Catherine Johnson, 'Beyond catch-up: VoD interfaces, ITV Hub and the repositioning of television online', *Critical Studies in Television*, Volume 12, Issue 2, July 2017.

In September 2015 ITV, the UK's major commercial public service broadcaster, replaced its video-on-demand (VoD) service and its website with a new service called ITV Hub. Positioned as a 'digital destination' for the broadcaster online, ITV Hub aimed to 'present all of ITV's family of channels and services front and centre with a distinct digital look and feel' (Rufus Radcliffe, Group Marketing Director for ITV, cited in ITV, 2015: online). The launch of ITV Hub came in the wake of re-designed VoD services from the other major terrestrial broadcasters in the UK. In March 2015 Channel 4 launched a new on-demand service, All 4, which also replaced its website and VoD player and positioned 'all of Channel 4's linear channels (Channel 4, E4, More 4), its catch-up content and its digital exclusives in one place' (Slattery, 2015: 8). A year earlier the BBC rolled out a new version of its VoD player, BBC iPlayer, describing the new service as 'more than just catch-up, with live streaming, archive collections, exclusives and premieres' (Taylor-Watt, 2014: online). In February 2016, the final UK terrestrial broadcaster, Channel 5, followed suit, rebranding its VoD player as My5, adding exclusive content, box sets of programmes and increased personalisation to offer 'a much more televisual and immersive experience' from its on-demand service (James Tatam, Director of Digital Media and Commercial

Development for Channel 5, cited in *VoD Professional*, 2016: online). This was a period, therefore, in which the UK's terrestrial broadcasters were reconceptualising their VoD players as much more than just a place to catch up on programmes already broadcast. Rather they were recast as linear TV broadcaster, catch-up service, on-demand player and provider of interactive content all rolled into one.

Although these broadcasters had been providing VoD since the mid-late 2000s, it is striking that they chose to re-launch their VoD players in such close succession.[1] This was a moment of rapid change in the UK media market. Ofcom (the UK communications regulator) noted that since 2013 there had been a significant rise in ownership of internet-connected televisions, smartphones and tablets, increased access to broadband, and the growing penetration of transaction and subscription VoD in the UK.[2] This was accompanied by 'a fundamental shift in audience attitudes and consumption' (Ofcom, 2015: 18), with a decrease in the share of viewing to live TV and an increase in the viewing of VoD and other online video services.[3] These re-launches, therefore, can be understood as an attempt by the UK's terrestrial broadcasters to respond to a media marketplace within which, according to Ofcom, the 'key enablers of on-demand television are now mass-market' (Ofcom, 2015: 18). Central to this media landscape is an increasingly quotidian form of TV ephemera – the television interface – that shapes access to, and engagement with, television on-demand. This article contributes to this special edition on ephemeral television by asking what an analysis of the VoD interface reveals about the changing nature of television in this increasingly internet-driven media environment.

Daniel Chamberlain argues that with digitalisation, 'television interfaces have become gateways to the content we desire, enabling individualized viewing patterns and subtly reformatting our televisual experiences along vectors of customization and control' (2010: 85). Interfaces are the frames through which access to digital television is provided to viewers, and include the menus of personal video recorders (PVRs) and smart TVs, as well as the cultural interfaces of VoD players.[4] VoD interfaces consist of a wire frame overlaid with a graphical user interface (GUI) within which content (images, programmes, text and so on) is placed. Although the wire frame and GUI provide a relatively stable structure for the content provided through the VoD player, VoD interfaces can be understood as television ephemera in the transience of their content and their peripheral status (Grainge, 2011: 2). VoD interfaces are constantly updating, with the content on offer changing according to the day/time of access or even depending on who is accessing the service (in the case of VoD players that offer personalisation). The transient nature of the VoD interface ties to its status as peripheral and throwaway. Unlike the programmes they provide access to, VoD interfaces are not routinely archived or valued as important forms of media content in their own right, despite their central role in organizing the viewing experience of television.

As with many other forms of television ephemera, there have been relatively few detailed analyses of VoD interfaces. JP Kelly (2011) offers an excellent study of the ways in which the US VoD service, Hulu, combines the logics of old and new media within its interface by using the interactivity of

online media for the same purpose as broadcasting's flow, which is to retain the viewer. While Kelly focuses on the modes of interaction made available to the viewer through VoD services, Daniel Chamberlain (2011) argues that interfaces can be understood as interactive scripted spaces that create a sense of agency in the user that belies the ways in which algorithms and metadata are used to control and shape the interactions on offer.[5] We can understand the VoD interface, therefore, as a site whereby television is adapted to the interactive environment of online media. This is a space in which the logics of broadcasting meet the possibilities of programming, software and algorithms in ways that shape and construct the experience of television online. Focusing on the interface of ITV Hub, this article asks how television is being repositioned for an online and on-demand landscape. It will do this by combining analysis of the visible (design) and invisible (data) structures of the interfaces of this broadcaster's VoD service.

The focus on a broadcaster's VoD service is a deliberate one here, in that it offers a prime locus to explore the ways in which traditional linear broadcast television is being reconceptualised for an on-demand environment. The UK is comparatively advanced in its uptake of on-demand television, with a greater proportion of people using an online service to watch TV or films and using a catch-up service from a free-to-air broadcaster than any of the other countries surveyed in Ofcom's *International Communications Market Report* (2015a: 7-8). While there have been a few studies of the BBC's VoD strategies (see for example Bennett and Strange, 2008; Johnson and Grainge, forthcoming) and of the development of VoD services in the US and elsewhere in Europe (see for example

Jenner, 2014 and 2015; Kelly, 2011; Medina, Herrero and Guerrero, 2015; Schwarz, 2016), the UK's commercial terrestrial broadcasters have received less attention. Indeed, despite being the BBC's primary competitor with a share of over 20 percent of the UK audience across its family of channels, ITV has been historically overlooked in television studies more generally, described by Catherine Johnson and Rob Turnock as the 'ugly sister' of British broadcasting (2005: 2). Focusing on ITV allows greater consideration of the ways in which commercial imperatives might be shaping the development of VoD by the UK's terrestrial broadcasters. Particularly significant here is the way in which ITV's advertiser-funded business model might inform its online strategy. In the UK context, subscription is the main driver of economic growth in the television industry, with revenue from online TV subscriptions increasing by 42 percent in 2015, driven by the take-up of new over-the-top subscription VoD services like Netflix and Amazon Prime Instant Video (Ofcom, 2016a: 68). Yet ITV, and the UK's other commercial terrestrial broadcasters, have a business model based on making their channels and services available for free in exchange for the viewing of advertising. Digital technologies, such as the PVR, potentially threaten this business model by making it easier to skip adverts, while new subscription VoD services offer ad-free viewing for a small fee. The challenge for the UK's commercial free-to-air broadcasters is whether it is possible to make ad-funded VoD work without undermining their broadcast revenue base.

Existing academic studies of linear broadcasters' responses to digitalisation have tended to stress the ways in which they are privileging traditional business models (see for example Bennett and Strange, 2014; Mann,

2014; Siapera, 2004). Indeed, UK broadcasters' VoD players tend to be positioned in academic and regulatory discourse as 'catch-up' services that provide viewers with the opportunity to watch broadcast programmes that they have missed (Doyle, 2010; Jenner, 2015; Michalis and Smith, 2016; Ofcom, 2015b). This understanding of the broadcaster VoD service ties it directly to the broadcaster's 'primary' role as a provider of linear programming, in which VoD is a supplementary service. The positioning of broadcaster VoD as catch-up service differentiates it from other forms of VoD, such as the rise of subscription and transactional VoD services provided by the likes of Netflix and Apple, which have been understood to offer a new form of television distinct from broadcasting (Jenner, 2014). Yet, as we saw at the start of this article, the UK's broadcaster VoD services in 2016 can be understood as far more than just catch-up players, offering access to programmes premiered or provided exclusively online, interactive content and live streams of broadcast channels. Interfaces, as the frames that structure access to this range of online content, provide an opportunity to examine how broadcasters are repositioning what online television is as a service and an experience beyond catch-up in a changing media market.

There are no established methodologies within television studies for studying interfaces. To explore how broadcaster VoD interfaces are repositioning television online, this article will combine an examination of press releases and trade press discussion surrounding the launch of ITV Hub with textual analysis of the design of its interface. Trade press analysis reveals the industry rhetoric about the aims and functions of ITV Hub, including the role of

data that might not be immediately visible within the surface design of the interface itself. Textual analysis subjects the visible surface of the VoD interface to scrutiny in order to explore how it is designed to structure and organise television online in ways that might enable certain experiences and limit others. Textually, VoD interfaces can be understood as 'dynamically-defined digital resources' (Schneider and Foot, 2004: 118) that provide access to range of content through a number of pages connected by hyperlinks. While it is beyond the scope of the article to map out all of the potential hyperlinks, pages and features of ITV Hub, this article will attempt to capture the ways in which the interface operates to structure the experience of television online in two ways. First, it will examine the design and structure of ITV Hub's home page. The focus on the home page enables analysis of the ways in which ITV is attempting to structure the overall VoD experience for the user. Second, it will analyse the channel and programme pages accessed through the primary links from the home page. The focus on the channel and programme pages stems from the prioritising of these two elements within the design of the home page for ITV Hub and enables analysis of the way in which the broadcaster frames the primary function of the VoD player.

The temporality of the web as an object of study adds an additional layer of complication here. Lisa Gitelman's definition of web documents as 'continuously present and yet constantly subject to change' (2008: 145) is particularly apposite when thinking about VoD interfaces which are dynamic objects subject to change depending on time, date, and location of access. The analysis below focuses upon the interface of ITV Hub accessed by myself within

the UK over the summer of 2016. However, I accessed these pages on numerous occasions in the first six months of 2016 and the analysis is contextualised in relation to my broader observations over this period. It is also worth noting that VoD interfaces are subject to continuous updates and, in the case of ITV Hub, are personalised for each user. This is one of the challenges of analysing ephemeral new media texts. Furthermore, broadcaster VoD services appear across multiple platforms and the analysis will focus on ITV Hub as it was presented on desktops and laptops. 33 percent of the UK online population used a desktop or laptop computer to access catch-up and VoD services at least monthly in 2015 (Ofcom 2015b: 56).[6] This is similar to the percentage using a set-top box (35 percent). However, not all of the UK's broadcaster VoD services have been rolled out for set-top boxes with much of the new content and design of ITV Hub not available through subscription cable and satellite services, such as Virgin Media, at the time of writing. This reminds us that when thinking about digital television we need to consider not only the service that is being analysed (such as the broadcaster VoD player) but also the platform upon which that service is accessed (such as the laptop, TV set or mobile device), as each platform enables or privileges certain forms of interaction over others. What follows, therefore, is an analysis of ITV's VoD interface as it appears on a particular platform (the laptop and desktop computer) in order to examine the ways in which this commercial public service broadcaster is re-positioning what television is within a online, web-based environment.

ITV Hub: the logics of broadcasting on-demand

When ITV introduced ITV Player in December 2008, it was the last of the public service broadcasters in the UK to launch a VoD service. ITV's later entry into this market can be understood in relation to its position as the major commercial terrestrial broadcaster in the UK. Broadcaster VoD services, such as Hulu and ITV Player, potentially take audiences away from watching linear television, where commercial broadcasters have traditionally made the bulk of their revenue (Mann, 2014: 22). The smaller audiences generated online mean that it can be harder for a broadcaster to generate the same revenue from a viewer watching online than from that viewer watching the same programme as broadcast. At the same time, however, since the development of online video in the mid-2000s, there has been on-going concern within the television industry about the sustainability of funding models based on television spot advertising. Amidst the recession of 2008 and declining ad-revenues, ITV successfully argued for a reduction to its output of children's, arts and religious programming, claiming that it was no longer possible to remain commercially viable while retaining all of its public service commitments in these areas (Beckford, 2010; Tunstall, 2010: 155; Ofcom, 2010). Yet despite these earlier concerns ITV has remained the market leader in the provision of commercial television in the UK. By 2015, ITV's share of viewing across its family of channels and services was 21.2 percent, far behind the BBC (with 32.8 percent) but significantly ahead of any of its commercial rivals.[7] This market position made ITV 'the biggest marketing platform in the UK' (ITV, 2015a: 19). As a commercial public service broadcaster, ITV has responsibilities to fulfil a set of public service purposes and characteristics (see Ofcom, 2016) and to generate profits for its shareholders. However, ITV's public service remit only applies to its main linear television

channel and not to its family of digital channels or to ITV Hub. This makes its digital channels and services central to its commercial proposition. Meanwhile, the position that ITV holds in the UK market as the primary free-to-air commercial terrestrial television provider makes its ad-funded linear television business particularly important to its financial security.

ITV's strong market position has been enabled, in part, by the continuing resilience of linear broadcasting. In 2015, 63 percent of all adults' viewing time in the UK was spent with live TV watched as broadcast (Ofcom, 2016a: 1). In addition, overall spend on television spot advertising in the UK has remained strong, even rising by 6.7 percent from 2014 to 2015 (WARC, 2016: 1). However, over the same period, the market for online advertising has shown significant growth.[8] ITV is operating in a market, therefore, in which television spot advertising and traditional TV viewing remain robust, but in which the growth is in online advertising and non-linear viewing (particularly amongst younger viewers) (ITV, 2015a: 9). This is summed up well by ITV's Chief Executive Adam Crozier, who stated that:

> Viewers, and particularly the younger generation, are changing the way they consume content […]. As a result online is one of the fastest growing businesses within ITV […]. However, while online viewing is growing rapidly in the UK, it remains a small proportion of total viewing at 7 percent, with the majority of television watched live (cited in ITV, 2015a: 15)

It is against this backdrop that ITV launched ITV Hub as a viewing experience centred on live streaming of the company's broadcast television channels. A *Broadcast* article on the launch noted that, 'Live streaming of ITV's portfolio of channels will sit at the heart of ITV Hub after the broadcaster reported this accounted for over 30 percent of usage.' (Campelli, 2015: online). While justified here as a response to user behavior, the emphasis on live television in ITV Hub can be understood in relation to ITV's broader need to develop an online strategy that supported its linear business model while also enabling it to gain a foothold in the growing online advertising market. Live television (whether viewed through digital terrestrial or online) is particular valuable for commercial broadcasters because viewers cannot fast-forward through the advertising breaks. ITV uses a range of strategies to encourage viewing as broadcast, such as hashtags, live tweeting, voting and a slate of live event shows, from *The X Factor* (2004-present) and *Britain's Got Talent* (2007-present), to *I'm a Celebrity Get Me Out of Here!* (2002-present). Developing its VoD service around a live television offer, therefore, ensures that its online strategy supports its commercial linear strategy as a market leader in ad-funded television.

In the trade press materials surrounding ITV Hub, the emphasis on live streaming was understood to make the experience of VoD more akin to the broadcast television experience. ITV's own press release for the service claimed that live streaming on ITV Hub would offer 'audiences a more compelling TV-like experience across all devices.' (ITV, 2015: online). Writing about the growth of live viewing through ITV Hub's forerunner, ITV Player, Paul Kanareck

(Director of Online and Brands at ITV) stated that 'TV is instant, immediate and alive and this should be reflected across all our platforms.' (cited in Durrani, 2014: online).[9] However, this emphasis on VoD offering the immediacy and (a)liveness of broadcast television is combined with a more traditional VoD rhetoric in which ITV Hub is understood to provide access to a vast archive of content. In outlining the proposition of ITV Hub as a new digital destination, ITV Media (responsible for ITV's media sales) described it as 'A destination that forgets the rules of time and space, where you can watch TV from the past, present or future - simply put, it's ITV's one stop shop for all your favourite shows, whenever you want them.' (ITV Media, 2016a). The trade discourse surrounding the launch of ITV Hub positioned it as a site where the immediacy and (a)liveness of broadcasting is combined with an archive of content in ways that defy the 'rules of time and space'.

The interface for ITV Hub demonstrates this combination of live and archive content in ways that emphasise the service's link to linear television. Table 1 shows the basic structure of the GUI for ITV Hub's home page.

<table>
<tr><td>ITV logo</td><td>Live TV</td><td>Shows</td><td>Categories</td><td>News</td><td>Help</td><td>Sign-in</td><td>Search</td></tr>
<tr><td colspan="8">Segment with dark background over which text and image of one, or a series of, programmes is provided</td></tr>
<tr><td colspan="2">ITV logo
Time of transmission (TX)
Programme title</td><td>ITV2 logo
Time of TX
Programme title</td><td>ITVBe logo
Time of TX
Programme title</td><td>ITV3 logo
Time of TX
Programme title</td><td>ITV4 logo
Time of TX
Programme title</td><td colspan="2">CITV logo
Time of TX
Programme title</td></tr>
<tr><td colspan="2">Still image
Programme title
Channel, date and time of</td><td colspan="2">Still image
Programme title
Channel, date and time of</td><td colspan="3">Still image
Programme title
Channel, date and time of</td></tr>
</table>

TX		*TX*		*TX* [NB repeated for 2 rows]		
Image from programme overlaid with channel logo, programme title, date and time of TX						
Still image *Programme title* *Channel, date and time of TX*		*Still image* *Programme title* *Channel, date and time of TX*		*Still image* *Programme title* *Channel, date and time of TX* [NB repeated for 2 rows]		
Image from programme overlaid with channel logo, programme title, date and time of TX						
Still image *Programme title* *Channel, date and time of TX*		*Still image* *Programme title* *Channel, date and time of TX*		*Still image* *Programme title* *Channel, date and time of TX* [NB repeated for 2 rows]		
ITV	*ITV2*	*ITVBe*	*ITV3*	*ITV4*	*CITV*	*ITV Encore*
ITV Presents *Be on TV* *Mobile* *Jackpot* *Signed Stories*		Corporate *ITV PLC* *ITV Responsibility* *Jobs* *Press Centre* *ITV Media* *Commissioning*		Information *Help* *Contact Us* *Terms & Conditions* *Privacy Policy*		

Table 1. The basic structure of the ITV Hub homepage, July 2016. Italics indicate a hyperlink.

The interface is designed along a vertical axis, allowing users to scroll down through the page. This creates a hierarchy in which the content nearer the top is prioritised. As Figure 1 demonstrates, the home page is dominated by the second section from Table 1, which takes up around one third of the screen that is visible without scrolling. This section is used by ITV to position the VoD player as a hybrid site that encompasses different kinds of television experiences, from viewing online premieres of programmes before their terrestrial broadcast, to bingeing on box sets of archived content, to catching up on the highlights of 'The weekend's top telly'. The most prominent part of the home page, therefore, is

used flexibly to promote different functions of the VoD player – as catch-up service, as archive and as transmitter of original content.

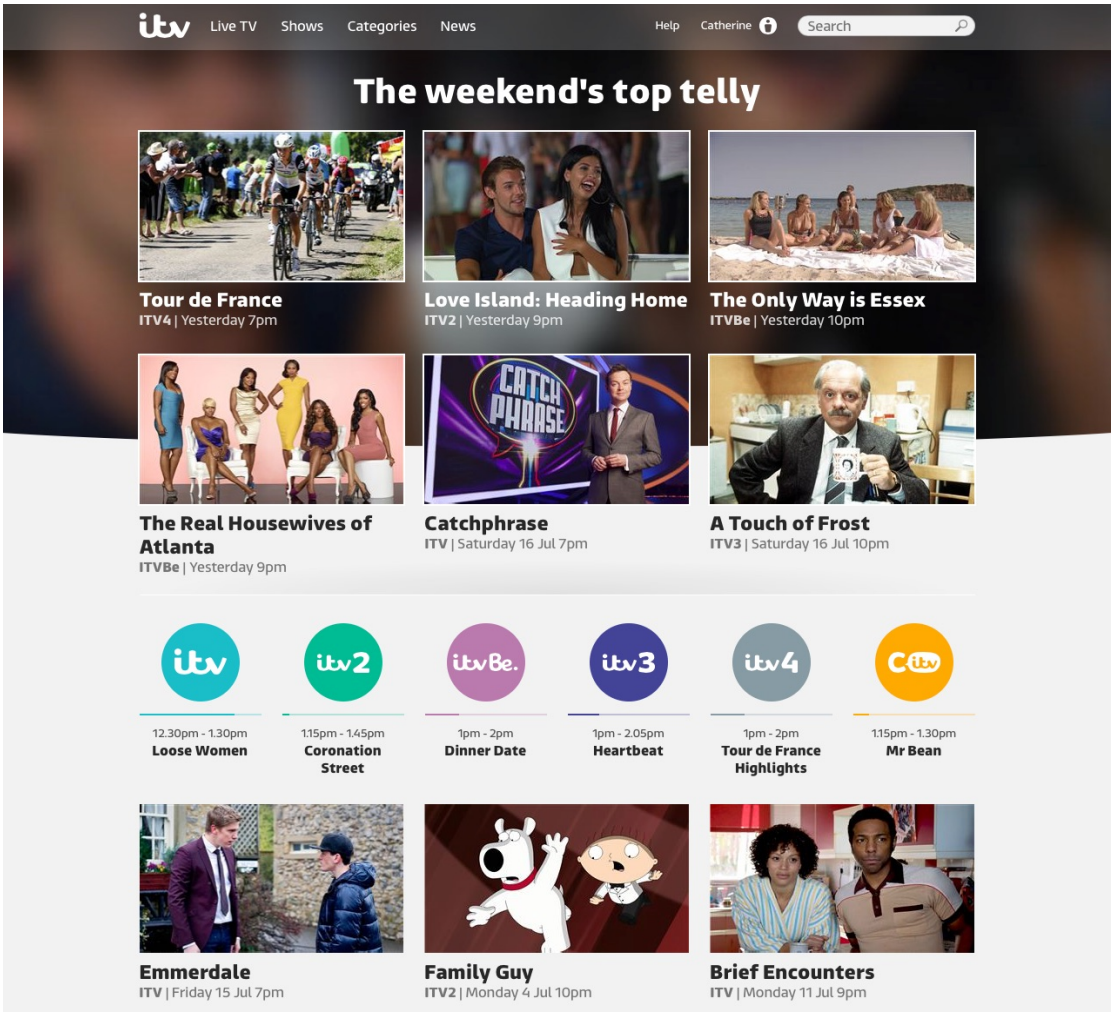

Figure 1. ITV Hub home page, July 2016.

Below this section of the home page, is a prominent row of channel logos for each of ITV's six free-to-air linear television channels, with the time and title of the programme currently being broadcast underneath. Clicking on any of these links takes the user to a page for this channel (see Figure 2). The design of this page mirrors that of the home page, dominated by a large window that occupies the top third of the page within which the ITV Hub ident, two advertisements and the live stream of the channel selected immediately begins

playing. Under this image is the text 'Watch Live', accompanied by the channel's tagline, followed by details of the programme currently being streamed and the next programme to be broadcast on the channel. Below the live stream on each channel page, the interface displays images and brief information of other programmes broadcast on that channel in reverse chronological order under the titles 'Recently on [channel name]' and 'More from [channel name]'. Here the link to linear television is particularly pronounced, appearing both as content (the live stream) and as a structuring device in the design of the interface.

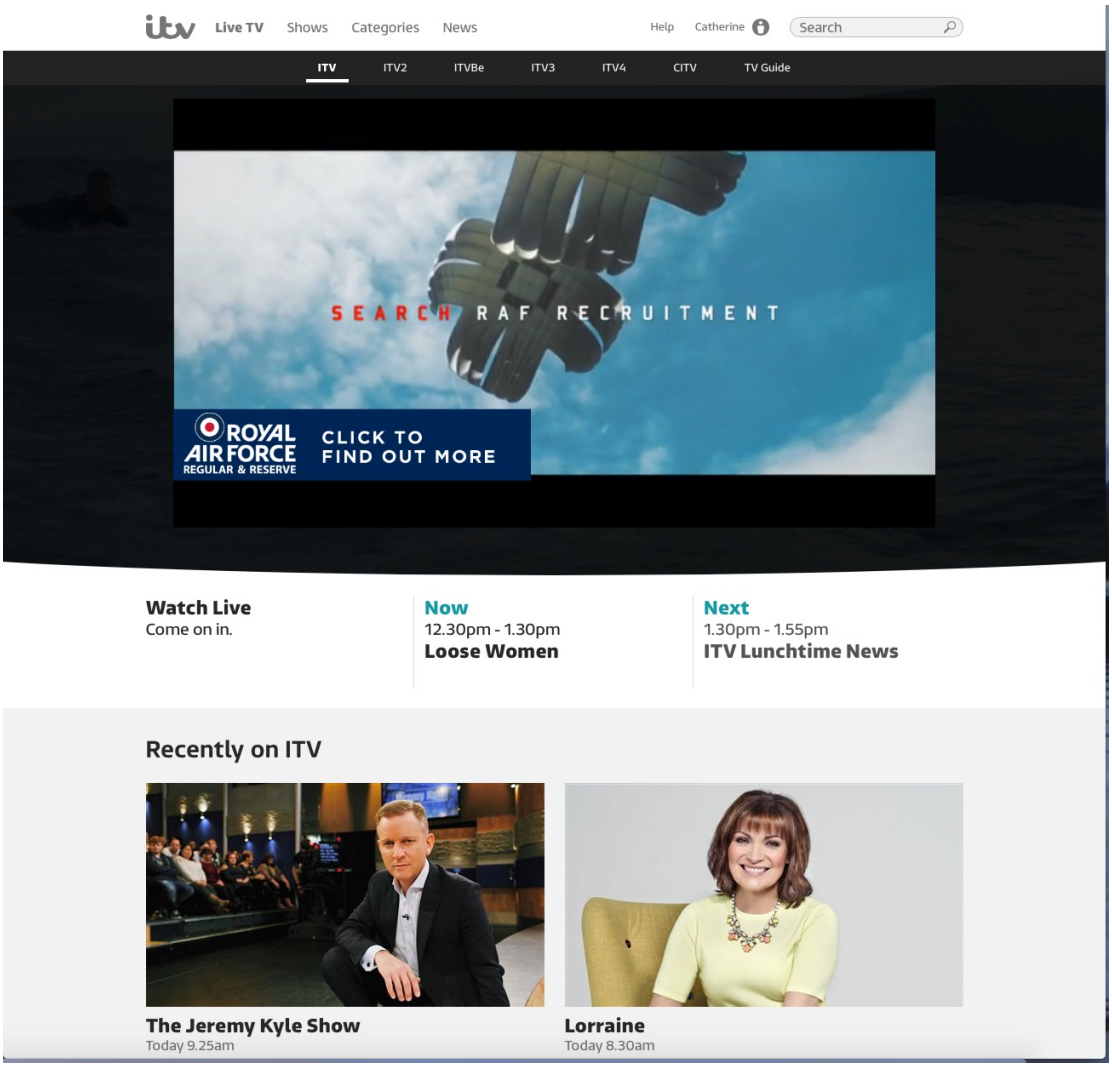

Figure 2. ITV Hub channel page for ITV with interactive advert, July 2016.

The rest of the home page interface appears to function more as an archive of programmes. It is structured around a series of images from episodes that act as hyperlinks to programme pages where users can watch the episode in question, access other episodes from the same series, other programmes in the same genre, and (for some series) other content, such as previews, images, interactive videos and so on. However, the link to the linear schedule is not absent here. The programmes selected for me on the home page came from a range of genres (comedy, drama, sport, factual), but were all episodes broadcast on linear television over the previous fortnight, with the interface indicating the channel, time and date of broadcast for each episode. The exception to this was a link to the box set of the first five seasons of the drama *Cold Feet* (1997-2003). While this link provided access to archival programming, *Cold Feet* was included on the home page because the series was returning shortly for a new season. Old and new programmes do sit side by side on ITV Hub, but the criteria for selection for both remains *currency*, defined by the programme's relevance to the linear schedule. Across the design of this VoD service, then, emphasis is placed on the relationship of the content to linear television. Even on the programme pages where viewers can watch online premieres the relationship to linear broadcasting is present as the page indicates when the programme will be shown on terrestrial television and only makes the episode available up to the day before its terrestrial broadcast. Indeed, overall, the interface of ITV Hub is informed by the logics of television broadcasting in its use of channels and linear schedules as central structuring devices.

The replication of broadcasting logics online in the interface of ITV Hub

cannot, however, be understood simply as the translation of broadcasting onto the internet. Indeed, we can position ITV Hub as part of a broader process in which television and computing have become progressively intertwined. With the rise of set-top boxes, personal video recorders, and smart TVs (as well as the development of VoD television services delivered through laptops, desktops, tablets and mobiles), the experience of television viewing increasingly encompasses search, browsing and recommendations provided through interfaces. It becomes harder to distinguish clearly between linear and non-linear television when the experience of watching linear television for many viewers is framed by the interface of the electronic programme guide (EPG) or PVR. This raises the question of what differentiates VoD television from the experience of watching linear television in the contemporary media context.

José Van Dijck and Thomas Poell's (2013) distinction between mass media and social media logics is useful in examining this question. Van Dijck and Poell argue that while mass media is largely one-way, social media enables greater two-way interaction and increased connection between people, in contrast to the mass media emphasis on connecting content to citizens or advertisers to consumers. The interface for ITV Hub does enable some forms of interaction and connection. From the programme page there are tabs to enable users to share a link to the episode on Facebook, Twitter and Google Plus. Yet this is a very limited form of interactivity, effectively enabling the viewer to act as marketer for ITV by sharing with others the fact that they have watched a particular episode or programme. There are also a few examples of interactive content, such as an interactive *Coronation Street* (1960-) video in which viewers

can click on 'hotspots' within the video to access more information or content. More typical, is the presence of interactive advertising, where viewers can select which version of the advert to watch or click on the advert to open up a new window to additional content. There is little sense here, however, of interactivity as a form of community building or of tools that would enable greater two-way communication between broadcaster and viewer. Indeed, the primary address of ITV Hub's interface is to the user as a *viewer of content*. While users can chose which programmes from the interface to watch, this process of selection is not far removed from the process of selecting a television channel on a remote control or an episode from an EPG. Even the ability to search for content is de-emphasized, relegated in the interface to a small box at the top right of the screen.

Similarly, although ITV Hub offers the promise of personalization and requires users to sign in to access the service, there is little visible evidence of personalization within the interface itself, apart from the user's name appearing next to the sign-in icon. In contrast, both All 4 and BBC iPlayer make the personalization of their services far more explicit to the user. All 4's interface includes a 'Recommended for You' section and a '4Viewers' section that outlines how data is collected and used, while graphics indicate when certain programmes have been selected for you. BBC iPlayer similarly includes 'Recommended for you' selections and a page that explains how programmes are selected and recommended to the viewer.[10] This more personalized address is absent in ITV Hub, and the impact of sign-in is not made visible to the user, in that it is not clear how the service is using data and algorithms to drive the

programmes that appear within the interface. The attention given to explaining how user data is driving the design of the VoD in All 4 and BBC iPlayer could be tied to concerns regarding personalization and public service broadcasting. The attempts at transparency in the use of data here tie to the address of public service broadcasters to viewers as citizens instead of (or as well as) consumers. It also works to allay concerns about the ways in which data and personalization might undermine the philosophy that public service broadcasting should provide access to content that viewers need and not just what they want (see Grainge and Johnson, forthcoming). By contrast, such public service concerns are far less apparent on ITV Hub where personalisation, as we shall go on to see, emerges primarily in relation to its offer to advertisers rather than to users. Overall, then, although ITV Hub enables interactivity as a mode of engagement, this is not dissimilar to the forms of engagement offered by EPGs or PVRs where users are addressed as viewers and invited to choose from a selection of programmes.

The emphasis on viewing as the primary mode of engagement is further exacerbated by the establishment of ITV Hub as a platform for streaming, rather than downloading.[11] As a streaming service, ITV Hub is quite different from the time-shifting technologies of video, DVD and PVR. ITV Hub provides users with access to watch content rather than the right to retain copies of content. In this sense, ITV Hub as a VoD service can be understood within the 'flow' model of production and distribution outlined by Bernard Miège (1989: 138-40). Differentiated from the publishing model in which products are sold directly to consumers as tangible objects, the flow model is based upon indirect income generated through the exchange between producers, broadcasters and

advertisers. Echoing Raymond Williams' (1990) theorization of broadcast flow, Derek Kompare argues that 'while the publishing model deals in media as discrete objects, the flow model is premised instead on the aggregate experience of television over time, rather than on individual texts' (2006: 340). Although ITV Hub offers access to individual texts, they are positioned as part of an aggregate experience that exists in direct temporal relationship with linear broadcasting. This is an aggregate experience that is also constantly refreshing in ways that are designed, much like broadcast flow, to encourage regular contact from the viewer and the development of audience loyalty (Miège, 1989: 46-7).

Kompare uses Miège's model to explore the ways in which the emergence of a DVD market for television drew attention to the consumption of television as 'consumer commodities and physical objects in domestic spaces' (2006: 353). ITV Hub offers an experience of television that is far less disruptive of the traditional understanding of television as broadcast flow. Describing the US VoD service, Hulu, James Bennett argues that:

> Removed from the structure of television's scheduled flow, the programme as content on these services calls our attention to its embedding in a new, digital media context: instead of flow, here we have interface, hyperlinks, and a database structure, experienced via broadband rather than broadcasting (2011: 1).

ITV Hub certainly places programmes as content within a database structure with an interface and hyperlinks, but those programmes are not entirely

'removed from the structure of television's scheduled flow'. Rather, ITV Hub interpolates the scheduled flow into the design of the interface in ways that translate a broadcast address to the user as a 'television viewer' (rather than consumer of discrete programmes) onto the web.

ITV's development of ITV Hub as a streaming service can be understood in relation to the potential impact of on-demand television on the economic relationship between broadcasters and advertisers. A key benefit of online viewing for broadcasters is that they can generate and own data on the behaviour of all viewers that use the service. While this can facilitate the development of personalized services, for commercial broadcasters it can also significantly enhance their offer to advertisers. This is what Van Dijck describes as 'the Holy Grail: maximizing the ability to distribute *personalized* commercial messages to *mass* audiences' (2013: 124-5). Indeed, ITV's *Annual Report* outlines the benefits of the digital data generated by ITV Hub in terms of its ability to develop 'new digital advertising features' and 'more targeted advertising online' (2015a: 27). ITV Hub, therefore, is positioned as being able to enhance ITV's offer to advertisers, complementing the reach of its linear advertising offer by providing a space for more interactive and targeted advertising opportunities.[12]

There are a number of ways in which the interface of ITV Hub supports the development of ITV's relationships with advertisers. First, ITV Hub requires users to sign-in when accessing the service on laptops, desktops, smartphones and tablets, enabling ITV to gather data on its users. This helps ITV to offset the smaller viewer numbers online and offer opportunities for more targeted

advertising.[13] Second, ITV Hub does not allow users to skip advertising, enabling it to offer the appearance of the choice, convenience and control of a PVR without giving viewers the control over advertising provided by PVRs. Third, ITV Hub enables ITV to extend its advertising sales opportunities. Typically, two adverts run before each programme plays and ITV can also re-sell the advertising space within the programmes as they stream online, effectively increasing its available advertising space. Finally, ITV Hub also offers opportunities for new forms of advertising, particularly interactive advertising and branded content that have become important components of the advertising mix with the decline of the 30-second TV spot (Lotz 2014: 186-7). ITV Media (ITV's commercial sales division) offers its own interactive VoD format (Ad Explore) that enables advertisers to layer interactivity onto their standard broadcast creative to allow users to 'explore and delve deeper into an advertiser's products or services without leaving the VoD environment' (ITV Media, 2016: online). ITV have also invested in digital companies with specific expertise in producing branded short form content (such as its purchase of Believe Entertainment Group) to develop expertise in monetizing online audiences (ITV, 2014: 30).

In developing the idea of the television interface as a scripted space, Daniel Chamberlain asked 'whose interests are served by a script that demands user interactions' (2011: 249)? While ITV Hub's promotional launch video promised access to 'all of your favourites, anywhere, anytime', (ITV, 2015: online) the scripted space of ITV Hub's interface structures the experience of ITV on-demand in ways that serve to extend the company's broadcast model online.

It does this by privileging broadcast logics in its design, constructing the user as a viewer of content, and developing an business model that complements, rather than replaces, its linear ad-revenue. This is not to suggest that ITV Hub is not serving any of the interests of viewers in terms of extending access to its programming, but that it works to do this in ways that adapt, rather than disrupt, its established broadcast business model.

Beyond linear vs non-linear

This article began by arguing that broadcaster VoD interfaces can be understood as a locus through which to explore the ways in which television is adapting to an online, on-demand environment. In examining the ephemeral interface of ITV Hub, it has demonstrated the ways in which ITV has attempted to transpose a broadcast logic online. This merging of broadcasting and online problematizes the distinction between linear and non-linear television. Linear television is associated with the flow of broadcasting in which programmes of standardized lengths are organized into a programmed schedule structured according to established assumptions about viewers according to the time of day, and designed to encourage continuous viewing. By contrast (as Table 2 summarizes), non-linear television has been understood to transform linear television into discrete files that can be interacted with and manipulated by the viewer (see for example Bennett, 2011; Mittell, 2011). Non-linear television frees viewers from the temporal logic of the broadcast flow, providing programmes within the fragmented and hyperlinked structure of the internet in which 'a vast array of audiovisual files sit side by side often pulling our attention in several different directions at once' (Kelly, 2011: 126).

Linear:	**Non-linear:**
Flow	File
Schedule – programmed sequence	Discrete object
Viewing	Interaction
Continuous	Fragmented
Temporal standarisation (e.g. in programme length or association of programmes with times of day)	Lack of temporal logic

Table 2. Linear vs Non-Linear Television

ITV Hub, which would typically be considered a non-linear service, combines these characteristics of linear and non-linear television and, in doing so, transforms them. ITV Hub does turn the flow of broadcasting into discrete 'digital objects to be accessed in menus and manipulated via an interface' (Mittell, 2011: 50). The design of the pages of ITV Hub's interface fragments the programmed flow and invites browsing from page to page across the menu of options offered. However, it does so within an interface in which the content offered is still programmed into a sequence significantly structured by the temporal logic of the schedule. While the interface offers the user a range of possibilities for engagement, from selection, search, sharing and (limited) interaction, ultimately the primary movement is towards viewing. Here interaction is not opposed to viewing but a driver towards or (in the case of sharing) a consequence of viewing. Equally, the user can simply enter the broadcast flow or follow the sequence of viewing suggested by the ordering of options within the interface, pointing to the ways in which the fragmentation of

the database does not necessarily undermine or run counter to the continuity of viewing associated with linear television.

This intermingling of linear and non-linear is unsurprising if one considers not only the economic, but also the wider technological and socio-cultural context within which ITV Hub has emerged. This is a context in which by 2015 the majority of adults in the UK had access to internet-connected television, and the launch of Freeview Play in October 2015 made on-demand and broadcast television available through smart televisions and set-top boxes subscription free. As such, this is a media landscape in which all television (whether accessed on a television set, or a tablet, mobile, laptop or desktop) will come to share features traditionally associated with non-linear television. At the same time, online video services are increasingly borrowing elements of broadcasting, with, for example, YouTube adopting channels as a primary means of organising its interface and 'prioritizing television features over social networking and group interaction' (Van Dijck, 2013: 114). Rather than understanding ITV Hub as simply the attempt of one broadcaster to impose their traditional business model onto the internet, we need to situate this VoD service within a wider contextual moment in which television and the internet are becoming interconnected. The case of ITV Hub, then, suggests that the question of how television is being repositioned for an online, on-demand landscape needs to be asked not just of VoD services, but of television more widely as it adapts to an emerging environment in which the distinctions between television and online, linear and non-linear, become harder and harder to police.

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[1] 4oD launched in November 2006, BBC iPlayer in December 2007, Demand 5 in June 2008 and ITV Player in December 2008 (Ofcom, 2014: 143).
[2] By 2015, 62 percent of UK homes had a TV connected to the internet (Ofcom, 2016a: 90), smartphone ownership had grown from 26 percent in 2010 to 71 percent, and tablets were in 59 percent of homes (Ofcom, 2016a: 12). 59 percent of all UK adults said they has used a VoD service in the past 12 months (Ofcom, 2016a: 58), with 26 percent claiming to have used a paid-for VoD service (Ofcom, 2016a: 60). Meanwhile, 83 percent of UK premises were able to receive superfast broadband and 90.5 percent of UK outdoor premises were covered by at least one 4G operator (Ofcom, 2016a: 139).
[3] Ofcom claims that the time spent by adults watching live TV in the UK has fallen from an estimated 92 percent in 2010 to 83 percent in 2015, while the viewing of

recorded and on-demand programmes has grown to 17 percent, with all of that growth coming from VoD in the past three years (2016a: 103-4).

[4] The term 'cultural interface' is borrowed from Lev Manovich, who uses it to describe 'the ways in which computers present and allow us to interact with cultural data' (2001: 70).

[5] See also William Uricchio, 2004 and Daniel Chamberlain, 2010.

[6] 21 percent of the UK online population used a smartphone to access catch-up and VoD services at least monthly in 2015, 23 percent used a tablet, and 13 percent used a games console (Ofcom, 2015b: 56).

[7] Channel 4's share across its family of channels and services was 10.6%, Five's 5.8% and Sky's 8.3% (ITV, 2015a: 8).

[8] Internet advertising has grown its share of the overall advertising market from 29.3 percent in 2010 to 47.1 percent in 2015 (ITV, 2015a: 9).

[9] ITV Player introduced live streaming in 2012.

[10] Unlike ITV Hub and All 4, BBC iPlayer does not require sign in.

[11] This differentiates ITV Hub from BBC iPlayer that does allow downloading of some content for a limited time period. The BBC has also launched BBC Store where viewers can download permanent copies of programmes for a fee.

[12] In addition, by privileging streaming over downloading, ITV is able exploit those programmes to which it retains the rights in other distribution markets, such as providing pay-per-view downloads of programmes through iTunes.

[13] In 2013, ITV launched 'ITV Lives' an insight and planning tool based on research into the TV audience undertaken with Kantar Media and WORK. It also produced qualitative research into television's role in creating social connections (ITV Primal Screen). In these ways, ITV is situating itself as a leading generator of knowledge and insight into the television audience.