).

Because publishers of newspapers saw opportunities to make money, a real war started between the Joseph Pulitzer of the New York World and William Randolph Hearst of the New York Journal (Harvey, 1994; Gordon, 1998). For the first time in history, artists had shown that comic strip characters could sell newspapers and with that, a new market was born. Artists at that time did not know how eventually this commercialism would influence the way comic strips' layout should be structured. However, before jumping right into these developments, it is good to look at the layouts of some prominent comic strips at the time before the imposed layout restrictions. Comics from this 'golden era' in particular have been a source of inspiration for Bill Watterson's layouts. In order to say something about Watterson's layout, it is therefore important to look at the layouts of these classic comic strips: what did artists do with the full or half page freedom they had? In the next sections, comics of three artists will be pointed out: *The Katzenjammer Kids*, *Little Nemo in Slumberland* and *Krazy Kat*.

The Katzenjammer Kids.

Because of the success with *The Yellow Kid*, the Journal continued to publish its comic section. With Rudolph Dirks' '*The Katzenjammer Kids*', published first on December 12, 1897, a new giant hit was born (Harvey, 1994; Gordon, 1998). Furthermore, this strip became so popular, that it is regarded as one of the most successful comic strips of all time (Gordon, 1998).

Although this strip is also considered a comic strip, in its early years it did not have much characteristics of its genre apart from the continuing characters (Gordon, 1998). Concerning the layout, it was different than its predecessor '*Hogan's Alley*', which was usually drawn as a colored full-page one-panel comic strip. '*The Katzenjammer Kids*' started off with a comic strip containing six unframed sequences (Gordon, 1998). Because Dirks had chosen not to use text, action was only depicted with images. However, he did use some text underneath his panels once in a while in the strip's first year (Gordon, 1998). Around the turn of the century, the way comics were drawn was changing. Less and less, the old-fashioned pantomime panels with rhyming texts underneath them were used and artists started to develop a real comic strip style with continuing characters, word balloons and the use of panels (Gordon, 1998). Styles like Rudolph Dirks used to draw their comic strips became the standard art form and comics started to appear in newspapers throughout the whole of America (Gordon, 1998).

With his developments, Dirks really set the tone for a whole new way of drawing comics in sequences. Nowadays, most comics are drawn this way, but it was not very common at that time. This way of drawing has been adopted by many artists, including Bill Watterson.

Little Nemo in Slumberland.

Although many artists' page layouts were developing, there was one man who stood out: Winsor McCay (Harvey, 1994; Smolderen, 2014). It is stated that he was unequalled and, because of that, there was no one able to imitate his work (Harvey, 1994). His comic strip '*Little Nemo in Slumberland*' in 1905 was different from all comic strips that had been created before (Harvey, 1994; Robb, 2007).

The most characteristic feature of McCay's strips was the layout. Instead of organizing his one-page strip in ordinary panels, from the second strip on, he left the traditional rectangular grid (four panels with a + shape gutter separating them) of comic panels and started to draw panels as he liked them in his story (Harvey, 1994). Since there has not been a study yet into *Little Nemo's* page layout, there is not much that can be said about the strips salient features. However, when reading some of his strips

(<http://www.comicstriplibrary.org>), it can be discovered that almost the only consistent layout feature is the last panel (usually a square inset panel) in the down-left corner (Figure 2). Fullgrid pages seem to be reoccurring too, but still McCay seems to deviate often from this pattern by using other regular or irregular layout types (Figure 2). It is also interesting to note that McCay used full row panels sometimes, which was not very common in his time (Pederson & Cohn, 2016). However, to really say something meaningful about McCay's layout, his strips need to be investigated more systematically. Nevertheless, it is clear that McCay was far ahead of his time with his typical page layout experiments (Harvey, 1994). McCay showed what could be done with the full-page design freedom. Decorative designs from this period made Watterson long even more for more freedom in his own comic strips ("The Cheapening", 1989; Watterson, 1995; 2001).

Figure 2. Two examples of *Little Nemo* strips with characteristic layout. The left was from April 15, 1906 (McCay, 1906) and the right from July 26, 1908 (McCay, 1908).

Krazy Kat.

Probably the most influencing strip for Watterson was the comic strip '*Krazy Kat*', drawn by George Herriman ("The Cheapening", 1989; Watterson, 1995; 2001). With *Krazy Kat*, he started to try out different layouts for his Sunday strip (Harvey, 1994; Gordon, 1998). Because the layouts of this strip have been so inspirational for Watterson, it is very interesting to define what made the layout of *Krazy Kat* so special. Sadly, similar to the strips of McCay, there has not been a systematic analysis of *Krazy Kat*'s page layout yet too. However, when reading Herriman's strips (<http://www.comicstriplibrary.org>), a few characteristics do seem to stand out. It seems for example obvious that Herriman used borderless panels quite often (Figure 3). Also, it often occurs that one or two panels are stressed more by a thick border (Figure 3). Another probable feature is the use of circular panels, which occur once in a while in his strips (Figure 3). However, although these features seem to be characteristic for *Krazy Kat*, a systematic study should be conducted to really say something meaningful about the strips layout. Nevertheless, it is clear that both Winsor McCay and George Herriman were ahead of their time. It took until the thirties before other admired cartoonists started to play with the layout as well (Harvey, 1994).

Figure 3. Two examples of *Krazy Kat* strips with characteristic layout. The left was from September 3, 1922 (Herriman, 1922a) and the right was from November 5, 1922 (Herriman, 1922b).

Shrinking space in newspapers.

But if comics in the early 1900s were drawn so decorative, what happened to the layouts of contemporary comics? The answer to this question has to be sought in the history of the ensuing years. As said before, the artistic full-page freedom started to reduce. The size of the Sunday comic strip shrunk (Lefèvre, 2016). There are two general reasons for this, which both are related to the rise of syndicates, which were companies artists could sell strips to in order to distribute them over many newspapers around the country (“The Cheapening”, 1989; Lefèvre, 2016).

The first reason has to do with these new distribution opportunities. As a consequence of this wide distribution, artists had to take into account all newspapers’ layouts when drawing their comics so that there was freedom for newspaper publishers to organize comics on their pages (Watterson, 1995; 2001). If the intended layout of one row containing four panels (1x4) did not fit in the layout of a certain newspaper, it could have been possible to publish the comic strip in a 2x2 layout with grid. To make this modification possible, artists had to draw comics with uncomplicated layouts that were easy to adjust.

A second reason why comic artists had restrictions imposed on them, had to do with technological developments (Watterson, 1995). Since the rise of radio and television,

newspapers were no longer people's main source of information and entertainment (Watterson, 1995). Newspaper comics were no longer able to entice people to read newspapers instead of watching for example television (Watterson, 1995). With that, comic strips lost their main function of attracting new readers. Meanwhile, newspapers' production costs had increased while the circulations had not, meaning that newspapers' total income decreased as well (Watterson, 1995). Since it turned out that newspaper comics weren't able to do anything about this decrease in readers anymore, the comic section was logically one of the first sections that had to suffer for costs cutting: more strips in less space, which meant less decent drawing and fewer words (Watterson, 1995). All in all, artists were imposed with more and more constraints.

Bill Watterson: A Revolutionary

One comic artist, whose newspaper comics seem not very restricted in their layout, was Bill Watterson, whose popular comic strip '*Calvin and Hobbes*' ran from 1985 through 1995 (Mahony, 2000). The strip about a boy and his tiger became such a hit that it became the third most widely syndicated strip in America with a spread over more than 2,400 daily and Sunday newspapers (Mahony, 2000). For the daily strips, Watterson drew a one row (usually) four-panel story. The Sunday strip however, was different: instead of a one row four-panel comic, this weekly strip covered half a newspaper page and was published in full color (Watterson, 2001). There were also several restrictions to the layout of this comic. In the beginning, he describes,

“The strip had to be drawn in three rows of equal height, and there was one unmovable panel division within each row. This allowed editors to reduce and reconfigure the strip to suit their particular space needs. The same strip could run in several shapes by restacking the panels” (Watterson, 2001).

It was not uncommon that editors made changes to Watterson's strip. Sometimes they deleted the entire top row of the Sunday strip with the consequence that a third of the strip never reached the audience (Watterson, 1995; 2001).

Watterson was not very content with these restrictions. He found the fixed-panel divisions annoying because of the limitation it involved when designing the most suitable strip to his ideas (Watterson, 1995; 2001). It was hard for example, when he had to fit a lot of text in a relatively small panel (Watterson, 2001). Although he knew that working with space restrictions was not uncommon when working as a comic artist for newspapers, Watterson

longed for the old full-page freedom comics like *'Krazy Kat'* in the 1930s enjoyed ("The Cheapening", 1989; Watterson, 1995; 2001). In his opinion, he could create better comic strips if newspapers gave him more freedom (Watterson, 1995; 2001).

Regardless of working with space restrictions, the strip had gotten more and more popular. Eventually, in 1991, Watterson took his first nine-month sabbatical (Mahony, 2000; Watterson, 1995; 2001). After this period, he proposed a new contract term, which implied "a redesigned Sunday format that would permit more panel flexibility" (Watterson, 2001). His syndicate Universal agreed on his terms and gave Watterson an unbreakable half-page strip format (Watterson, 1995; 2001). Although many editors complained about this, there were almost no cancellations of the Sunday strip (Watterson, 1995; 2001). From that day on, Watterson's comic strips started to take many different forms. Where he first drew his Sundays almost fully out of square panels, he now tried complete new page layouts. He said,

"Laying out the panels became a job in itself, now that I was no longer confined to horizontal rows. I could place boxes anywhere and any size, but the reader's eye needs to flow naturally to the proper panels without confusion, and big panels need to be designed in such a way that they don't divert attention and spoil surprises" (Watterson, 2001).

In order to carry out this new style successfully, Watterson looked at the layout of the *Krazy Kat* comic strips as a great source of inspiration (Watterson, 1995; 2001).

Creative Layouts

To understand this presumed change in Watterson's layout, it is good to discuss some basic theories on page layout in comics. What is it that makes a layout more or less creative? To answer that question, it is necessary to look at the external compositional structure (ECS) of comics: the physical layout of a sequence (Cohn & Campbell, 2015).

There are numerous ways to organize panels on a page. If a strip consists of four square panels, the gutter between those panels forms a '+'. This is called a 'grid' (Figure 4(a)) (Cohn, 2013) or a 'waffle-iron' (Groensteen, 2013). It does not take much effort to read the sequence in the correct order because it follows the same reading direction Western people are used to when reading written language, a 'Z-path' (Cohn, 2013). However, it gets a bit more complicated when up following panels are placed less close to each other. This manipulation in layout is called separation (Figure 4(b)). The opposite of separation exists when one panel

overlaps with another panel (Cohn & Campbell, 2015). This is called overlap (Figure 4(c)). When several panels with different heights and widths are used, gutters between panels may break up horizontally or vertically and with that do not run continuously across a page anymore. This manipulation is called staggering (Cohn, 2013). There are two types of staggering: horizontal (Figure 4(d)), in which the vertical gutter experiences discontinuity, and vertical (Figure 4(e)), in which the horizontal gutter experiences discontinuity (Cohn, 2013). Another form of staggering is blockage (Figure 4(f)). This is the case when two or more panels are ordered vertically next to one big panel with the height of those vertical panels combined (Cohn, 2013). In this arrangement, the horizontal gutter is blocked by one big panel. Inset panels (Figure 4(g)) are panels within other (dominant) panels and whole row-panels (Figure 4(h)) or ‘landscape-panels’ (Groensteen, 2013) are, as the name suggests, panels that cover an entire row (Cohn, 2013).

Although panels can differ in their shapes (square, rectangular, circular, irregular, etc.), they can also differ in the type of border they have. Panels most frequently have a border, but it is not necessary. There are also other panel types like the borderless or the bleeding panel (Figure 4(i)). This last panel entails a borderless panel with an extensional ‘bleed’ of content to the edge of the canvas (Cohn, 2013).

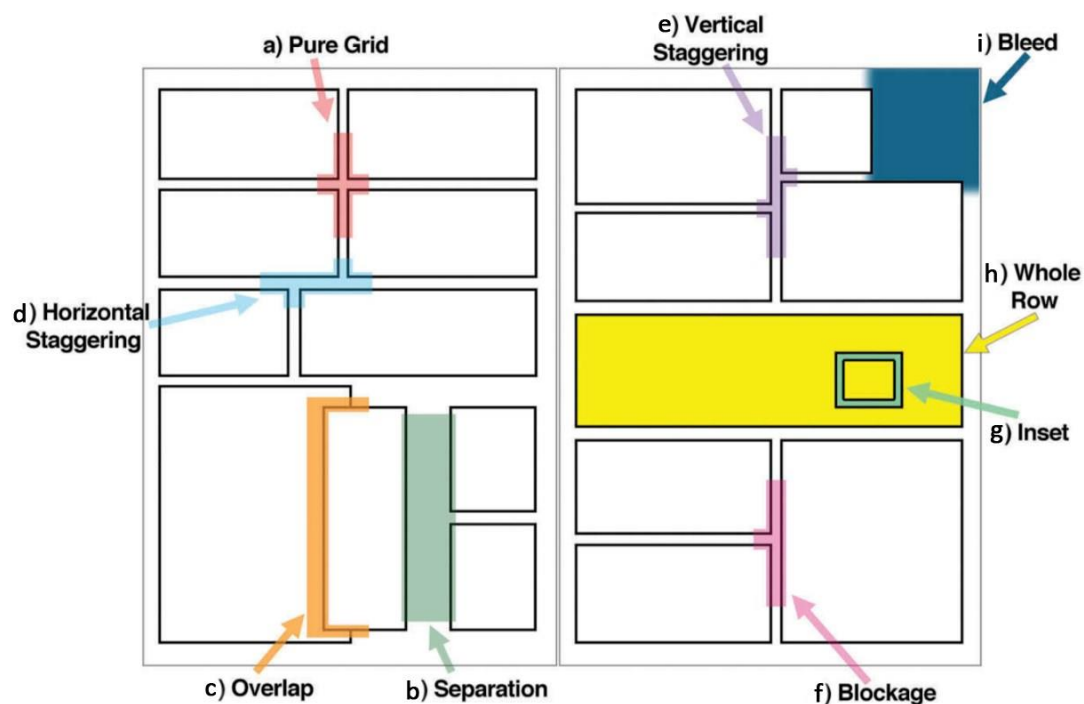


Figure 4. Schematized features of panel arrangements in page layouts. Adapted from Pederson and Cohn (2016).

In the Field of Page Layout

Although there have not been conducted many empirical studies on page layout in newspapers, there has been done some research into cross-cultural and comic book page layout that may also be of importance when investigating *Calvin and Hobbes*. These studies will be discussed in the next sections.

Cross-cultural differences in page layout.

Cohn, Axner, Diercks, Yeh and Pederson for example, looked at cross-cultural variation in page layout (2017). In their study, they analyzed comics from America, Europe and Asia on their reading direction, panel arrangements, gutter space between panels and the panels' shape (Cohn et al., 2017). Since this study is about an American comic strip artist, Bill Watterson, it is interesting to know what features are characteristic for the American strip culture. It is likely that Watterson is influenced by his own culture's style too. Therefore, if characteristic features of the American strip culture can be defined, it is possible to make a prediction of which features started to appear more in *Calvin and Hobbes* after his first sabbatical.

For the directionality it was found that a lateral reading direction (to the left or right) was maintained most in American as well as in other cultures' comics (Cohn et al., 2017). This suggests that the use of rows of panels is most common. After lateral, the most used reading directions in American comics were down and down-diagonal. Up-diagonal directionality almost never occurred (Cohn et al., 2017). Difference between cultures is that both Asian and Western cultures use a Z-path, but in Asian comics a vertical reading direction is used more than in European or American comics (Cohn et al., 2017).

What the panel arrangement concerns, Cohn et al. found that American comics contained the most pure grids (2017). They also featured more whole rows and inset panels than Asian or European comics (Cohn et al., 2017). On top of that, the use of 'whole pages' appeared most in American comics as well. In contrast, the use of blockage was more frequent in Asian books than in European or American books (2017). Another discovery was that European comics use more horizontal staggering than Asian or American comics (Cohn et al., 2017). This suggests that American comics maintain a more grid-type like layout than other cultures' comics.

However, what is also interesting to note is that the use of normal gutters was the least in American Mainstream comics, even though grid-type layouts are used most in these comics. This means that these comics feature a greater variability in gutter types like overlapping panels and separated panels than other comics (Cohn et al., 2017).

Concerning the shape of panels, rectangular shaped panels were not only used the most in the American, but in all cultures compared to square, quadrilateral, irregular, borderless and bleeding panels. Bleed did occur sometimes in American comics, but appeared significantly more in Asian comics (Cohn et al., 2017). Only a few irregular panels were found (Cohn et al., 2017).

Thus, characteristic for the American comic culture is the use of pure grids without staggering, whole row and inset panels, variable gutters (separation and overlap) and many rectangular panels with some irregular and bleeding panels. These features are therefore likely to appear in *Calvin and Hobbes* strips as well.

Page layout over time

In addition to cross-cultural differences of comics, it is assumed that page layout has also changed over time. Pederson and Cohn (2016) looked into the changes in page layout of American superhero comics from 1940 through 2014. Their prediction was that these comics indeed have changed and have become more complex, decorative and productive over time. Instead of using more conventional panel structuring features like grids, superhero comics' pages have gotten more diverse in their arrangement of panels (Pederson & Cohn, 2016). This research is in particular interesting because the present study is also about a presumed change in page layout over time, but then from one artist: Bill Watterson.

Concerning the directionality, a decrease of right and down-left directions was found, suggesting a decrease in grid-type layouts. On the contrary, straight-down directions increased, suggesting a more decorative layout (Pederson & Cohn, 2016).

Secondly, there were also some interesting findings on panel arrangement changes. While pure grids remained constant over time, there has been a significant increase in the use of inset panels, whole rows, whole columns and whole pages (Pederson & Cohn, 2016). The increase in whole row panels in particular corresponds with the findings of Cohn et al. who found that whole rows were a characteristic of American comics (2017). Pederson and Cohn (2016) also found a small increase in the use of vertical stagger and blockage. On the contrary, a decrease was found in the use of horizontal staggering (Pederson & Cohn, 2016). These findings again support the hypothesis that American superhero comics do have become more decorative over time.

Thirdly, with regard to gutters it can be said that although the use of normal gutters remained constant, the use of separation and overlap increased from the late 1980s on (Pederson & Cohn, 2016). This again supports the assumption of an increased decorative layout. It is also

in accordance with Cohn et al. who found that separation and overlap are characteristic features of the American strip culture (2017).

Finally, changes were found in the types of panels used in superhero comics. Where the number of square, triangular and circular panels decreased, rectangular panels were observed to be used more. This finding is consistent with the observation of the increase of full row-panels (Pederson & Cohn, 2016). The increased use of bleeding panels was particularly interesting. Over the last few decades, the use of these panels increased enormously in contrast to the 1990s and before (Pederson & Cohn, 2016). Borderless panels on the contrary, slightly decreased (Pederson & Cohn, 2016).

All in all, Pederson and Cohn observed that the page layout of American superhero comics has changed over time from an initially conventional to eventually a more decorative (more whole rows, blockage, overlap, bleeds, etc.) style, while becoming more systematic and less irregular in their features (Pederson & Cohn, 2016). This means that the general layout standard in comic books today is, like the classic comic strips in newspapers before syndicates, more or less decorative. Because a layout style influence on Watterson of classic newspaper comics is assumable and because an influence of contemporary layout standards of his own culture is probable, it could be suggested that Watterson's layout after his first sabbatical has become more decorative as well. However, this has to be investigated.

This Study

It is very interesting to combine the knowledge of page layout theories with the history of newspaper comic strips. It is generally assumed that page layouts of newspaper comics have changed over decades, and there are very clear indications that support this notion (Pederson & Cohn, 2016). Also, it is known that differences in layout do not occur only over time, but also between cultures (Cohn et al., 2017). However, no empirical studies have yet examined the changing of newspaper comics' page layouts, nor have any studies targeted the layouts of a single author over time. This study will therefore investigate the changes in the larger Sunday comics' page layout of one seminal comic artist: Bill Watterson.

As argued before, Watterson longed for the artistic freedom comic artists from the time of Winsor McCay and George Herriman enjoyed ("The Cheapening", 1989; Watterson, 1995; 2001). For him it was a frustration to be stuck to a fixed page layout. Therefore, he was really pleased when he eventually gained more freedom after his first sabbatical (Watterson, 1995; 2001). However, what did Watterson really do with his freedom? Did his layout style of his Sunday strip change? If so, what exactly was it that changed?

Directionality.

Because of Watterson's fixed layout before his first sabbatical (Watterson, 1995; 2001), it is assumed that the reading order of his strips neatly followed a Z-path. However, because Watterson did not like these restrictions very much, he may have deviated from the Z-path afterwards, leading to the following hypothesis:

H1: *Calvin and Hobbes* Sunday strips after Watterson's first sabbatical deviate significantly more from the Z-path than before the sabbatical.

Panel arrangements.

As argued in the study of Pederson and Cohn (2016), over the decades the use of grid-type layouts decreased in America. It is therefore expected that Watterson, after being freed from his fixed layout, started to use different types of arrangements for his Sunday strips like blockage, horizontal- and vertical staggering. Because there has been an increase of whole row and inset panels over time (Pederson & Cohn, 2016), it is assumable that Watterson started to use these types of panels more as well. Also, Watterson said that because of his gained freedom, he was able to draw strips with more panels in which text was not needed to understand the meaning of it (Watterson, 1995; 2001). It is probable that Watterson started to draw more wordless panels after his sabbatical. Therefore, the following hypotheses were set up:

H2: *Calvin and Hobbes* Sunday strips after Watterson's first sabbatical contain more whole rows and inset panels and more features like blockage, horizontal- and vertical staggering.

H3: *Calvin and Hobbes* Sunday strips after Watterson's first sabbatical contain less grid-type layouts than before the sabbatical.

H4: *Calvin and Hobbes* Sunday strips after Watterson's first sabbatical contain more panels without text.

Gutter space.

Again, because Watterson detested the fixed layout, it is likely that he deviated from the use of normal gutters in his strips. Therefore, the following hypothesis was set up:

H5: In *Calvin and Hobbes* Sunday strips after Watterson's first sabbatical, less normal gutters and more divergent gutter types like overlap, separation or no gutter at all are used.

Panel shape.

It has been argued before that Watterson got his inspiration for his new Sunday strip from strips like *Krazy Kat* ("The Cheapening", 1989; Watterson, 1995; 2001). After a shallowly analysis of *Krazy Kat* a few probable characteristic features were discovered. Since Watterson gained more freedom after his sabbatical, it is likely that his new Sunday strips contain at least some of *Krazy Kat*'s features. Therefore, the following hypotheses concerning panel were set up:

H6: *Calvin and Hobbes* Sunday strips after Watterson's first sabbatical contain significantly more borderless panels and panels with a thicker border.

Methods

Materials

The corpus used in this study consisted of the entire collection of 3096 comic strips (Sundays and dailies) created by Watterson over the ten years he drew *Calvin and Hobbes* (November 1985 – December 1995). In sum, a total of 14.711 panels were annotated. The strips were gathered from www.gocomics.com.

Areas of Analysis

Each panel was coded separately (e.g. shape of a panel) and in relation to surrounding panels (e.g. type of gutter between panels) on four fields: directionality, panel arrangements, gutter space and panel shape. All categories were taken from previous studies (Pederson & Cohn, 2016; Cohn et al., 2017). In order to code properly, a codebook was constructed in which all the elements that could be coded were included with a description and an example. This codebook is provided in the Appendix.

Directionality.

In order to analyze the reading direction in the comic strips, first the beginning panel of the strip had to be indicated. In daily strips, this was always the left-most panel. For the Sunday strips, the location of the first panel could vary. When the title of the strip was placed in a panel, it was not counted as a panel, but considered a 'satellite carrier', which can include captions of

an omniscient narrator without any connection to the images (Cohn, 2013). After coding the initial panel as ‘first panel’, following panels were always coded relative to their previous panel (right, left, up, up-left, up-right, down, down-left or down-right). For example, if a standard daily format was used (1x4), it would be coded as ‘first panel – right – right – right’. If in a Sunday strip used a 2x4 grid, it would be coded as ‘first panel – right – downleft – right’. When blockage was involved and the panel following the blocking panel was the upper panel in an embedded column as shown in figure 5, it would be coded as ‘[2] up-right – [3] down’. Furthermore, it was also coded whether panels belonged to a horizontal or a vertical row and whether panels were the first in a new row or column. For a more elaborate description, see the Appendix.

Figure 5. Coding directionality in blockage (Watterson, 1992).

Panel arrangements.

The arrangement of panels in relation to each other has also been analyzed. Pure grids (Figure 4(a)) are the most basic type of arrangement, forming a symmetric + shape at the junction point between panels. All panels involved in a grid were coded as ‘grid’. When panels could be coded ‘staggering’ and also ‘grid’, because of different relations with different surrounding panels, they were coded both ‘grid’ and ‘staggering’. When a gutter was constrained horizontally (Figure 4(d)) or vertically (Figure 4(d)) by a panel so that there was no pure grid, this was coded as well. Again, all panels involved were coded as ‘staggering’. When blockage (Figure 4(f)) occurred, all panels embedded were coded as ‘blockage’ (Figure 5). If there was only one panel in a strip, this panel was coded as ‘whole strip’. Some panels that also had the height or length of a whole row (Figure 4(h)) or column were coded as respectively ‘whole row’ or ‘whole column’. Finally, ‘inset’ panels (Figure 4(i)) enclosed within other, dominant panels were coded as ‘inset’.

Gutter space.

The spacing of gutters varied in four ways: normal gutter, separation, overlap and no gutter. A normal gutter was coded when the space between panels was the standard space used between grouped panels, as in Figure 6.



Figure 6. Approximately the normal distance between panels in *Calvin and Hobbes* (Watterson, 1985).

Separation was coded when grouped panels had a larger space between them than usual (Figure 4(b)). When panels were literally overlapping each other, this was coded as 'overlap' (Figure 4(c)). When an overlapping panel belonged to a grouping of two panels of which the other panel was fully overlapping an underneath panel, this was also coded as 'overlap' and not as 'inset', as shown in Figure 7. Real inset panels were not coded as 'overlap', but as 'no gutter'. Also, these panels belong to a grouping with a normal gutter between them. Therefore, a normal gutter was coded as well.

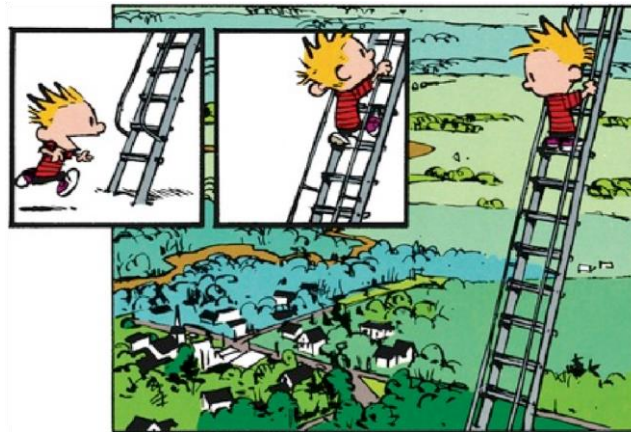


Figure 7. The overlapping panels were seen as a grouping of two with a normal gutter (Watterson, 1992).

No gutter occurred if there was only a border separating panels like it is the case with inset panels. With these inset panels, it is clear no gutter is present. However, it is different with borderless panels. In these panels, it is arguable whether there is a gutter or just a larger panel without a gutter (Figure 8 and 9). Individual panels were only coded as ‘no gutter’ if there were clear indications for it (e.g. content close to other panels’ borders and thereby crossing its own panels ‘fictitious’ border as in Figure 8).



Figure 8. The content of the right panel uses the imaginary gutter space and is therefore coded as no gutter (Watterson, 1993).

If borderless panels’ content neatly stayed within fictitious lines (inferring a normal border and gutter) the panel in concern was coded as ‘normal gutter’. This was often the case in daily strips as in Figure 9.



Figure 9. The third panel is borderless, but its content clearly respects the gutter space (Watterson, 1995).

Panel shapes.

There were several predetermined shapes for panels: circular, square, rectangle, diagonal, triangular, quadrilateral and irregular. Panels' shape was coded 'irregular' when none of the predetermined shapes was appropriate. 'Diagonal panels' were panels diagonally crossing from the upper-left or -right corner to the down-left or -right corner of a square. Borderless and bleeding panels were also coded. Borderless was coded when panels did not have a border (Figure 9). When panels' content extended beyond panels' border (also imaginable borders coded as 'borderless'), it was coded as 'bleed' (Figure 10).



Figure 10. An example of a bleeding panel (Watterson, 1992).

Finally, when a thicker border was used, this was also coded as 'colored border' (Figure 11).

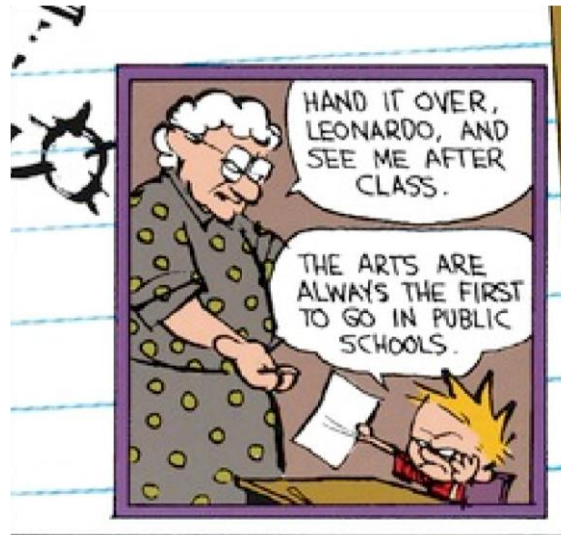


Figure 11. An example of a panel with a colored border (Watterson, 1992).

Data Analysis

In total, three coders combined coded 14.711 panels. To make sure that all coders maintained consistent annotations, all three coded the first year of *Calvin and Hobbes* strips (November 1985 – December 1986). After this, results were compared in an Inter Rater Reliability analysis. The results of this analysis are presented in Table 1.

Table 1

Results of the Inter Rater Reliability analysis

Intraclass Correlation (Average)	
Word count	.999
Directionality	.999
Horizontal/Vertical	.219
Grids	.991
Inset	1
Whole row	1
Whole column	1
Whole strip	1
Blockage	.123
Vertical stagger	.840

Horizontal stagger	.986
Gutter type	.105
Panel shape	.966
Borderless	.904
Bleed	.789
Content overlap	1

After the analysis, layout features scoring below .700 were discussed to make sure everyone would code similarly. When everyone agreed on how features should be coded, the remaining years and months of strips were divided randomly between coders (Table 2). All coders finished the annotation independently.

Table 2

Randomized division of remaining years of coding

	Coder 1	Coder 2	Coder 3
Nov. 1985 – Dec. 1986	X	X	X
Jan. 1987 – Dec. 1987	X		
Jan. 1988 – Dec. 1988		X	
Jan. 1989 – Dec. 1989			X
Jan. 1990 – Jun. 1990		X	
Jul. 1990 – Dec. 1990			X
Jan. 1991 – May 1991, Feb. 1992 – Mar. 1992	X		
Apr. 1992 – Sept. 1992		X	
Oct. 1992 – Mar. 1993	X		
Apr. 1993 – Mar. 1994			X
Apr. 1994, Jan. 1995 – Jun. 1995		X	
Jul. 1995 – Dec. 1995	X		

In order to analyze the data, scores were averaged across years first. Afterwards, ANOVA's were used with 'year' as the covariate. If a violation of the assumption of sphericity occurred, the Greenhouse-Geisser estimates of sphericity were used. In order to investigate change over time for each specific layout feature in the ANOVA's, Curve Estimation tests were used. Finally, to specifically say something about a change between before and after Watterson's first sabbatical, layout features' averages from before and after the sabbatical were grouped into separate groups and analyzed with an Independent-Samples T-test afterwards.

Results

All 14.711 panels were coded successfully by the three coders. The results of the Curve Estimation tests are presented in Table 3.

Table 3

The results of the Curve Estimation test; the F-Value and the R²

Page layout features	Linear trend	
	F-Value	R ²
<i>Directionality</i>		
Right	.214	.023
Up-right	1.858	.171
Down-right	10.060*	.528
Down	10.488**	.538
Down-left	22.609***	.715
Horizontal	4.061^	.311
Vertical	2.002	.182
New row	5.165*	.365
New column	1.587	.150
<i>Panel arrangement</i>		
Grid	.340	.036
Whole row	15.605**	.634
Whole column	.465	.049

Inset	22.503***	.714
Blockage	2.159	.193
Vertical stagger	7.723*	.462
Horizontal stagger	1.514	.144
Wordless panels	19.924**	.689
<i>Gutter type</i>		
Normal gutter	2.940	.246
Overlap	5.639*	.385
No gutter	3.002	.250
<i>Panel shape</i>		
Shape: square	10.471**	.538
Shape: rectangle	9.809*	.522
Shape: circular	1.570	.149
Borderless	1.761	.164
Bleed	.104	.011
Content overlap	.044	.005
Colored border	24.495***	.731

Note: *** $p \leq .001$, ** $p \leq .01$, * $p \leq .05$, ^ $p \leq .1$.

Directionality

First, a main effect of directionality, $F(4, 36) = 7.402$, $p < .001$, indicated that various types of directionality differed significantly from each other. Furthermore, an interaction was found between directionality and year ($F(4, 39) = 7.193$, $p < .001$), suggesting relations between different types of directionality also changed significantly over time.

Second, it was analyzed whether *Calvin and Hobbes*' page layout in the Sunday strips deviated from the Z-path across ten years of time. From the right and down-left directions associated with this path, only the down-left direction was observed to be used less across ten years significantly (Table 3). No significant change was found in the use of the rightward direction (Table 3). In contrast, directions moving straight down and down-right were observed to be used significantly more across ten years (Table 3; Figure 12). No increase was found in the use of the up-right direction.

Table 4*Differences in directionality between before and after Watterson's first sabbatical*

Directionality	<i>t</i>	Mean (SD)	
		Before sabbatical	After sabbatical
Right	1.149	.693 (.013)	.679 (.028)
Up-right	-2.480**	.000 (.000)	.015 (.017)
Down-right	-6.967**	.000 (.001)	.012 (.004)
Down	-7.912**	.000 (.000)	.032 (.011)
Down-left	7.026	.204 (.010)	.158 (.011)

Third, it was investigated whether there was a difference in directionality between before and after Watterson's first sabbatical in 1992. Up-right, down-right and straight down directionalities were all observed to be used significantly more after the sabbatical (Table 4; Figure 12). No change in use was found for the right and down-left directionalities (Table 4; Figure 12).

Directions moving to the left, up-left and straight up were excluded from the analysis because of too few data points.

Z-path directionality over time

Decorative directionality over time

Figure 12. Change over time in the reading direction.

Panel arrangement

Analysis of the arrangement of panels showed first of all a main effect of panel arrangement, $F(7, 63) = 3.331, p < .01$, and an interaction effect between year and panel arrangement ($F(7, 63) = 3.338, p < .01$). These findings suggest that various arrangement types differed significantly both from each other and differed over time.

Secondly, for individual arrangement types, changes in use across ten years of time were observed. Although no significant changes in the use of horizontal stagger and pure grids (Figure 13) were found, significant increases were observed in the use of vertical stagger, whole rows, insets and wordless panels (Table 3; Figure 14). No significant change was observed in the use of blockage and whole columns over ten years of time (Table 3; Figure 14).

Table 5

Differences in panel arrangement use between before and after Watterson's first sabbatical

Panel arrangement type	<i>t</i>	Mean (SD)	
		Before sabbatical	After sabbatical
Grid	-.398	.251 (.322)	.317 (.046)
Whole row	-5.279**	.000 (.001)	.027 (.014)
Whole column	-1.474**	.000 (.001)	.006 (.011)
Inset	-12.787	.003 (.004)	.044 (.007)
Blockage	-2.874**	.000 (.000)	.061 (.059)
Vertical stagger	-6.420^	.008 (.013)	.130 (.049)

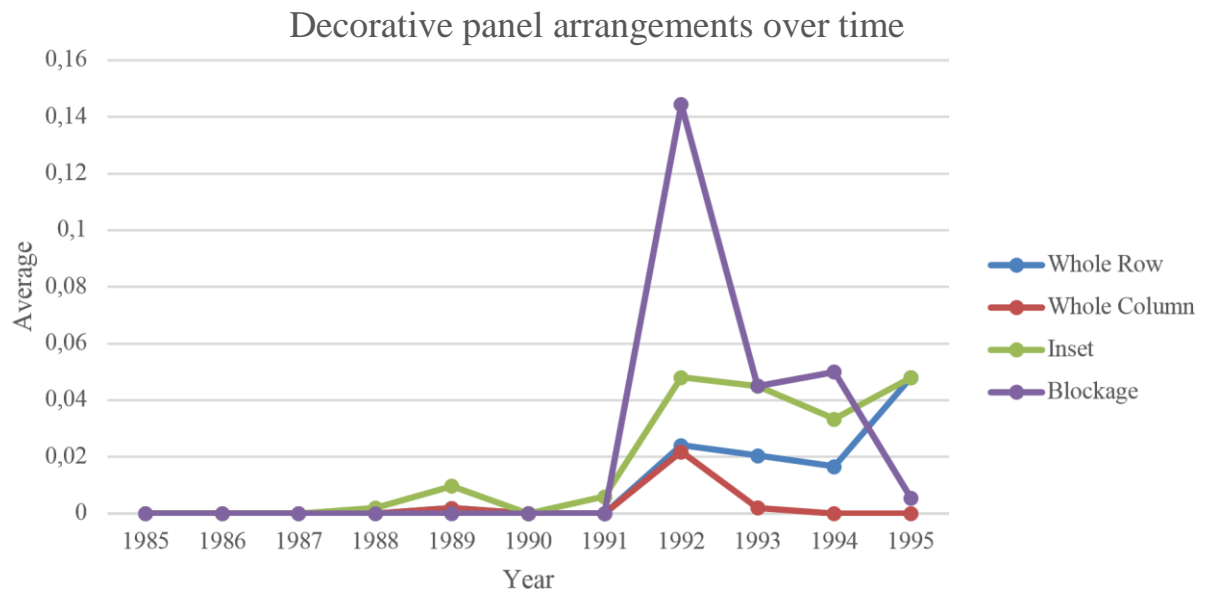
Horizontal stagger	2.791	.836 (.178)	.547 (.135)
Wordless panels	-2.303^	.602 (.213)	.871 (.116)

Thirdly, it was analyzed whether there was a difference in panel arrangement use between before and after Watterson's first sabbatical. Overall, significant increases were found in the use of whole rows, whole columns and blockage (Table 5; Figure 14). For vertical stagger and wordless panels, an increase in use was found as well, although not significant (Table 5; Figure 14). Therefore, these increases could be called 'trends'. No difference was observed in the use of pure grids, insets and horizontal stagger (Table 5; Figure 14).

Whole strips were excluded from the analysis because of too few data points.

Grid over time

Figure 13. The use of grids over time.



Vertical- and horizontal stagger and wordless panels over time

Figure 14. The significant increases in the use of whole rows, insets, vertical stagger and wordless panels.

Gutter

First of all, the overall analysis of gutter types showed both a main effect of gutter type, $F(2, 18) = 4.781$, $p < .05$, and an interaction effect between gutter type and year ($F(2, 18) = 4.606$, $p < .05$). These findings suggest that gutter types differed over time from each other.

Additionally, with regard to individual gutter types, no change in the use of normal gutters or no gutters over ten years of time was observed (Table 3; Figure 15). However, a significant increase was found in the use of overlap (Table 3; Figure 15).

Table 6

Differences in gutter type use between before and after Watterson's first sabbatical

Gutter type	<i>t</i>	Mean (SD)	
		Before sabbatical	After sabbatical
Normal gutter	2.320^	.983 (.015)	.917 (.076)
Overlap	-3.253**	.012 (.013)	.142 (.108)
No gutter	-1.923***	.013 (.012)	.051 (.053)

Lastly, analysis of the difference in gutter type use between before and after Watterson's first sabbatical showed significant increases in the use of overlap and no gutter (Table 6; Figure 15). A decrease in the use of normal gutters was observed, but not significant (Table 6; Figure 15). This change is therefore called a trend.

No data points were found for the use of separation at all and were therefore excluded from the analysis.

Gutter type over time

Figure 15. The use of normal gutters, overlap and no gutters over time.

Panel shape

Panel shape.

Finally, analysis of the shape of panels showed first of all a main effect of panel shape, $F(2, 18) = 10.147, p = .001$, suggesting individual panel shapes differed from each other. In addition,

an interaction effect was found between panel shape and year, $F(2, 18) = 10.187$, $p = .001$, suggesting a differentiation between individual panel shapes over time too.

Secondly, regarding individual changes in panels' shape, the use of square panels decreased significantly, while the use of rectangle panels increased significantly over ten years of time (Table 3; Figure 16). No such change was observed in the use of circular panels (Table 3; Figure 16).

Table 7

Differences in panel shape use between before and after Watterson's first sabbatical

Panel shape	<i>t</i>	Mean (SD)	
		Before sabbatical	After sabbatical
Square	1.784	.381 (.217)	.179 (.064)
Rectangle	-1.975	.590 (.205)	.804 (.071)
Circular	-1.348	.007 (.010)	.015 (.010)

Thirdly, it was investigated whether there was a difference in the use of panel shapes between before and after Watterson's first sabbatical. No significant differences in use were found for all three types of panel shapes (Table 7; Figure 16).

Triangular, diagonal, quadrilateral and irregular panels were excluded from the analysis because of too few data points.

Panel shape over time

Figure 16. The use of square-, rectangle- and circular panels over time.

Other panel shape features.

In addition to the found effects of the shape of panels, first of all a main effect of other panel shape features (borderless panels, bleed, content overlap and colored borders) was found ($F(3, 27) = 11.106, p < .001$). Also, an interaction effect was found between year and these other panel shape features ($F(3, 27) = 11.129, p < .001$). These findings suggest that these features differed from each other across time.

Second, a significant increase was found for the use of colored borders over ten years of time (Table 3; Figure 17). Over the same period of time, no significant change was found in the use of bleeds, borderless panels and the use of content overlap (Table 3; Figure 17).

Table 7

Differences in the use of additional panel shape features between before and after Watterson's first sabbatical

Panel shape feature	<i>t</i>	Mean (SD)	
		Before sabbatical	After sabbatical
Borderless panel	-.289 [^]	.087 (.054)	.095 (.022)
Bleed	.307	.011 (.022)	.007 (.009)
Content overlap	-.574 [^]	.012 (.013)	.017 (.020)
Colored border	-14.854***	.002 (.005)	.184 (.033)

Third, analysis of differences of use between before and after Watterson's first sabbatical showed a significant increase in the use of colored borders after the sabbatical (Table 7; Figure 17). Although no significant increases were observed in the use of borderless panels and content overlap (Table 7), it could be spoken of as a trend (Figure 17). Bleeds were observed to have been used equally before and after the sabbatical (Table 7; Figure 17).

Figure 17. The use of borderless panels, bleeds, content overlap and panels with a colored border over time.

Discussion

This study examined whether Bill Watterson's page layout of *Calvin and Hobbes* changed over time, especially after his first sabbatical. Overall, significant increases in the use of decorative panel arrangement features like blockage, inset panels, whole rows and whole columns were found. In addition, a decrease was discovered in the use of reading directions suggesting a Z-path (down-left) in contrast of the discovered increase in alternative reading directions. This suggests a deviation from the Z-path over time and directly after Watterson's sabbatical. Altogether, these findings support the assumption that Watterson's page layout indeed changed over time by moving from more conventional layout features towards more decorative layout features. Evidence for this assumption will be further elaborated in the following sections.

Directionality

The first evidence for a shift towards a more decorative layout can be found in the directionality between panels. Although no decrease was found in the use of the rightward direction (part of the directions implying a Z-path), there was a decrease in the use of the down-left direction. The decrease in this last directionality suggests a deviation from the Zpath. In addition, a significant increase in the use of down- and down-right directions over ten years of time emphasize the notion of a deviation from the Z-path even more.

Furthermore, additional analysis showed that up-right-, down-right- and down directions appeared significantly more after 1991 than before that year, again suggesting a shift towards a more decorative layout. Since Watterson's first sabbatical was from May 1991 to February 1992, these findings suggest that the changes in directionality have been caused deliberately by Watterson, who gained more freedom to draw more decorative layouts after his first sabbatical ("The Cheapening", 1989; Watterson, 1995; 2001). This confirms the first hypothesis which stated that Watterson deviated significantly more from the Z-path after his sabbatical.

Panel arrangement

In addition to a change in directionality between panels, there is also evidence for a change in panel arrangement features. In general, there has been an increase across ten years of time in the use of whole rows, vertical stagger, and inset panels. More specifically, starting right after the first sabbatical, whole rows, whole columns and blockage were observed to be used significantly more than before the sabbatical, which makes the assumed influence of the sabbatical more likely. This is in line with the findings of Pederson and Cohn, who found that the use of all of these panel arrangement types have been increasing over eight decades in superhero comics (2016). When Watterson gained his freedom, he probably wanted to go with this flow too. The finding is also in line with the findings of Cohn et al., who found that whole row panels are characteristic features of the American strip culture (2017). Vertical stagger was also observed to be used more after the sabbatical, however, this change was considered a trend rather than a significant difference.

It is interesting to note that inset panels were observed to be used significantly more over ten years of time, but no increase in use was found after Watterson's sabbatical compared to before his sabbatical. Therefore, it is probable that this change in ten years of time was not (indirectly) caused by Watterson's sabbatical. The other increases (whole rows, whole columns, vertical stagger and blockage) all appeared right after the sabbatical, suggesting Watterson started to use these panel arrangements because of his gained freedom. This confirms half of the second hypothesis which stated that *Calvin and Hobbes* Sunday comics after Watterson's first sabbatical contain more whole rows and inset panels and more features like blockage, horizontal- and vertical staggering.

The third hypothesis stated that, after his first sabbatical, Watterson started to use grid-type layouts less. Like in the study of Pederson and Cohn (2016), no significant decrease has been found in the use of pure grids. Not over ten years and not when the before and after sabbatical

values are compared. This hypothesis can therefore not be confirmed. What it does support, is the finding of Cohn et al., who found that pure grids are a characteristic feature of the American strip culture (2017). However, although no decrease was observed in the use of pure-grid, it is interesting to see Watterson shifting in his pure-grid use. In 1985, he rarely seems to shift towards other panel arrangements. This preference attenuated very quickly within the following four years, but from 1990 on, the use of pure grids slowly slopes up (Figure 13).

Lastly, Watterson stated that, with more artistic freedom, he would have the opportunity to draw strips with more panels. This would have enabled him to draw stories with just visuals in which text was not needed to understand the meaning of the story. Therefore, it was hypothesized that after his first sabbatical, Watterson would draw more panels without text. Although an increase was found in the use of wordless panels over ten years, the assumption that Watterson drew significantly more panels without text after his first sabbatical is only a trend (Figure 13). This hypothesis can therefore not be confirmed.

Gutter type

Another indication of Watterson changing in style over time can be found by analyzing the gutter types used. Over ten years, only an increase in overlap can be found. However, when solely analyzing the differences in gutter type use between before and after Watterson's sabbatical, a significant increase in overlap and no gutter can be found. The first significant finding of these two corresponds with the results of Pederson and Cohn, who found that the use of overlap increased over time, starting around the late 1980s (2016). Also, this particular finding corresponds with the findings of Cohn et al., who found that variable gutters like overlap are characteristic features of the American strip culture (2017).

The before-and-after-sabbatical analysis also showed a trend in the decrease of normal gutters. However, the use of normal gutters over ten years of time, apart from a 1992 dip, approximately stayed the same. This was also in line with Pederson and Cohn's results, who observed that the use of normal gutters roughly remained the same across eighty years of time (2016). All in all, these results again indicate a move from a more conventional towards a more decorative gutter type use after Watterson's first sabbatical, supporting the fifth hypothesis.

Panel shape

Analysis of the use of panel shapes over time gives final evidence for a suggested changing layout style. Because Watterson said that he was inspired by comic strips as *Krazy Kat* (Watterson, 1995; 2001), it is assumable that he imitated the style of those strips. Because it seemed that, after shallowly analysis of *Krazy Kat*, features like borderless panels and panels

with a colored border were characteristic features of this comic strip, it was hypothesized that Watterson started to use those more after his first sabbatical.

In this study, clear evidence was found for an increase in the use of colored borders, both over ten years of time and right after Watterson's sabbatical, supporting half of the final hypothesis (Figure 17). Borderless panels seem to appear slightly more frequent over the years (Figure 17), which is strengthened a bit more by the found trend of an increase after the sabbatical. Because this increase is not significant, it is not possible to confirm the hypothesis. Nevertheless, it is also assumable that borderless panels were inspired by *Krazy Kat* comic strips, but no extra artistic freedom was needed to draw panels without borders. This would mean that Watterson already drew borderless panels in the beginning, which could be a probable explanation of why no significant increases were found.

Concluding

Although these findings suggest that *Calvin and Hobbes* Sunday strips' page layout has become more decorative over time, it is still unclear whether this has had any effect on the readability of the strips. Watterson himself mentioned he had to design his layouts very carefully after the sabbatical to prevent confusion while reading (Watterson, 2001). Therefore, it is interesting to ask the question whether his strips have become more complicated and more difficult to comprehend or not. Further experimental analysis is needed to answer that question.

Altogether, this study found evidence for the overall hypothesis that Watterson's layout style changed over time from a more conventional layout towards a more decorative one. Although not all changes were significant, increases in decorative page layout features like whole column and whole row panels, blockage, vertical stagger, overlapping panels and panels with colored borders appeared, especially after 1992. This suggests that it is indeed likely Watterson used his gained half-page freedom to change the layout style of *Calvin and Hobbes*.

These findings are important because they first of all are similar to the findings of Pederson and Cohn who got roughly the same results in their study into the changing page layout in superhero comics (2016). Furthermore, specific features Watterson started to use more after his sabbatical (e.g. whole rows and rectangle panels) are the same features that Cohn et al. found to be characteristic features of the American strip culture (2017). This means that *Calvin and Hobbes* comic strips have many layout features in common with other contemporary American strips, suggesting all of these artists share the same kind of 'thinking pattern' or a so called 'visual language' (Cohn, 2013). Since artists in this case are all American,

an ‘American Visual Language’ could be presupposed (Cohn, 2013). This is an important suggestion that may substantiate future investigation into the existence of visual languages.

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Appendix

Appendix 1: Calvin and Hobbes Coding Guide for Page Layout

Layout Feature	Definition	Example
1st panel	It is the first panel of the strip	
Up	From the previous panel, the direction to the location of the next panel is straight up	No good examples found in <i>Calvin and Hobbes</i>
Up-Right	From the previous panel, the direction to the location of the next panel is up and to the right	
Right	From the previous panel, the direction to the location of the next panel is to the right	
Down-right	From the previous panel, the direction to the location of the next panel is down and to the right	



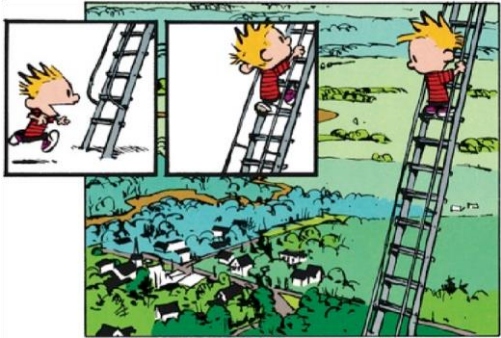
Down	From the previous panel, the direction to the location of the	
	next panel is down	
Down-left	From the previous panel, the direction to the location of the next panel is down and to the left	
Left	From the previous panel, the direction to the location of the next panel is to the left	No good examples found in <i>Calvin and Hobbes</i>
Up-Left	From the previous panel, the direction to the location of the next panel is up and to the left	Not found in <i>Calvin and Hobbes</i>
Horizontal	The panel belongs to a horizontal row	

Vertical	The panel belongs to a vertical column	
New Row	When there are multiple rows, the panel starts a new one	
New Column	When there are multiple columns, the panels starts a new one.	

<p>Grid</p>	<p>The gutter between panels is neatly gridshaped.</p>	
<p>Inset</p>	<p>The panel is inside another dominant panel.</p>	
<p>Whole Row</p>	<p>The panel is a full row width.</p>	
<p>Whole Column</p>	<p>The panel is a full column width.</p>	

Whole strip	The strip consists of one panel in total	
Blockage	A stack of panels in a column next to a single panel spanning the length of that column	
Vertical stagger	There is a discontinuity in the vertical line of the	

	<p>gutter (no straight horizontal line)</p>	
<p>Horizontal stagger</p>	<p>There is a discontinuity in the horizontal line of the gutter (no straight vertical line)</p>	

<p>Wordless panels</p>	<p>There is no text used in panels</p>	
<p>Normal gutter</p>	<p>A normal gutter is used to separate panels</p>	
<p>Separation</p>	<p>There is a larger space between panels</p>	<p>Not found in <i>Calvin and Hobbes</i></p>
<p>Overlap</p>	<p>There is overlap between the panels</p>	

No Gutter

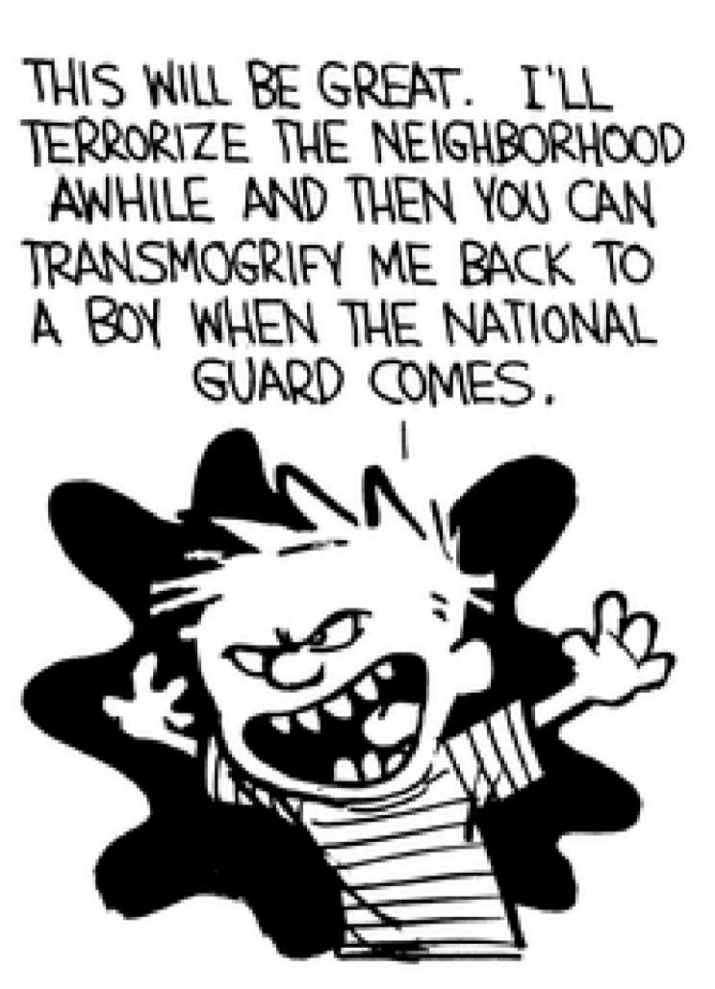
No gutter is used to separate the panels

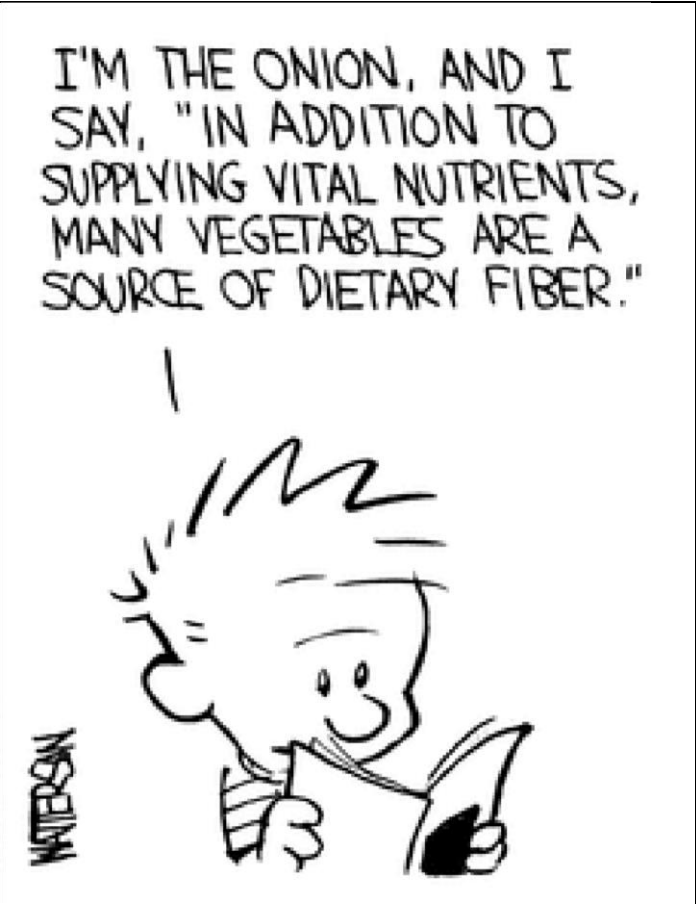

**Circular**


The panel shape is circular



<p>Square</p>	<p>The panel shape is a square</p>	
<p>Rectangle</p>	<p>The panel shape is a rectangle</p>	
<p>Diagonal</p>	<p>The panel shape is diagonal</p>	<p>Not found in <i>Calvin and Hobbes</i></p>
<p>Triangular</p>	<p>The panel shape is triangular</p>	<p>Not found in <i>Calvin and Hobbes</i></p>

Quadrilateral	The panel shape is quadrilateral	Not found in <i>Calvin and Hobbes</i>
Irregular	The panel shape is irregular	

<p>Borderless</p>	<p>The panel shape is borderless</p>	
<p>Bleed</p>	<p>The panel bleeds content</p>	
<p>Content overlap</p>	<p>There is content overlap between</p>	

	panels	
Colored border	The panel has a colored border	