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Ratings revisited

RESUMÉ
Denne artikel fokuserer på publikumsmålinger, som har fungeret som mediesfærens 'handelsvaluta'. Den diskuterer forandringer i målingerne og nøjagtigheden af seertal i en tid karakteriseret ved målemetoder i opbrud. Artiklen tager udgangspunkt i en empirisk undersøgelse af målesystemer i forhold til at finde en relation mellem faldende tv-seertal og streaming på baggrund af målestandarterne inden for seertal og webtraffik i Denmark (TV Meter og Gemius). Den argumenterer for, at de nuværende markedsbaserede målesystemer er ude af stand til at opfange et publikum, der i stigende grad ser tv på tværs af medier og platforme, forskudt i tid og on-demand.

ABSTRACT
This article focuses on audience ratings, which have functioned as the central 'currency' informing the media trade. It discusses changes to the production and accuracy of audience ratings at a time when established standards are being challenged. The article departs from an empirical study based on existing systems of audience measurement for television and online activity in Denmark (TV Meter and Gemius), examining the shortcomings of these systems for arriving at similar estimates of the impact of streaming on flow television consumption. It argues that current tracking systems cannot capture increasingly cross-media, time-shifted, mobile, and on-demand audience behavior.

EMNEORD
Seertal, digitalt publikum, mediekonvergens, målemetoder, *currency*

KEYWORDS
Ratings, digital audiences, media convergence, measuring methods, currency

Introduction

Digital media convergence is turning television practices *upside down*, including advertising; motives for political and administrative decisions; and the planning, production, and distribution of content (Buzzard 2012; Cunningham and Silver 2013; Havens 2014; Ihlebæk et al. 2014). This article engages with audience ratings, which function as the underlying central 'currency' informing the majority of these practices in flux. The aim is to provide an empirical study exploring changes to the production and accuracy of audience ratings at a time when transformations in digital audiences challenge established standards such as *TV Meter*. The shift to online television distribution entails that viewing become measureable to existing systems for online audience tracking, represented by *Gemius* in a Danish context. Although web measurement leaves the audience researcher with unprecedented amounts of data, it nevertheless fails to capture increasingly cross-media, time-shifted, mobile, and on-demand audience behavior.

While forecasts presuming the death of broadcast television are still falling short, a growing body of research reconsiders television as it moves from the television set to a heap of other platforms. It seems that if one can simply sidestep the hype that television is on the edge of an abyss, then the redefinition of television really is a revolutionary one, as analyzed by scholars addressing "the distribution revolution" (Curtin et al. 2014), "the user revolution" (Buzzard 2012), and "the digital revolution" (Cunningham and Silver 2013).

Industry alert

The tagline for the annual industry conference, *Copenhagen TV Festival*, targeted media digitization and convergence with a call for the Danish television industry to "Embrace Change" (2014). Several national initiatives have sought to meet the digital challenge: for instance, Danish broadcasters have intensified their use of online distribution channels including *Facebook*, *Instagram*, *Snapchat*, and recently *YouTube*, and several streaming platforms such as *TV2Play* have been launched.

From an industry perspective, the online services making their entrance into the Danish arena are challengers for more than just ratings. Although streaming services like *Netflix* and *HBO Nordic* offer a wide range of

content, their main brand is rooted in their high-profiled original television series (e.g. *House of Cards* (2013-), *Orange is the New Black* (2013), *Girls* (2012-), *Game of Thrones* (2011-)). Meanwhile, Denmark has a longstanding tradition of producing quality television dramas, which have proven to be solid export material over the last decade (Redvall 2013). Thus, while high-profile online television fiction has the potential to steal away television audiences, it also threatens the position of Danish television drama in a national *and* a newly attained international context.

Measuring methods in flux

Despite the attention it receives from industry stakeholders, the extent of the migratory relationship between broadcast television and emerging online video-on-demand (VOD) platforms has received little academic attention. In their 2014 annual report on changes in the media landscape, the industry research unit DR Audience Research (2014, 7) regards streaming as playing a significant role in what is termed the "biggest drop in TV viewing ever." Simultaneously, however, it is emphasized that the relational impact of streaming is not *measureable* (8). The straightforward conclusion is that methods for tracking digital audiences are lagging behind. Nevertheless, various approaches *are* being employed to measure audiences' whereabouts. The present article engages with the existing systems of audience measurement in Denmark, TV Meter and Gemius.

This article contributes to the debate concerning the future of broadcast television, especially spurred by the advance of streaming outlets (see e.g. Turner and Tay 2009; Cunningham and Silver 2013; Curtin, Holt, and Sanson 2014). It neither affirms nor dismisses the general notion that streaming is eating away at television audiences. Rather, the article discusses the methods and accuracy of established standards for audience measurement by examining whether the systems arrive at similar estimates of the impact of streaming on the flow television consumption of Danish adults (18+ year olds). Focusing on the methodological challenges of tracking digital audiences, it examines the extent to which a migratory relationship between dropping broadcast television ratings and streaming can be traced against the backdrop of research rooted in quantitative data on television viewing and online activity.

The first section of the article considers the intermediate digital developments destabilizing the ratings systems. The second section focuses on research methodology, explaining the measuring methods and analyzing the empirical data, which are discussed in the third section.

I. Context

In parallel to the television industry that gradually exchange the term *viewers* for *users* (Curtin, et al. 2014), ten years – and quite a few *digital quantum leaps* – ago the scholar Sonia Livingstone (2004, 85) took notice of digital changes that were transforming television viewing into a much more interactive and participatory act. Historically, the differentiation between the use of media-as-goods and the reception of media-as-text led to the detaching of reception from consumption:

> "In earlier centuries, use and reception were more intimately connected, so that reception could be to some degree 'read off' from the participatory activities of audiences in particular social contexts of media engagement or use (…) But in the age of mass television, use and reception became disconnected" (Livingstone, 84-5).

Asking, "What is the Audience Researcher to Do in the Age of the Internet?", Livingstone (Ibid.) argues that reception must once again be reviewed from the perspective of use and consumption. This account is central to the article's quest to track audiences' migratory whereabouts. The notion of television *users* enhances the likelihood of streaming developing at the expense of broadcast television, but it also has dramatic repercussions on the way television audiences are measured.

Reinventing TV

"The 21st century truly unleashed the digital genie but, depending on one's point-of-view, the departing genie left a bottle either half full or half empty" (Cunningham and Silver 2013, 2). Scholars Stuart Cunningham and John Silver (2013, 64) focus on the genie as opposed to its departure and target their seven emergent market leaders, the King Kongs of distribution: YouTube, Apple, Amazon, Yahoo!, Facebook, Netflix, and Hulu. The transnational

nature and (in ambition) global reach of these online players render it impossible to consider them traditional television networks. The choice is thus to either dismiss their sway within the sphere of screen distribution or reevaluate the criteria for what in fact constitutes the television network of the future (Ibid.).

This theme forms the basis for the "reinvention of television" (Cunningham and Silver 2013, 9), which is characterized by the dual aspects of *where* (online, cross-media) and *what* (content). Gradually, online content is being priced and positioned relative to distribution platforms and multiple media (5), disrupting established distribution structures. In turn, more and more content is original, developing in experimental ways enabled by the access of a critical (transnational) mass of online viewers due to digital distribution (105).

Although Cunningham and Silver write from a screen distribution perspective, as the two scholars put it, "the question of the significance of content diversity and its relationship to platform innovations (…) is central to any qualitative understanding of what is going on in online media today"(11). Not long ago, television content was wed to specific distribution modes (Webster 2014, 4), yet digital media have broken that engagement. This entails that an increasing number of connected media access an exploding amount of digital television content. Gradually, as people skillfully move from one platform to another, they require that any digital content move with them just as effortlessly, anytime, anywhere (Ibid.). In order to keep up, audience measurements must measure not one but *several* media and platforms; not at a particular moment in time but *anytime*; and not fixed in a confined space such as the household living room but *anywhere* – that is, in order to consolidate online measurements of viewing with television ratings. However, beyond the need for ways of measuring *new* media as a result of the convergence of old and new media, questions are also being raised concerning the methods for measuring *old* media (TV Meter).

The motivation to come up with a model that can do just that must be found in the historical function of the ratings as the currency of the media market.

Currency

Ratings are essential in the abstract marketplaces of television, radio, and the internet. People meter systems like the TV Meter were thus originally developed to create a valid currency for the advertisement trade when it came to assessing ad space on television – that is, they were developed for commercial reasons rather than scientific ones.

'Currency' entails a double meaning, in the words of Karen Buzzard (2012, 1): "It refers to what method is currently in use by the dominant ratings services, but it also refers to the use of ratings as a form of currency or money by which to buy and sell an otherwise invisible product." Since the 1990s, people meters have been trusted to be accurate enough to set the value of this currency. However, as digital audiences have proven difficult to count, they have disrupted the established ratings and the business models that depend on them. Buzzard (2012, 9) argues that "the fundamental message behind all these new devices [attempts to measure the digital audiences] is that digital technology was not only splintering audiences but allowing them to skip the commercials that were the foundation of the industry's business model."

The people meters cracked the code of measuring the activity of a viewer turning on a TV set, shifting channels, and turning it off again. With flow television, responses and interaction were (limited to) scribbling down a few lines for the newspaper debate pages and calling a music program or the TV Shop phone lines. 2015 levels of interactivity leave even program scheduling in the hands of the audience – if they want it. When it comes to tracking audiences beyond the simple measures of exposure, we find ourselves midstream, between what Buzzard (2012, 130) distinguishes as *mainstream* and *clickstream* measurements. Mainstream measurements are any sample-based methods (in this study, the TV Meter and IndexDanmark but also the Gemius Software Panel, all of which are explained below) while clickstream refers to collected census data enabled by digital tracking mechanisms (including site-centric systems like gemiusTraffic but also, for instance, the TNS Gallup counterpart TNSMetrix).

Reflecting the origins of the people meters, the motivation behind developing systems for measuring internet ratings was the discovery of the vast advertising value of the internet medium and the lack of an established online non-linear multi-screen currency (Buzzard 2012, 9). As a result, the systems developed for measuring web traffic were based on a *mainstream*

sample and exposure logic similar to that of the people meters. However, the intensified power over the *what*, *when*, and *where* of changing media consumption means that measuring exposure alone no longer suffices. By virtue of the computer's ability to track any move (click) of its user (site visits, time uses, interaction), site-centric *clickstream* ratings, independent of a sample and more transparent in relation to the new levels of interactivity, are advancing (see Buzzard, 2012, 106).

In summary, the fragmented media landscape is characterized by interrelated ecological changes, and so, as of the time of writing, measuring methods are in flux too. As media digitalization calls for new business strategies, original content, and platform innovations to meet (inter)active viewers with an on-demand state of mind, new methods for tracking digital audiences are also needed. These must be sensitive to new kinds of complex audience behavior in order to provide the currency for trading in television content *and* its audiences.

II. Methodology and data

This section considers the methodological advantages, limitations, and implications of the established standard methods of measuring audiences, the TV Meter 'black boxes' and the Gemius software. The research design also includes *IndexDanmark*, serving as a comparative data resource by virtue of its use of surveys rather than tracking. The following explains the three approaches and their methodological considerations (as of December 2014) in terms of analyzing empirical data.

TV Meter

TNS Gallup carries out Danish audience ratings. The TV Meter system is used to analyze quantitative viewer data in a representative sample of households, the TV Meter panel. The panel consists of around 2250 people, who are selected via surveys and telephone interviews, with a continuous replacement of 20% each year. The informants fill out a questionnaire, allowing their television viewing to be linked to a range of social demographics. The TV Meter unit is attached to the television set. It registers whenever the television is turned on and off as well as the channel(s) to which it is set while panelists use a special remote control to identify the viewer. The raw data is processed

by the Infosys+ analysis software, for which the basic viewing units are *Rating* and *Share of Viewing*. These are expressions of the average number of viewers relative to the entire universe and the percentage of viewers relative to the number of total current viewers respectively. Since December 2013, content viewed on a pc/Mac, either live or on the same day as the live broadcast, on broadcaster platforms such as DR TV and TV3Play is also counted (Helles and Hjarvard 2014, 17-20).

The unit used here, however, is *AvAud (All)*. It calculates the average daily television consumption in minutes per individual:

$$AvMins = \frac{\sum_{day}^{period} \frac{\sum_{i=1}^{n} min_i^{day} \cdot weight_i^{day}}{Univers_{target}^{day}}}{Days}$$

The primary advantage to this system is that it registers genuine viewing on a second-to-second basis in contrast to self-assessment methods like surveys and diaries. Its central sources of error relate to time-shifted and space-shifted viewing as well as media and platforms outside the reach of the 'black box'. Its true 'Achilles' heel', however, is the questionable representativeness of the panel sample for the television audience universe (Bjur 2009, 79). Significantly, the bias relative to the TV Meter sample (technique-friendly informants, coverage, and non-response) also applies to the Gemius and IndexDanmark samples. All three are representative stratified probability samples of the Danish population, functioning in practice as random samples subjected to standard sampling error. The statistical uncertainty can be calculated by a confidence interval of 95% (Helles and Hjarvard 2014, 125-31).

Gemius

The official provider of the Danish web ratings, Gemius, combines two systems, collected website server-based census data and panel-based software meter ratings. GemiusAudience thus resembles a "hybrid model" (Buzzard 2012, 111). Both of these systems are processed by the gemiusExplorer program.

The gemiusTraffic system registers the total web traffic on 300 Danish sites that are a part of Danske Medier's official web measurement system. The

automatic general census data is informed by codes installed on the servers of the sites as well as on so-called 'cookies' that are placed on the visiting computers, allowing the system to register unique users, reoccurring visits, and traffic across sites (Helles and Hjarvard 2014, 73-75). GemiusTraffic only includes site-centric data from sites that are willingly registered with Danske Medier. As a result, my main focus from here on will be the second system, Software Panel, containing the two dominant VOD sites in a Danish context: *Netflix* and *YouTube*.

The Software Panel method is based on software installed on the computers of the panelists, a representative sample of approximately 6500 people. On the basis of questionnaires, their socio-demographic data can be linked to the web traffic. Their every online move is registered, specifically what URL addresses they visit, and a constant stream of anonymized data is reported to a central server. Unlike the census data of the gemiusTraffic method, Software Panel is a subject to sampling error (see Danske Medier 2012, 26-28, for more on gemiusTraffic, the definition of users, and cookie errors; and on Software Panel and URL uncertainty).

Reservations towards both methods include double coverage, different connected media such as game consoles, the sometimes multiple users behind the one registered screen, use on Mac, and in particular apps.

IndexDanmark

TNS Gallup also carries out the IndexDanmark survey. On the basis of telephone inter-views and questionnaires with a representative sample of nearly 26000 people, the survey generates data on media use, shopping, interests, etc. This data can then be extracted via the GallupPC analysis program. In contrast to the TV Meter and Gemius tracking systems, IndexDanmark data on internet consumption is based on claimed measurements. With assertions of perceived behavior, certain risks apply: that individuals will either over-emphasize or under-emphasize socially popular or disliked behavior or that they will simply be unable to remember (see Buzzard 2012, 111; DR Audience Research 2014, 60). In its favor, however, the IndexDanmark sample is considerably larger than the TV Meter and Gemius samples.

In comparison, the data sources diverge when it comes to age ranges, sample sizes, and time periods. For instance, the TV Meter measures individuals from the age of 3+, IndexDanmark from 12+, and Gemius (Software Panel) from 15+. In addition, access to data limits the present article's analysis. Although university research has extensive access to the TV Meter and Gemius systems, access to the IndexDanmark survey is limited to the latest year, here 2013.[1] Up until a few years ago though, the Danske Medier association purchased the IndexDanmark data so that Danske Medier's 2012 report provides data for 2011.

Television flows

One incentive for engaging with streaming's impact on flow television is that Danish broadcast ratings have been in steady decline since 2010. From a drop of just three minutes in average daily viewing each year between 2010 and 2012, the drop from 2012 to 2013 amounted to an average of 15 minutes for the population as a whole. Analysis of the latest ratings calculated for this article from the TV Meter shows that by December 2014, an extra 9 minutes were added to the decline. Figure 1 shows this drop in television consumption, divided by target groups, which are defined so as to match those of the contextual reports in the third section.

Since 2010, the drop in daily television viewing adds up to a total of half an hour (15%). Breaking down the decline into age groups, it becomes clear which targets weight the scale. The average daily television viewing of the 18-34 year olds has dropped by close to an hour. For 35-54 year olds, it is 38 minutes, and for the 55+ year olds it is just four minutes, which is insignificant, bearing in mind the statistical error.

[1] During an IndexDanmark seminar at DR, I accessed the data for the remainder of the analysis period, 2010-2014, but for copyright reasons I cannot include it here.

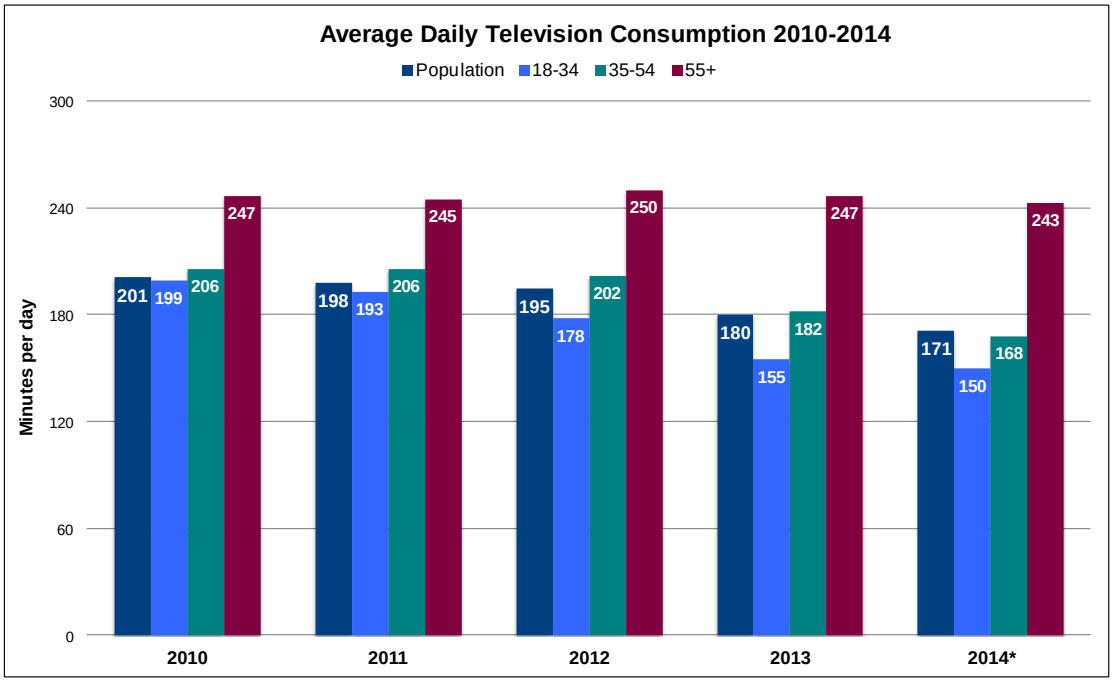


Figure 1, N=2300, source: author's calculations based on TV Meter data (Infosys+) (1st of January – 30th of November 2014)

It is, however, necessary to emphasize that although time spent viewing flow television has declined at an unprecedented rate since 2010, the consumption of the population nevertheless still amounts to a total of two hours and 51 minutes on a *daily* basis. Going back in time, to 2007, the average daily television viewing was just two hours and 28 minutes. From then on, following the digitalization of Danish television and the appearance of a whole range of new digital channels, ratings increased until 2010. In turn, this development triggered a fragmentation of viewers across multiple channels. That is to say that two hours and 51 minutes is still *a lot* but also that fragmentation now seems to be expanding *beyond* television channels and across national borders – and onto other platforms.

DR Audience Research (2014, 8) emphasizes that the decline in viewing between 2012 and 2013 (8%) cannot be ascribed to streaming alone, implying the drop to slow down in the future. However the data in the 2014 column shows a reduction of another 9 minutes by December (5%). Considering this decline in light of the TV Meter system's inclusion of broadcast television on pc/Mac from December 2013, it seems that audiences are in fact focusing their attention *somewhere else*. The next sections looks into potential challengers for television audiences.

Streaming Netflix

The notion that the internet may be stealing time from flow television viewing is largely focused on various versions of online VOD. It is thus that the annual survey by the media service Arkena (2014, 24) indicates how a hypothetical future drop in television viewing could link to its online equivalent: While 49% of respondents expect to experience an increase in viewing internet television and just 3% expect a decrease over the next three years, a total of 60% expect a decrease for broadcast television (via cable, satellite, or antenna).

In the Danish context, Netflix is considered the key streaming service. 17% of Danish households are paying Netflix subscribers in a universe in which 24% of households pay for TV streaming in some form (DR 2014, 32-33). Netflix (2014) begins its apocalyptic forecast for tomorrow's media reality (the *Netflix Long Term View*) with the headline "Linear TV is popular, but ripe for replacement." The Gemius ratings on the replacement entity of this equation go back to the launch of Danish Netflix in October 2012. Figure 2 illustrates the number of Netflix users (not subscribers) and the average monthly consumption.

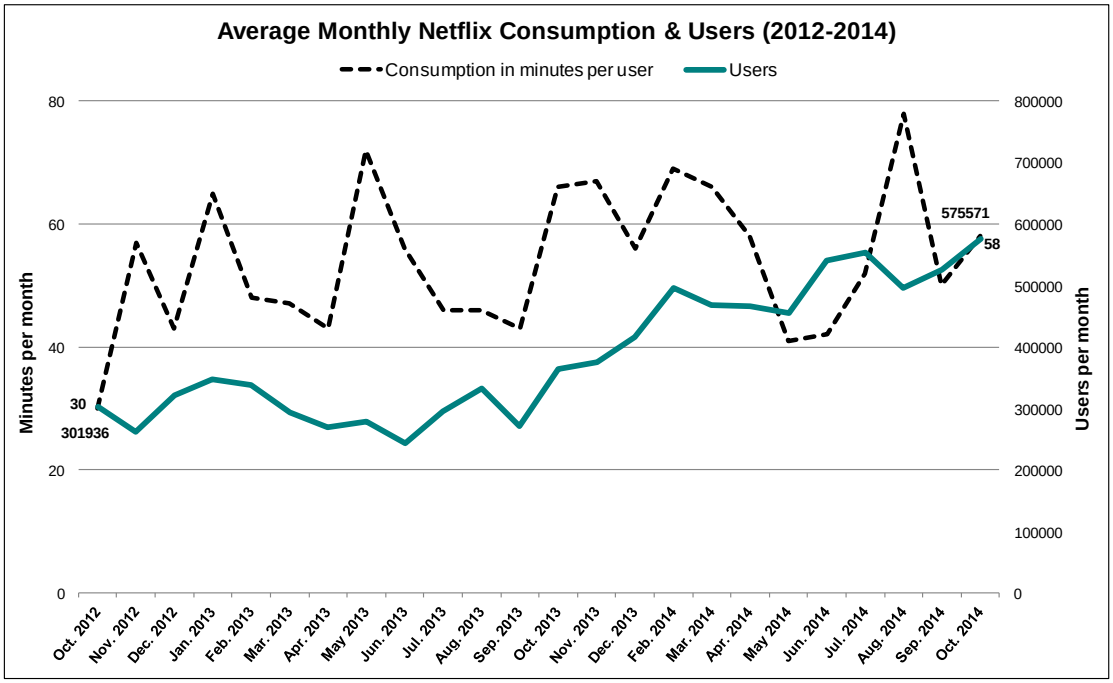


Figure 2, N=6500, source: author's calculations based on Gemius Software Panel (gemiusExplorer)

The Danish Netflix timeline illustrates that the number of users has nearly doubled over a two-year period. However, although the average consumption in minutes-curve starts at 30 minutes and ends at 58, it has not in fact increased since November 2012 but has instead remained a stable average consumption of 54 minutes. Consumption varies from month to month *and* from release to release (e.g. *House of Cards* in February 2014 and *Orange is the New Black* in summer 2014).

This is where, essentially due to the content on Netflix (film/television), the reservation of the number of *viewers* behind the one tracked *user* comes up. Despite increasing individualization of television viewing, television is far from extinct as a social activity, and so it must be assumed that *users* do not fully account for *viewers*. Also, an important aspect of the Netflix universe is its app and use on devices that are not captured by Software Panel (e.g. smartphones, tablets, game consoles like PlayStation and Xbox).

Streaming YouTube

YouTube constitutes the second runner up in the Danish streaming context (Arkena 2014, 35). However, YouTube is not just a streaming outlet; among many other functions, it is also, for instance, a music player. Based on a qualitative categorization of YouTube content, the DR researchers stress that just 10 out of the 22 YouTube content categories are "TV-like," meaning that 43% of YouTube consumption is taken into account as streaming (see DR 2012, 61 for the 10 categories). Based on this estimate, I calculated a second curve that represents 43% of the consumption referred to as 'streaming (43%) in minutes per user'.

The number of YouTube users increases by half a million over the two years (to include nearly half of the Danish population), but as with Netflix, the consumption curve is ambiguous. It does not reflect an increase in use but instead drops from June 2013 and only increases again from March 2014 and onward. The average monthly consumption of 55 minutes on the 'streaming (43%)' curve resembles that of Netflix.

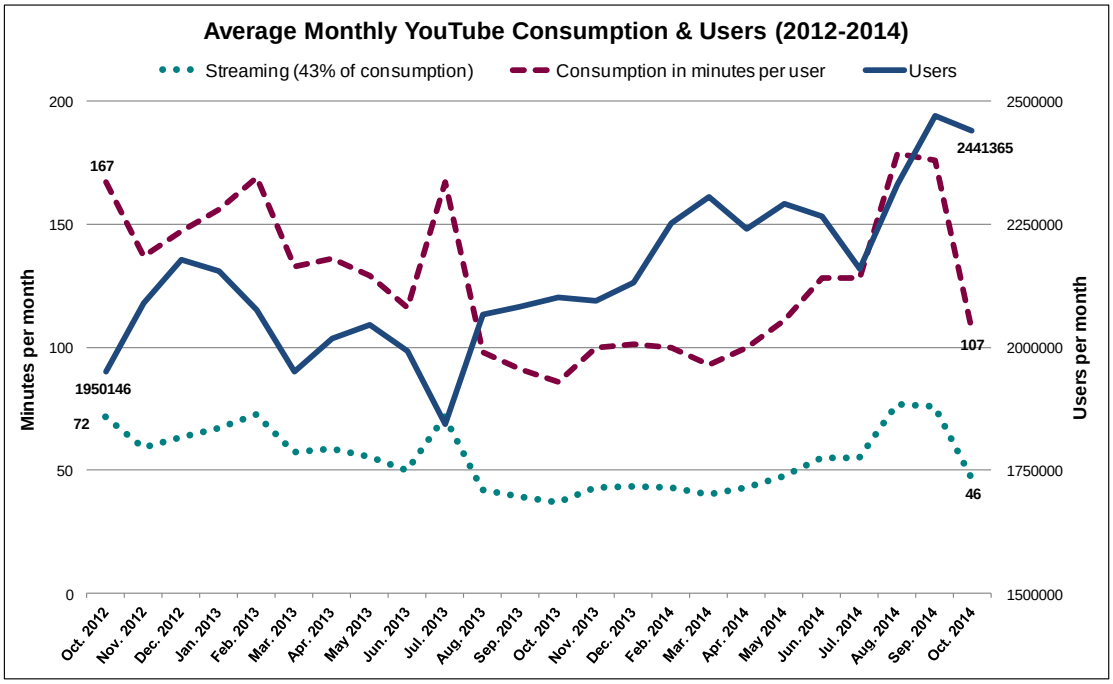


Figure 3, N=6500, source: author's calculations based on Gemius Software Panel (gemiusExplorer)

Roughly the same reservations crop up with regard to YouTube data. Again, other devices, the YouTube app, and the number of viewers behind one user may blur the picture. Another opaque dimension involves YouTube content sharing on social networks, especially Facebook, where the web address does not change to YouTube so long as the content is viewed directly in the Facebook feed.

Targeting 18-34 year olds

The one target group that stands out when examining Netflix and YouTube consumption is 18-34 year olds, which is also the target group with the highest decline in flow television viewing and the lowest viewing rate.

Combining the data on Netflix and YouTube, Figure 4 illustrates that, by the end of 2014, 18-34 year olds constituted half of the entire Netflix user population (see Figure 2 for total users) and spend 27% more time on YouTube compared with the general YouTube user (see Figure 3 for average consumption).

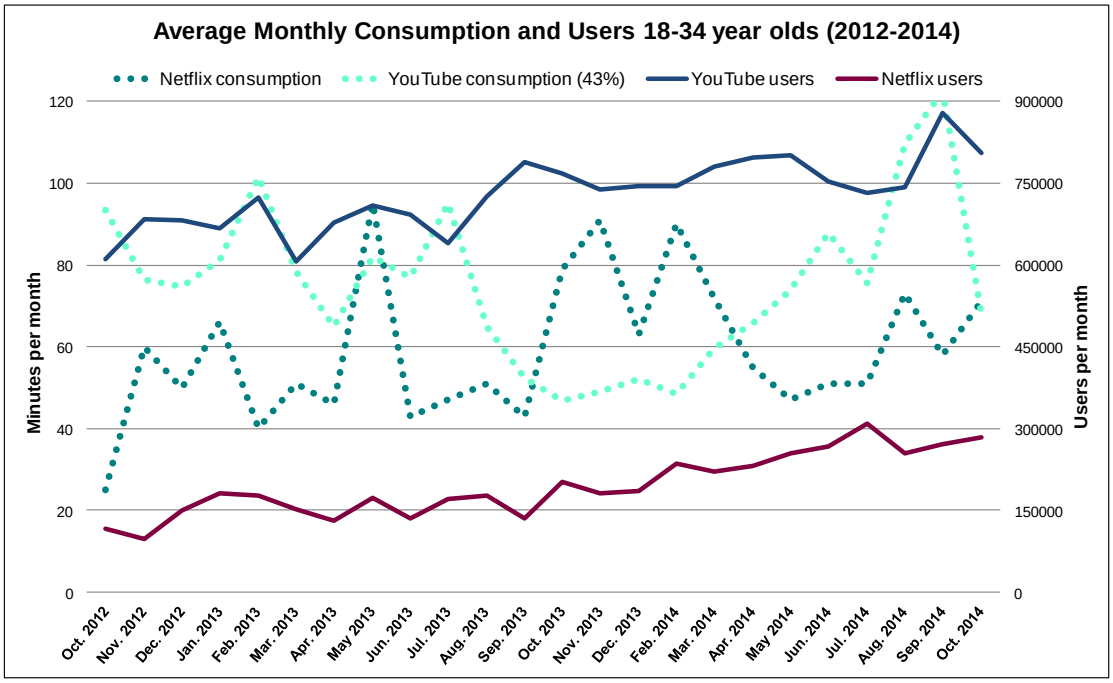


Figure 4, N=6500, source: author's calculations based on Gemius Software Panel (gemiusExplorer)

This article was prompted by the unprecedented drop in television viewing. Considering streaming, the alternative activity most likely to pose a threat, the findings appear ambiguous. The past two years' stable consumption per user on both sites of a little less than an hour *monthly* comes across as insignificant in comparison with *daily* television consumption. Moreover, it is impossible to link the decline in television viewing *per viewer* to an evident increase in minutes of consumption *per user* on the two sites.

However, by multiplying, for instance, monthly Netflix consumption by the increase in its users (of nearly 100%, from 300,000-575,000), total consumption doubles. Applying this calculation across the target groups in Table 1 illustrates that the target group with the highest average viewing time (55+), has the lowest consumption rate, while the target group (18-34) with the lowest average viewing time ranks highest in consumption on the two streaming sites.

	Netflix			YouTube		
	Users	Minutes	Total hours of use	Users	Minutes	Total hours of use
18-34	258.880	63	**271.824**	781.804	184	**2.397.532**
35-54	150.404	56	**140.377**	830.684	95	**1.315.250**
55+	42.110	32,5	**22.809**	547.865	52	**474.816**

Table 1, N = 6500, data source: see figure 2 and 3. Based on 2014 averages, calculation: Hours of use $= \frac{\textbf{users} \times \textbf{minutes}}{\textbf{60}}$

Developing this point further, if the same calculation is carried out for the 2013 averages, again using Netflix as an example, Figure 5 illustrates how the total number of hours put into the site intensifies over time. For 18-34 and 35-54 year olds, there is an increase of approximately 40% from 2013 to 2014. In this sense, consumption per user does not reflect an increase corresponding with the drop in television viewing per viewer, but the influx of users has a significant effect on total consumption on the streaming site over the course of the past two years.

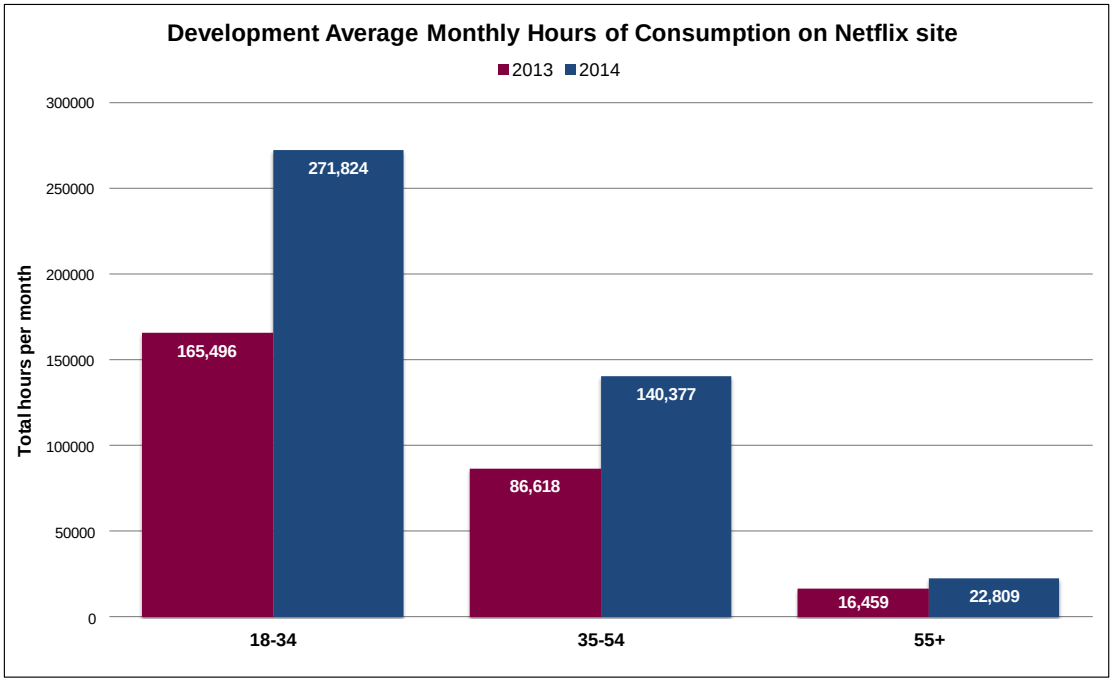


Figure 5, N=6500, source: see figure 2 and 3, averages for 2013/2014

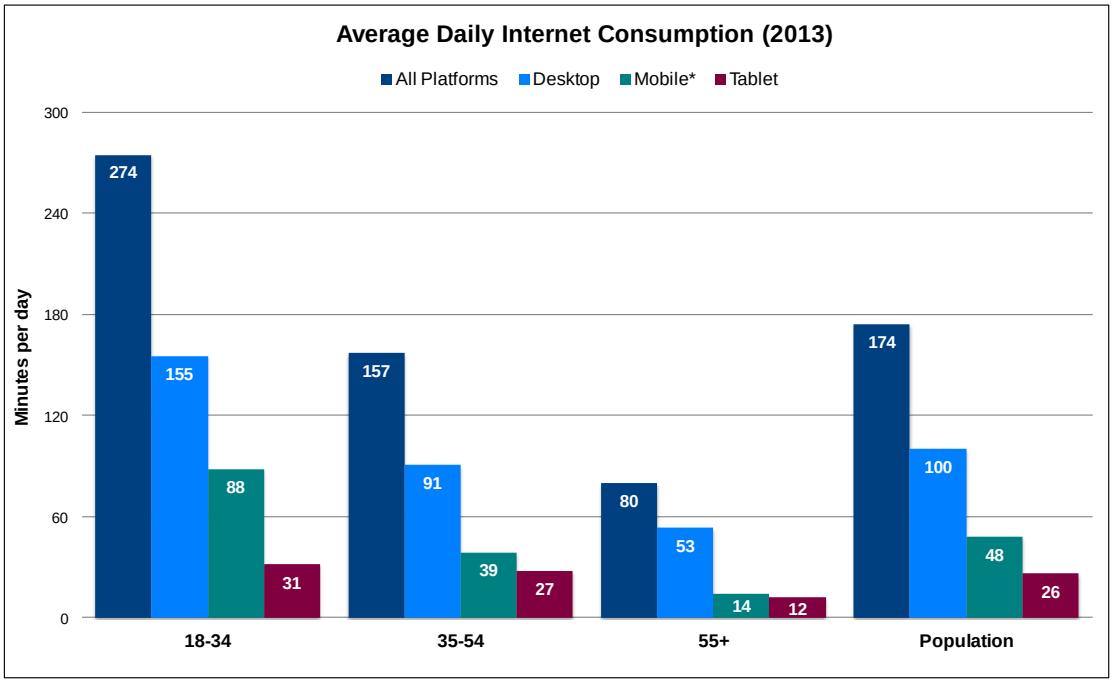
Internet flows

It is to some extent logical to focus on streaming as a challenger for television audiences. However, while the drop in television viewing is quite

straightforward, the ambiguity of streaming consumption over time suggests that other explanations apply as well. Taking into account the aforementioned reservations concerning Gemius data as well as the declining television ratings, we now examine internet use as a leisure time stealer, including *but not limited to* streaming.

At the time of writing, no technological audience tracking systems measure internet use on all platforms, anywhere, and at all times. Thus, because of its vast sample and continuous research structure, IndexDanmark is used for making conclusions regarding general internet use (see Danske Medier 2012).

When relating internet use to television viewing, one definite reservation comes up: What about all of the other aspects of internet use besides streaming and, indeed, besides entertainment in general? This question is perhaps more relevant than ever in a highly digitized Denmark (see ITU 2014). Internet consumption in the following figures must be viewed in light of the digitalization of the Danish public sector and its communication methods, internet banking, e-mail correspondence, etc.



*Mobile is an expression of all phone use, and so it is fair to presume that a certain percentage of the minutes are devoted to talking and texting rather than apps, streaming, music and social media

Figure 6, N=26000, source: author's calculations based on IndexDanmark (Gallup PC)

When distributing overall internet use across target groups and devices, the figure resembles the one for television consumption, only reversed over. Evidently, while 18-34 year olds spend two hours viewing television and 4.5 hours on the internet daily, 55+ year olds watch television for an average of four hours while using the internet for just one hour and 20 minutes. Another important observation is that, if daily average internet use is combined with average television viewing (for 2013), then daily *media* consumption among 18-34 year olds amounts to over seven hours, surpassing the approximately 5.5 hours for the two other targets.

To support a notion of a one-to-one substitution of internet uses eating away at television viewing, the negative development in television ratings would need to be mirrored in a corresponding positive development in internet use. For purposes of comparison, I needed to change the age ranges from the previous figures to match the ones used in the report from Danske Medier providing 2010-2011 data on internet use. The report did not include tablets, so I omitted this category.

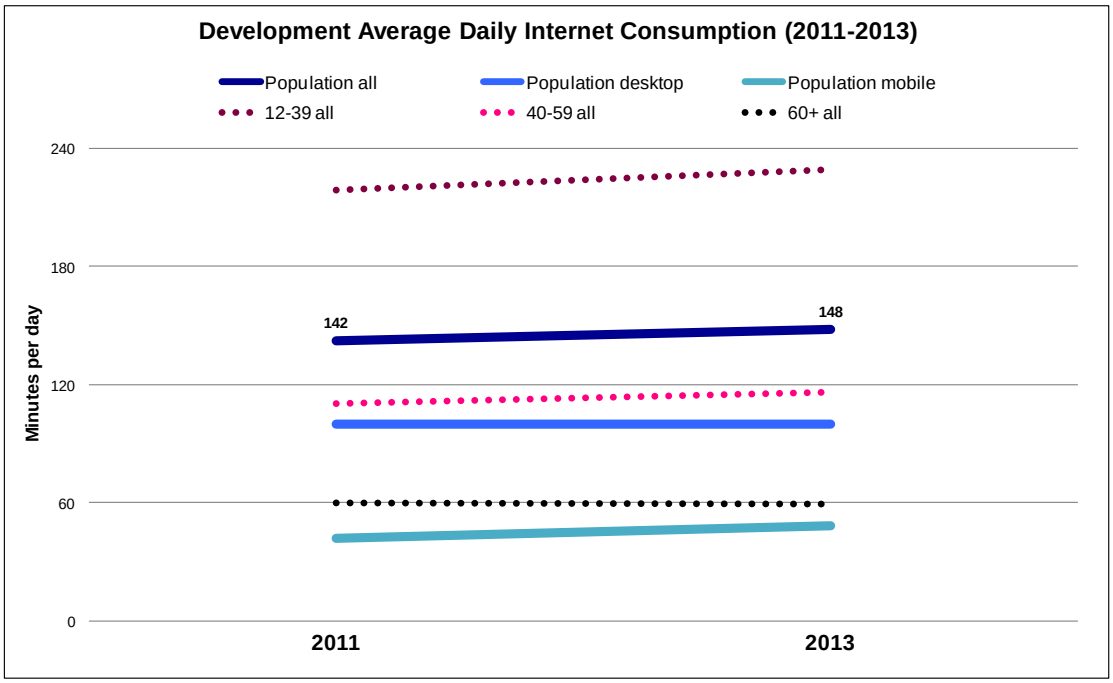


Figure 7, N=26000, source: author's calculations based on IndexDanmark (Gallup PC)
(2011 source: adapted from Danske Medier 2012)

Figure 7 illustrates that, on the basis of the IndexDanmark data, a hypothesis of significantly increased internet use cannot be supported at all. Thus, over the period of 2011-2013, average internet use only increases by an insignificant six minutes whereas television viewing drops by three times as much. Although not directly comparable, the increase in average internet use of 11 minutes among the youngest target group (12-39) also does not come close to mirroring the drop in television viewing (for the 18-34) of 38 minutes between 2011 and 2013. Based on this analysis, the changes transforming the media landscape are hard to explain, and a relational development between dropping television ratings and increasing internet use cannot be maintained.

This can to a certain extent be linked to the lack of tablet use, which can instead be found in Figure 5. When tablets are included (26 minutes), the population's average daily internet use in 2013 increases from 148 to 174 minutes daily. In 2011, only 9% of people had a tablet, tripling to 33% in 2013 (Statistics Denmark 2014, 7), which probably explains the exclusion of tablet data in the cited report as well as justifies its inclusion in a 2013 analysis. Doing so distorts the 2011 data on the one hand but embodies the rapid device expansion on the other. Nonetheless, the consistent yet staggering 100 minutes of internet use on desktop computers and the mere 4% increase in the mobile column in themselves invite suspicion.

III. Findings revisited

This final section seeks to revise the empirical findings and discuss the implications of the blind spots in the established measurements.

In order to examine my suspicion of claiming-error in the IndexDanmark data, I calculated the average daily television consumption based on the IndexDanmark survey responses. When asked about daily television, the sample answered an average of 138 minutes – 23% less than the 2013 tracked average of 180 minutes (Figure 1). This exemplifies the risk relative to under-claiming, even with the sizeable IndexDanmark sample.

Another way of investigating the IndexDanmark findings is to use Software Panel. Although only the top 200 sites of Software Panel are available for analysis, total internet use on desktop computers can be measured as well using the 'internet' node. According to the Gemius ratings, average daily internet use on desktop computers amounts to just 67 minutes in 2011 and 66 in 2013. In both cases, this is over 30 minutes less than desktop

internet use in the IndexDanmark survey. This counters the suspicion of under-claiming and supports the consistency of daily internet consumption.

The Arkena survey devotes several questions to Netflix, which can provide clues that are unaffected by the Gemius sources of error. 52% of Netflix users estimate that they use Netflix for an average of three hours or more *weekly*. Just 18% use it for less than an hour weekly (2014, 40). In comparison with Gemius, these percentages support the notion that Software Panel far from accounts for the totality of Netflix use. Looking in detail at devices (and in particular at the devices unaccounted for by Software Panel), the Arkena findings are that, even though the computer is the most common streaming device, the tablet (used by 33%), the smartphone (24%), and the game console (13%) are also becoming mainstream in a streaming context (52).

Although Netflix constitutes the key national player, it does not come close to accounting for the entirety of Danish streaming activity, as the data on YouTube alone evidences. The Statistics Denmark survey reviews streaming in general terms. According to these findings, 76% of 16-34 year olds stream film and TV content while 50% of 35-54 year olds do and 20% of 55+ year olds do so. When asked about the frequency of streaming, the rate drops for each target group, yet 27% of *all* streaming users say that they stream content *every day* (2014, 23).

Reviewing the entire population, Statistics Denmark finds that 49% of the Danish population streams film and TV content (2014, 23) in contrast to 25% of the same population in the Arkena findings (2014, 8) and 40% in the DR research (2014, 5). This goes to show that the results on streaming vary considerably from survey to survey, offering context to this research. The analysis emphasizes how digital developments have outrun audience measurements at the same time as streaming is transitioning from being a niche activity to being mainstream. The standard tracking systems are flawed with regards to media, platforms, and shifts in time and space. In order to capture 2015 audiences, surveys dodge sources of error relative to the tracking systems, but simultaneously establish reservations of their own. Varying samples and age ranges may account for some of the divergence between the three surveys' results as emphasized here, yet these inconsistencies highlight the importance of acknowledging the inherent

uncertainties of surveys, involving the ways in which questions are drafted, informant memory, and subconscious emphasis of favorable behavior.

Currency revisited

This article has shown that there is a gap between what is measureable from a site insider perspective on the one hand and from the outsider perspective of the audience researcher on the other hand. An explanatory example is the server-based measurement conducted by gemiusTraffic. This could (if only sites like Netflix and YouTube allowed it) deliver an abundance of transparent clickstream data on online audiences, with the advantages of dodging sampling errors and sensitivity towards interactive engagement with content. However, the services are instead tracked in software panels that register (only) computer visits to the URL address but cannot decipher what is watched, with what frequency, and at what volume.

But why these blind spots? Up until now, Netflix and most other major subscription services (SVODs) have maintained that they do not feel the need to "play the ratings game" (Curtin et al. 2014, 1), and so they have kept their viewing data to themselves. By virtue of being funded by subscriptions rather than advertising, these players seem to be less dependent on ratings – to such an extent that their digital strategies benefit from keeping ratings in the dark. Brands are increasingly expanding control over more than just one link in the media chain, extending across production, distribution, audience measurements, and business model development, where the gap between official and masked ratings in turn enforces the gap between different industry players (funded by subscriptions, advertisements, or the public).

In an interview, Netflix content officer Ted Sarandos explains how, besides the number of viewers (regardless of where and when), viewing behavior also determines the value of Netflix content. Being independent of the constraint of a maximum of 24 hours' daily screen time also provides independence from mass ratings for a single program. By investing in niche content, Netflix meets various audience demands, adding to the flexible viewing options when it comes to time bands and media. And so, the content that ends up ranking highest on Netflix does not necessarily have the highest linear television ratings (Curtin et al. 2014, 136). Based on Netflix's in-house

clickstream measurements of viewing (in essence shifted in time and space), Sarandos explains:

> "The current ratings model makes no sense whatsoever. It doesn't reflect human behavior at all (…) For people watching television, especially younger viewers, they're no longer connected to a linear grid. They very much consume television on-demand (…) It's ridiculous to base the value of content on such a flawed measurement system" (137).

Clickstream tracking enhances the ratings' transparency, drawing upon data other than counts of exposure, including interactive engagement measures of 'binge watching', genre preferences, etc. In the sense that they form a basis for advertisement models that are conditional upon audiences interacting with advertisements (Buzzard 2012, 108), ad-supported streaming services such as Hulu and TV3Play or services with public service obligations such as DR TV have joined the official web measurements. All the while, SVODs hold back their ratings to set a currency of their own. Thus, when it comes to subscribing audiences, large portions of the data are inaccessible for the time being.

Conclusions: Convergence

This research began with the inciting "Embrace Change" tagline at the annual TV industry conference. Trading in the term *viewers* for *users* embodied the changing understandings of television audiences, but it also underlined how audience measurements that are preoccupied with exposure fall short of capturing new audience behavior. This article's theoretical framework functioned as a short background story for understanding how technological and digital developments, which are sparking interrelated changes in all corners of the media industry, have finally caught up with the ratings currency too. It also served to show why, at the time of writing, established audience measurement standards are being challenged.

The methodological considerations served a dual purpose: to outline the relative advantages and weaknesses of each system and to underscore the multifaceted media reality as one that is not easily viewed from all sides at once. The conclusions from examining empirical data were: *firstly*, that flow television viewing drops continuously in 2014; *secondly*, that the number of

streaming users increases substantially on YouTube and Netflix but that consumption (on desktop computers) remains a stable proportion of daily television viewing; and *thirdly*, that internet use is more-or-less unchanged. In summary, the empirical findings combined did not support a *clear-cut* image of Danish television audiences *embracing change.*

The findings of the analysis called for discussion of the measurement methods and their declining accuracy as well as of the implications of the measurements' blind spots.

With regards to the first aspect, it was established that the advanced TV Meter system functions as well as ever – but only if one is interested in a specific part of the viewer universe: those people viewing content within a short period of time after broadcast and sticking to television sets and computer browsers. The reservations regarding the Gemius web measurements were underscored by survey findings from audiences outside the desktop-only reach of Software Panel, consuming Netflix to an extent far surpassing the stable consumption of a little less than an hour per month. At the time of writing, surveys free of the systems' blind spots best capture the entirety of audiences' whereabouts, yet the dissimilarities between the findings of the surveys referenced in this article highlight another set of objections regarding claimed measurements.

Relative to the second aspect, the SVODs' reluctance to participate in official web measurements has implications for site-centric census audience data. Online strategies develop independently from the official media currency and dominant business models. They draw upon the transparency of online tracking and the advantages of being relieved of the constraints of a 24-hour broadcasting timeframe when it comes to establishing an online currency of their own.

""Innovation" which is often labeled "disruption" replaces widely accepted truths with emergent realities" (Curtin et al. 2014, 87). While my findings maintain that broadcast television is doing okay, an unknown amount of viewing is thus-far unaccounted for within established standards of audience ratings. This is the *emergent reality* of this article – and so it closes with an open ending.

With a constant online high-speed connection always within arms' reach, the manner in which we consume television has undergone revolutionary change, outrunning the ratings industry and leaving audience

research in a grey zone – capable of identifying a decline in broadcast television ratings but being unable to follow the leak to its outlet. Catering to media convergence, audience measurements sensitive to multiple platforms; cross-media content; second, third, and fourth screens; time- and space-shifted viewing; *and* engagement are advancing. Nevertheless, the existing systems are failing to consolidate their online viewing measurements with flow television audience ratings. Changes in the media value chain bring into question the commercial advantage of releasing increasingly transparent audience ratings, thereby throwing doubt upon one of the central tools in the audience researcher's toolbox.

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