

The Concept of Interactivity – revisited

Four new typologies for a new media landscape

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ABSTRACT

In this paper definitions, classifications and typologies of the concept of interactivity in the context of the new media landscape will be discussed. The paper takes its point of departure in the evaluation of two typologies of interactive media and interactivity introduced some 10 years ago. In the remainder of the paper, four new typologies or matrices concerning interactive media and the new media landscape are introduced. In this sense the paper can be seen as the concept of interactivity – revisited.

Categories and Subject Descriptors

H.1.2 [User/Machine Systems]: Human factors, human information processing

General Terms

Theory, Design, Performance.

Keywords

Interactivity, user-generated content, social media, mainstream media.

1. Introduction: The Matrix of Interactivity

Approximately ten years ago a new typology of interactivity was introduced in [6, 7, 8, 9, 10, and 11]. The typology was based on Bordewijk & Kaam's [1] so-called 'idealized information traffic patterns'. The distinctive mark of this typology is that it is defined independently of the technical design of the media, the form of presentation, and the information content, and instead based on social power relations and power positions, which constitute various kinds of 'information traffic patterns'.

The typology takes its point of departure in two basic questions that can be stated as follows: Is the transmitted information produced and owned by an information service providing center or an individual information service consumer? And is the transmission

and use of the information controlled by an information service providing center or an individual information service consumer? The answers to these two questions can be combined in a single matrix definition, thus given four possible combinations of answers, termed respectively: transmission, conversation, consultation, and registration [6], as shown in Figure 1.

Figure 1. The Matrix of information traffic patterns

	Information produced by center	Information produced by consumer
Distribution controlled by center	1) Transmission	4) Registration
Distribution controlled by consumer	3) Consultation	2) Conversation

If (media) interactivity is defined as *a measure of a media's potential ability to let the user exert an influence on the content and/or form of the mediated communication* [9], then it is possible to develop a typology of interactivity from the above matrix. In this way the concept of interactivity is divided into four sub-concepts or dimensions, which could be called, respectively:

- 1) *Transmissional interactivity*, defined as a measure of the media's potential ability to let the user choose from a continuous stream of information in a one-way media system without a return-channel and therefore without the possibility for making requests (e.g. multi-channel TV, tele-text, near-video-on-demand, per-per-view, data-casting, multicasting)."
- 2) *Conversational interactivity*, defined as a measure of the media's potential ability to let the user produce and input his/her information in a two-way media system that is made available to other users, be it stored or in real time (video conferencing systems, chat, videophone, news groups, e-mail, mailing lists etc.).
- 3) *Consultational interactivity*, defined as a measure of the media's potential ability to let the user choose, by request, from an existing selection of pre-produced information in a two-way media system with a return-channel (true Video-On-Demand, news-, sports- or games-on-demand, on-line information services, WWW, etc.).
- 4) And finally, *registrational interactivity*, defined as a measure of a media's potential ability to register information from and thereby also adapt and/or respond to a given user's needs and actions, whether they be the user's explicit choice of communication method or the system's built-in ability to automatically 'sense' and adapt (home-shopping, surveillance systems, intelligent agents, guides, or

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interfaces, adaptive or intelligent Electronic Programming Guides, etc.). [9] The different forms of interactivity are outlined in the ‘Matrix of Interactivity’ in Figure 2.

Figure 2. The Matrix of Interactivity

	Information produced by center	Information produced by consumer
Distribution controlled by center	1) Transmissional interactivity	4) Registrational interactivity
Distribution controlled by consumer	3) Consultational interactivity	2) Conversational interactivity

The above-mentioned typologies have been widely discussed by academics and practitioners and in some cases also criticized over the last decade [see e.g. 2, 3, 4, 12, 13, and 14]. Nonetheless, the typologies remain some of the most influential and widespread definitions and understandings of interactive media and interactivity to this day.

2. The New Media Landscape

Because the typology of interactivity is not based on concrete characteristics such as the technical design of the media, the mode of presentation, or the type of content, but on the relatively high-level and abstract characteristics of information traffic patterns or power relations, it is still operative and sensitive in the current media landscape.

Even new media phenomena with connections to interactive TV such as ‘user-generated content’, ‘personalized’ or ‘adaptive media’, ‘customized media’, ‘Video-on-Demand’, ‘Near Video-on-Demand’, etc. can be categorized within the frame of this typology. ‘User-generated content’ understood as various kinds of media content produced by end-users or consumers that are available for other users can be categorized as a relatively typical form of conversational interactivity. ‘Personalized media’ or ‘content’ defined as media or content that are adapted to a specific user based on personal behavior or characteristics can be categorized as a prototypical form of registrational interactivity, because they are based on the media system’s registration of the user. ‘Customized media’ or ‘content’ understood as media and content that is tailored to the specific user based on the given users’ personal choices or preferences can correspondingly be categorized as a typical case of registrational interactivity. [11].

Video-on-demand can be categorized as consultational interactivity, since it is a choice by request between an existing selection of pre-produced material in a two-way media. And Near Video-on-Demand or Per-per-View can be classified as transmissional interactivity, in view of the fact that it is a choice from a continuous stream of media material in a one-way medium without a return-channel.

Although this categorization and typology is still effective and sensitive in relation to current media phenomena, the rapidly changing media landscape with new applications, platforms and media, and new forms of interactions also makes it relevant to develop new typologies or classifications that in a sensitive way capture the many new media forms and aspects of interactive media and user experiences.

In this paper four new typologies are presented that in a sensitive way can capture the new media landscape, in this way providing an updated view of the field of interactive media.

3. The Matrix of Media Form and User Mode

The current media landscape consists of many different kinds of media that can be divided and categorized in many different ways. One new way of categorizing current media, which has become more and more widespread over the last couple of years [5], is the distinction between mainstream media and social media. Mainstream media are represented by the traditional mass media such as broadcast media like TV and radio, newspapers, film, etc. and their key characteristics are professionalism in production and distribution, public accessibility, separation of sender and receiver etc. Social media – on the other hand – are represented by the new interactive media such as computers, mobile phones, PDAs and content types such as blogs, pod-casts, online social networks etc. Key features of social media as opposed to mainstream media are: social relationships, communities, dialog or the conversational mode, self-expression or self-exposure, etc.

However, the two forms of media are not in opposition to each other in the current media landscape. On the contrary, over the last couple of years a new symbiotic relationship has evolved between mainstream media and social media. For example, mainstream media often quote bloggers and blogs, and the discussion between bloggers often is the source of ideas for stories in mainstream media. In the opposite perspective, content provided by mainstream media is often the point of departure for contributions and discussions in the blogosphere, just as journalists from mainstream media often establish their own blogs. Thus, the two types of media seem to feed off each other in the new media landscape [5].

A similar symbiosis can be identified as regards the consumer. In the former media landscape of mainstream media the consumer was primarily passive. In the current media landscape one of the most prominent trends is towards participation and active contribution. The new media consumer wants to create, share, and participate. However, this does not imply that we get two types of media consumers more or less divided into two distinctive groups. Every consumer is both an active creator and a passive consumer and is able to switch continually between the two modes [5]. Furthermore, the relations between media and consumers are not so straightforward that we have passive users consuming mainstream media and active users producing active media. The relations are much more complex and can be represented in the following new matrix of media forms and user modes, see Figure 3.

Figure 3. The Matrix of Media Form and User Mode

		Media Form	
		Mainstream media	Social Media
User Mode	Passive users	Traditional broadcast	Consumption of UGC
	Active users	Production of UGC to mainstream media	User-generated media and content

In the upper-left corner we have passive users consuming mainstream media, that is, traditional media consumption as for example watching broadcast television, listening to broadcast radio, reading the newspaper, etc. In the lower-right corner we have active users producing user-generated media and content. Typical examples are sharing digital photos on Flickr, producing and uploading videos to YouTube, making a profile on MySpace or Facebook, etc.

But there are also more complex combinations of media forms and user modes. It is also possible to passively consumer user-generated content, as represented in the upper-right corner. For example, watching videos on YouTube or Current TV, reading articles on Wikipedia, browsing digital photos on Flickr. In the diametrically opposed combination, it is possible to submit user-generated content to mainstream media as is the case in SMS messages to broadcast programs, MMS photos to e.g. weather programs on broadcast TV, emails to programs on broadcast radio, and so on.

4. The Matrix of Media Creation and Editing

Production of content involves both creation and editing. Earlier, in the traditional media landscape, the two roles were performed by the media, i.e. by media professionals. For example, news stories were created by professional journalists and edited by professional editors. In the new media landscape, the two roles can be performed by professional media as well as the users. This calls for a new typology to catch the new complex relationship between media and users vis-à-vis creation and editing.

Concerning creation of content, ‘user-generated content’, or ‘user-generated media’ has become a major trend in the new media landscape that refers to various kinds of content that is produced by end-users as opposed to media professionals. Examples include blogs, personal web sites, wikis, etc.

However, the current media landscape also offers examples of ‘user-edited content’ or ‘user-filtered content’ [5]. In this case users perform the role of editors or filters in the form of ratings, recommendations, annotations, etc. that are available for other users and in this way function as a sort of user-generated editorial guidelines or as a form of social intelligence.

Thus, we have two types of functions: creation and filtering, and two types of actors: the media and the users. These two dimensions can be combined in a 2X2 matrix with a sample space of four possibilities, as shown in Figure 4.

Figure 4. The Matrix of Media Creation and Editing I

	Media	Users
Creation	Professionally produced content	User-generated content
Filtering	Professionally edited content	User-filtered content

It is, however, possible to construct a more interesting matrix, because media and users on the one hand and creation and filtering on the other can be combined in more complex ways, in that creation can be performed by media as well as users and filtering can be performed by media as well as users as shown in Figure 5.

Figure 5. The Matrix of Media Creation and Editing II

		Creation	
		Media	Users
Filtering	Media	Traditionally produced (journalists) and edited media (editors)	UGC in programs (news etc.)
	Users	User audience ratings	Blogs

In the upper-left corner we have the traditional instance of content created and edited by professional media as we know it from newspapers, national public broadcasters, etc. In the lower-right corner we find the ultimate case of user-generated media or social media, where the users create the content and the users also function as a kind of editors. Examples are full-fledged participatory news sites and collaborative and contributory media sites like Slashdot where the users produce the content in the form of articles or comments and the users also functions as editors by rating the articles they read, thereby providing a collective evaluation of the contributions.

In the upper-right corner we have the combination of user-generated content that is edited by some sort of media professionals. Examples here are – as the concept itself spells out – ‘letters to the editor’. Other examples are home videos submitted to broadcast programs based on viewer material, SMS-messages to radio programs, video footage captured from personal mobile cameras and submitted to news programs. Finally, in the lower-left corner we have the combination of professionally produced content that is edited or filtered by the audience. A representative of this type is the selection of music videos to air on MTV. Here we have professionally produced content in the form of videos that goes into high, medium, or low rotation on the channel according to viewer ratings. But also user ratings of books on Amazon, user reviews of consumer products on epinion.com fall into this category.

5. The Matrix of Shifting

Traditional or mainstream media content is often fixed or embedded into the host media, that is, it is only consumable in its original form [5]. The content of a book can only be read from the book, the telephone conversation can only be listened to on the telephone, and TV news can only be watched via the television screen. However, thanks to digital technology, interactivity, convergence, etc. now different forms of user-controlled content emerge. It is possible to dissolve these forms of user-control in different types of shifting. In the current media landscape we see three prevailing forms of shifting: Time shifting, space shifting, and format shifting.

To systematize the different forms of shifting we can construct a couple of new matrices. In Figure 6 the relations between time shifting and space shifting are mapped.

Figure 6. The Matrix of Shifting

(Non-format shift)	Non-space shift	Space shift
Non-time shift	Broadcast media	Mobile phones, mobile radio receivers
Time shift	DVR, VOD, NVOD	iPod / podcast, mobile VOD services

In the upper-left corner we have the instance of media content that is fixed in time and space and in this way embedded into the host media. Examples are analogue TV programs, analog radio programs, film presented in the cinema etc. In the lower-left corner we have media that are fixed in the spatial dimension but flexible in the temporal dimension, i.e. is open for time shifting. Examples are Digital Video Recorders on which you can record TV programs for subsequent consumption, and Video-On-Demand on cable networks.

In the upper-right corner we find the media that is fixed in the temporal dimension but flexible, i.e. open for user-control, in the spatial dimension. Cases in point are telephone conversations on mobile phones and reception of radio programs or watching of terrestrial broadcast TV on mobile receivers. Finally, in the lower-right corner we come across the media with maximum flexibility in the spatial as well as temporal dimension in that they are open for both space and time shifts. Illustrations of this combination are the iPod or more generally pod-cast, mobile Video-on-Demand services, applications and services on PDAs, etc.

However, all the above examples are fixed in regard to format, that is, can be characterized by the label *non-format shifting*. Consequently, we can construct a third dimension on the above matrix by supplementing the non-format shifting matrix with a layer of format shifting, in this way establishing a single matrix with a total of eight different types or combination of shifting. The supplementing four categories located in the background on the z-dimension of the above matrix is represented in Figure 7.

Figure 7. The Matrix of Shifting

Format shift	Non-space shift	Space shift
Non-time shift	Screen formats, text-based enhanced TV	DVB-H programs
Time shift	DVRs with filters for adds	Mobile web, mobile VOD, mobisodes

In the upper-left corner we have media that is fixed in regard to space and time but open for format shifting. Examples in the simple form would be interactive screen formats on TV monitors, or in the more advanced form text-based enhanced TV in connection with broadcast programs. In the upper-right corner we have media that are fixed in regard to time but flexible in regard to space and format. A case in point could be tourist information distributed over DVB-H with, e.g., interactive choice of language.

In the lower-right corner we find media that are fixed in regard to space, but flexible in regard to time and format. A prototypically example would be Digital Video Recorders, which are capable of skipping commercial breaks. And finally, in the lower-right corner we have the ultimate flexible media that are capable of

performing time and space as well as format shifts. Occurrences of this media type are the mobile web with different layers of information, news-on-demand with flexible interactive levels of information, interactive fiction on mobile media, mobisodes with interactive features, etc.

6. Conclusion

The media landscape is undoubtedly becoming more and more complex and needs more and more advanced frameworks and theories to be categorized, mapped, and comprehended. I believe that the theoretical approaches and frameworks presented here are relevant for analyzing – as well as designing – new interactive media, services and products, and that their relevance will increase in the years to come. And I believe that they in particular will prove indispensable for the understanding of the future development of interactive television and the user experience of ITV.

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