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When old media never stopped being new
Television's history as an ongoing experiment[1]

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In the 1990s, when new technologies and deregulation policies were emerging throughout television practices, the resulting changes were considered to be transitions that would lead to a completely different and enhanced form of television. Back then, everybody anticipated that digital television would evolve as a new, possibly interactive television standard. Today, as profound changes are still taking place, scholars refrain from determining television's future form, focusing instead on the process of its transformation. The features of contemporary television simply seem to undermine a coherent definition of the medium, which seems too complex, too heterogeneous, in constant flux.

Today, many critics proclaim the end of (the classical form of) television and speak of multiple transformations leading to a new era – be it 'the phase that comes after "TV"' (Spigel 2004: 2), the 'Post-Network Era' (Lotz 2009), the 'Post-Broadcast Era' (Turner and Tay 2009), or 'New Television' (Moran 2009). Although they focus on different aspects of the ongoing transformation, all distinguish the medium's current heterogeneity from television as it used to be – thereby implying that television once had a stable identity that is now being called into question. Given the 'multifaceted technologies and uses of television' (Lotz 2007: 78) it is no longer even sure if television is still a distinct medium. In her book *The television will be revolutionized*, Amanda Lotz articulates 'the need to think of the medium not as "Television" but as televisions' (Lotz 2007: 78) and Michael Curtin describes contemporary television as a 'flexible and dynamic mode of communication' that is better defined as a 'matrix medium' (Curtin and Shattuc 2009: 175).

However, looking at previous descriptions of television this common presumption of television's former stability and clear identity can be challenged. In the foreword to the 1990 edition of his *Tube of Plenty* (1975), Erik Barnouw looks back on his historical work, stating that 'not for one moment, in the intervening years, has the subject sat still for its portrait' and he predicts that 'the upheavals [will] continue' (Barnouw 1990: V). In 1985, the title *Television in transition* was used for an anthology dealing with 'new developments – for instance cable and satellite – [that] promise further to revolutionize a still infant medium' (Drummond and Patterson 1985: VII). Another ten years later, the editors of *Transmission: Toward a post-television culture* clarified the subtitle of their book by coining the phrase: 'Tomorrow, television again becomes some-

thing else' (d'Agostino and Tafler 1995: XIV). In light of these examples (and another from the 1960s, which will be discussed below) television seems to be a medium that always was in transition throughout its entire history.

The current discussion of television's transformation and the observation that the medium never 'sat still' serve as our starting points to scrutinize (broadcast/network) television's presumed stability and homogeneity. In what follows, we suggest understanding 'change' and 'transformation' not only as characteristics of the medium's current phase but more generally as one of television's integral features. Because it deals with a constantly changing object, we argue further, television studies has much to contribute to media theory more generally. Such a perspective enables us to rethink the established ideas about both television's historical development and its cultural and social impact, and it allows for a new evaluation of the recent transformations.

Discussing television as a heterogeneous and constantly transforming medium calls for more general questions such as: in which sense is it heterogeneous? Why is it constantly transforming? What is the cultural impact of a medium in constant transformation? We will start by briefly addressing the still-persistent idea that a medium's social impact is based on its stable institutionalization. To open up a different perspective, we will refer to the concept 'experimental system', as used in science and technology studies. To prove the relevance of this concept for understanding television, we will first analyze an actual television experiment from the 1960s and then expand the notion of the experimental system to television's broadcast/network mode more generally. At the end we will return to the current situation and briefly discuss the key features of post-network television as re-articulations of problems or potentials that have already incited constant transformations of broadcast/network television. Our main argument will be that television's impact is not adequately described by pointing to a stable and characteristic institutional structure of the medium. Part of the 'power of television' lies in its constant transformation process, enforced by a continuous reflection on the 'appropriate' use and an ongoing redefinition of television.

1. Always already new: the ongoing transformation of television

It is often argued that new media contribute to the reconceptualization of old media (e.g. Bolder and Grusin 2010; Winkler 1997). William Uricchio makes a similar point by referring to television's flexibility and 'unusually opportunistic potential' in his chapter in this volume. We want to take up his methodological remark that 'looking back with historical hindsight' allows us to 'relativize our definitional conceits and reframe some of our theoretical assumptions'. If television's current changes require and provoke new theoretical concepts, these new concepts should be considered less as apposite descriptions of contemporary television and more as possibilities to rethink the conceptualization of television generally.[2] As 'transformation' is one of the key terms used to describe the current state of television we suggest using this term to rethink television's past as one of *constant transformation*. Our concern is thus not the definition of television be-

fore or after a particular change. Rather, we are interested in the productivity, the power effects, and the rationalities of the *transformation processes themselves*. On the one hand, this allows for a reconceptualization of the latest developments from a historical point of view: how do the present transformations continue, re-articulate, or differ from previous changes? On the other hand, this approach also raises more general questions concerning the well-established theoretical and historical concepts of television, as well as those of its social or cultural impact.

The traditional idea of a medium as a coherent entity has already been questioned in a number of historical studies that explicitly explore the changing character and the heterogeneity of different media. But more often than not these insights are confined by at least two persistent assumptions: 1) The heterogeneity of media is analyzed with reference to the specific medium's formative years. This implies that after a phase of turbulent changes and redefinitions a medium will ultimately take on a stable form that lasts until a new technology completely redefines the field and causes the end of the medium's 'life cycle';[3] 2) Homogeneity remains the reference point when it comes to explaining a medium's social effects, which are mostly conceptualized as resulting from the implementation of a stable technological and institutional structure. Transformation, thus, is not considered to be a constant or decisive feature of the medium.

The persistence of these two assumptions, which also structure the discussion of television's current development, becomes especially evident in two seminal books explicitly aiming to historicize the 'newness' of new media: Lisa Gitelman's *Always already new* and Carolyn Marvin's *When old technologies were new*. Analyzing the upheaval resulting from the emergence of the telegraph and the telephone at the end of the nineteenth century, Marvin convincingly shows that many topics and sentiments, which seem so specific to today's new media, actually have a history of their own. Her analysis counters the idea of radical breaks in media history by pointing out the fractured identity of media resulting from the media's involvement in (and their dependency on) heterogeneous practices: 'Media are not fixed natural objects; they have no natural edges. They are constructed complexes of habits, beliefs, and procedures embedded in elaborate cultural codes of communication' (Marvin 1988: 8). In the end, however, she confines these heterogeneities (habits, beliefs, procedures) to the 'uncertainty of emerging and contested practices of communication', presupposing that the actual media practices, which guarantee a medium's all-encompassing effect, 'come later and point toward a resolution of these conflicts (or, more likely, a temporary truce)' (Marvin 1988: 5).

A similar argumentation can be found in Lisa Gitelman's book *Always already new*, a study that compares the introduction of the phonograph to the introduction of the internet. Gitelman convincingly criticizes the 'tendency to naturalize or essentialize media' (Gitelman 2008: 2) and tackles the 'oddly perennial newness of today's new media' (Ibid.: 3) by showing that 'the introduction of new media [...] is never entirely revolutionary: [...] they are socially embedded sites for the ongoing negotiation of meaning as such' (Ibid.: 6). However, she too considers these 'ongoing negotiations' as passing, characteristic of new media's early phase. By stating that 'the success of all media depends at some level on

inattention or "blindness" to the media technologies themselves' (Ibid.: 6), she implies that these struggles over the definition of media come to an end when they 'become self-evident' (Ibid.: 5), thereby suggesting that their social impact is based on a certain stability.

Although of major importance for the analysis of many aspects of television culture (not least of television's multifaceted features during its formative years), the two books exemplify a well-established and persistent pattern of thinking about media's historical development and cultural impact – a pattern that inhibits understanding transformation as a *constant* characteristic of television and supports (against the authors' intentions) the uncritical description of the current development as a major turning point. What is still missing is a more systematic discussion of how the medium's transformations have never halted and how they contribute to both the medium's productivity and its cultural impact.

2. Experimental systems

As most media theories adhere to the notion of stability (a phase which allegedly follows media's heterogeneous character during the formative years) when explaining the impact of a medium, we felt the need to look for models from other disciplines to get a better grip on television's constant transformations. In what follows, we suggest comparing television to a scientific laboratory, a strategy conceptualized in science and technology studies (and already applied to the analysis of museums by Tony Bennett (2005)). Similar to television, the laboratory is a complex constellation of practices and technologies: it produces (or makes visible) phenomena that can be scrutinized and manipulated by experimental procedures – just as television produces (and makes visible) audiences or cultural objects (moral panics, celebrities, etc.) that can be sold to advertisers or become objects of political endeavour. Moreover, and instrumental to our aims, the concept of the laboratory – or to be more specific: the 'experimental system' – opens a new perspective on processes of media transformation. Science and technology studies argue that it is precisely the constant transformation of a system (and not the rigour and stability of a constellation) that accounts for its efficiency.

It is striking that Gitelman explains media's 'self-evidence' by comparing them to scientific instruments. The pertinence and function of newly introduced scientific technology is often disputed until it eventually becomes accepted by the scientific community and, as a result, can be used without further reflection on it. Similarly, Gitelman argues, the success of mass media depends on a culture's blindness to the media after a process of habituation. Science and technology studies, however, has shown that a permanent attention to, and reflection on, the instruments is indispensable for scientific experiments (e.g. Latour 1990, 1999). People working in a laboratory must constantly reclarify whether the results of their experiments (e.g. visual patterns on a telescopic image or sudden changes on a statistically produced graph) are effects of the object they are studying or of the instruments they use.[4] If we take this perspective on scientific experiments as a starting point, the oft-repeated assumption that the deployment of instruments/

media more or less necessarily results in their automatic, unreflected, and highly conventionalized use becomes much less convincing. 'Blindness' and 'self-evidence' are not necessarily preconditions for the effective appliance of technology.

Moreover, given its many different elements and practices, we believe that television can better be compared to a laboratory or an 'experimental system', than to a single scientific instrument (as Gitelman suggests). As such a system, it is not only far from being self-evident, but it is also undergoing constant rearrangement. Experimental systems are defined as 'the working units a scientist or a group of scientists deals with' (Rheinberger 1998: 287). At certain moments the technical instruments of such an experimental system might be used in a stable and very mechanical manner, the system as a whole, however, never reaches a state of automatic use or self-evidence. It always remains a heterogeneous constellation of theories, objects, instruments and practices redefining each other constantly. The productivity of an experimental system is attributed to constant processes of 'articulation, dislocation, and reorientation,' which are 'governed by a kind of movement that has been described as a play of possibilities (*jeu de possibles*)' (Ibid.: 291). The heterogeneous elements and the possibilities of rearranging them jointly create a 'space of representation' (Ibid.: 287) that allows new phenomena to appear, be manipulated, and become objects of knowledge. It is one of the basic necessities of an experimental system to constantly try out new tools and integrate new, ambivalent objects, because: 'As soon as one knows exactly what it produces, it is no longer a research system'. (Ibid.: 291) This means that 'experimental systems' do not merely exist to solve problems but also enable the *problematization* of an object or a field of knowledge: the 'transformation of a group of obstacles and difficulties into problems to which the diverse solutions will attempt to produce a response' (Foucault [1984] 2010: 389).

Our examples will show that television similarly consists of heterogeneous elements, which allow for and incite a constant rearrangement – e.g. through technical or programmes innovations, changing economic strategies, political regulations, or viewing patterns. Some of television's elements are used as 'instruments' to question, scrutinize and transform other parts of the overall constellation. While such rearrangements are often connected to explicit strategies and objectives, their effects (how advertisers will react to changing viewing patterns, how the audiences will make use of the remote control) are never entirely clear and cannot be predicted – thereby producing new phenomena. Rearranging television's constellations also creates a 'space of representation' that makes certain 'objects' visible and accessible (e.g. a target audience). Television does not 'manipulate' behaviour but it surely 'problematizes' it by identifying patterns, posing questions and offering possible solutions.

In what follows, we will not systematically compare television to all the elements and procedures characteristic of a scientific experimental system. However, we will flesh out how the conception of an experimental system can be appropriated to explain television's cultural impact through 'the generation of differences' (Ibid.: 287). We will first discuss a historical example that quite literally deployed television as a laboratory, and then provide more theoretical elaborations on the consequences and insights of that approach for a reconceptualization of televi-

sion's past and present development. At certain points, our application of the term 'experimental system' might seem a bit too vague or farfetched. In the end, we do not only conceptualize television as an experimental system because of its shared characteristics with the laboratory, but also because of the concept's actual productivity in theorizing television's development. We thus adopt the insights of science and technology studies in Jonathan Culler's sense of theory: 'Texts become 'theory' because their visions or arguments have been suggestive or productive for people who are not studying those disciplines' (Culler 2009: 4f.).

3. Experiments in television

Rearranging the medium for educational needs

In television history, early forms of broadcasting – without regular programming and received by only a handful of people – are often explicitly called 'experiments'. These were not only conducted to test the technology, but also to search for appropriate programme forms and schedules. Yet, even after television had been properly institutionalized, the experimental mode continued to be crucial to television's development. Not only did literal experiments accompany broadcast/network television throughout its entire history, this established mode of television is itself constantly experimenting, thereby fuelling television's transformations – an argument we will pick up after we have explored one of television's many actual experiments.

In the 1960s, when broadcast/network television was already a settled institution, dissatisfaction with its established forms of usage incited continuing experimentation. Art projects combined the technical/scientific with an artistic notion of the 'experiment', making use of advanced image processing techniques like the video synthesizer to create surprising visual outcomes.[5] The 1960s saw a number of publicly funded television art projects like the work done at the *National Center for Experiments in Television* or at other TV labs in the US, or the West German experiments *Black Gate Cologne* and *Fernsehausstellung* (Dobbe 1994: 26), which were conducted by established television broadcasters.

There were more experiments in television, for example in the context of education: in 1968 Tony Gibson, director of the Television Research and Training Unit at London's Goldsmith College, published *Experiments in television*.[6] This book (followed by two others [Gibson 1970a, b]) summarizes a series of workshops[7] held to experiment on and with educational television. 'Experimenting' can be understood quite literally here: teachers from all over the world were invited to arrange a variety of television devices in a way most pertinent for their particular teaching purposes, methods, or subjects. Cameras and screens, conventional blackboards and overhead projectors, television producers, cameramen and teachers were 'arranged and re-arranged' (Gibson 1968: 14) in the most diverse ways to find out how television could increase students' curiosity, improve the teacher's supervision of the learning process, or provide insights into new objects of study. As in scientific experiments, television was first split into separate elements and then reconfigured in many different ways; the varying

configurations were tested for their practicability in different teaching situations, which in turn led to new insights and further modifications.

To endow his experiments with credibility and rationality, Gibson outlines some very general technical and aesthetic definitions of television's basic apparatuses[8] that guarantee its pertinence as an instrument of knowledge production. For him, the television screen has the twofold advantage of raising curiosity and supporting an analytic perspective: comparing television to 'the bundles of dirty washing that revolve' in a washing machine, he concludes that 'a small glass screen behind which things move' (Gibson 1970a: 11) always attracts attention; at the same time, the glass screen positions the spectator at an analytic distance (as does a sample under a microscope). In addition, the framing of the television image dissects and isolates whatever object it displays, thus supporting a scrutinizing point of view (Ibid.).

Notwithstanding these definitions of television's technical potential, the *Experiments in television* are based on the assumption that television is heterogeneous[9] as well as transformable and 'always already new'. Gibson's appropriation of the broadcast/network mode – then the dominant dispositif of television – reveals this belief in a permanent process of transformation. He refers to several conventions of the broadcast/network mode, some of them assisting, others limiting television's educational use.[10] However, constraints such as the fixed schedule of broadcast/network television and its too general addressing of a mass audience could be overcome by using recently invented technologies, especially VTR and CCTV.[11] In Gibson's view, everybody dealing with educational television can rely on (and will have to reckon with) the further development of television's technologies (e.g. Gibson 1968: 8).

Gibson does not confine himself to describing how one could use (the already established forms of) television for educational ends, he also re-arranges the elements of television again and again in order to gain new insights into television's educational potential. One of the experiments took a conventional television studio as its starting point. As a teacher combines the role of producer and presenter, the usually separated spaces of studio and control room were integrated into one unit; the presenter's desk was supplemented by additional 'display areas such as bench, blackboard, model table' (Gibson 1968: 15); complementing the three available cameras a mirror was subsequently put up 'above a working area in order to show things from the viewpoint of the craftsman' (Ibid.); a simplified image mixer was then added to enable the teachers to switch between camera views; finally, the use of lightweight equipment made it possible to put the whole studio in a van to set it up in different classrooms (Ibid.: 18).

Gibson describes (and illustrates) different set-ups of television equipment pertinent to particular learning situations and learning objects, each following and realizing a set of assumptions and provisional rules – that is a certain rationality: they aim to facilitate television-supported live teaching (see Fig. 1), to enable children to use the cameras themselves, to give instructions on how to arrange and supervise test lessons (see Fig. 2), to help with making an instructional video tape, and so on. Each constellation establishes a specific relation between the apparatuses of television, the teacher, the objects of knowledge, and the students.

One and the same technical element can thus acquire different strategic positions in these varying constellations. Sometimes a television monitor is a control monitor to observe the students, sometimes it is a display that helps students to watch themselves (Gibson 1970a: 25f.).

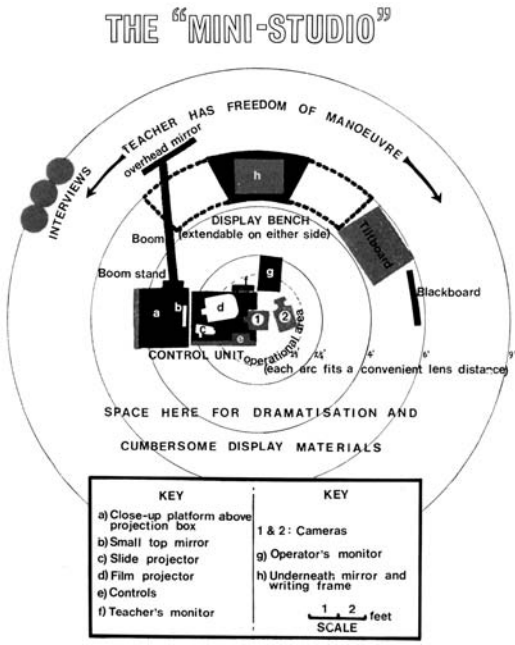

FIG. 1: Gibson, Tony. 1968. *Experiments in television*.
London: National Committee for Audio-Visual Aids in Education;
Educational Foundation for Visual Aids, page 17.

As is often the case in scientific laboratories, these television experiments were not conducted to solve one well-defined problem. Instead, the instigators' general interest in teaching/education meant their research question was rather vague: how can television support teaching? During the experimentation process, this question's focus shifted from television technology to teaching situation and back again; at certain moments some educational requirements provoked a closer inspection (and transformation) of television technology (e.g. how to position what type of microphone to record a classroom discussion); at other moments the technical constraints and capabilities supported the invention of new didactical strategies (e.g. the image mixer enabled the teacher to switch between a graphical model and the real object). As in a scientific laboratory, there was not one well-defined object of knowledge, but a set of questions, which could only be answered by problematizing – that is reflecting on and re-arranging – the involved objects, technologies, and practices.[12] Of course, unexpected things happened during this continuing re-arrangement process, providing insights into phenomena that were never part of the original experimental set-up, and inciting even

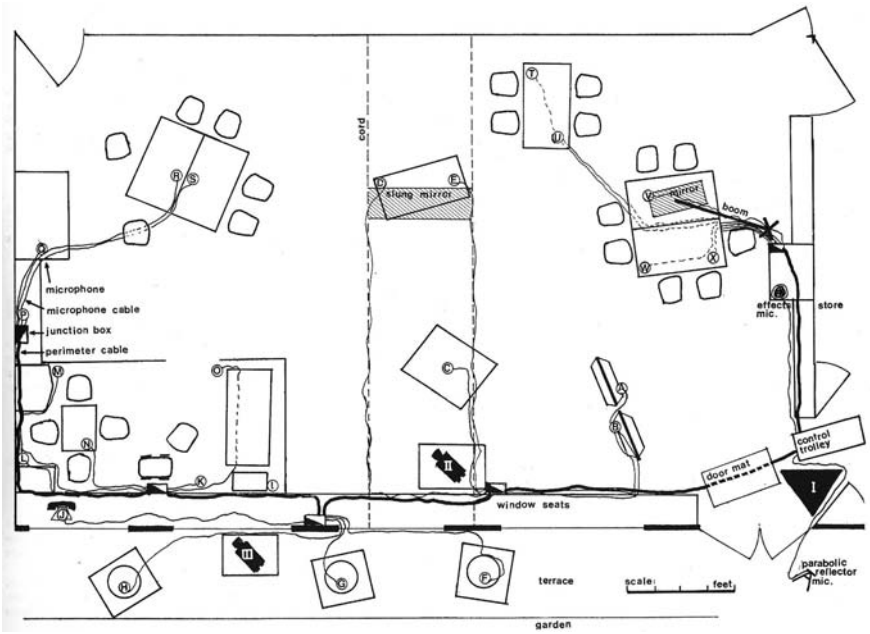

FIG. 2: Gibson, Tony 1970b. *The Practice of ETV*. London: Hutchinson Educational Ltd., page 47.

more re-arrangements. Gibson, for example, describes how a colleague in Italy discovered that older people, to whom educational TV was not addressed at all, had started to watch broadcasts of school television. This was reason enough to modify the dispositif with respect to the (presumed) needs and capabilities of seniors (Gibson 1970a: 93).

These *Experiments in Television* show that television was already 'in transition' in the 1960s. Taking the then-dominant broadcast/network mode of television and the contemporary technological developments (video, CCTV) as starting points, the experiments transformed television according to the rationalities of education. They are experimental in Rheinberger's sense because television technologies and teaching practices were combined in different ways to gain insight into television's educational potential. Television (or better: certain technologies of television) figures simultaneously as an *instrument* that guarantees the realization of the experiment (e.g. raising the attention of pupils), and as an *object* that itself has to be scrutinized and altered to gain insight into the phenomena under inspection.[13]

4. Experimental moments of broadcast/network television

The experimental transformation of a constellation of technologies, practices and objects, so obvious in the somewhat particular case of Gibson's *Experiments in television*, also characterizes the broadcast/network mode of television. Although

television became more institutionally and technically stable after its explicitly experimental formative phase, the experimental mode was never relegated to the fringe of educational or art projects. In fact, the success of broadcast/network television and its manifold cultural effects was and is, in a way, based on its functioning as an 'experimental system'. We will refer to a number of such experimental moments in broadcast/network history to show how they shaped television before arguing more generally that most of television's day-to-day practices can also be considered as experimental strategies.

Advocating the applicability of science and technology studies concepts to media studies, Lorenz Engell (2008) identifies specific experimental moments in television's history. One of his examples is the freeze of television licences in the US that the FCC (Federal Communications Commission) imposed between 1948 and 1952 to solve technical problems (interferences). This freeze transformed the chaotic proliferation of television stations into a (laboratory-like) controlled setting, which allowed for the scrutiny of both the institutional (allocation of channels) and technical (standards for colour television, usage of additional spectrum space) development of television. It also raised questions about programming (educational programmes) and about audience research (Ibid.: 29). But the freeze not only made it possible to try out different constellations under laboratory conditions, it eventually resulted in significant transformations of the media landscape through, for instance, the opening of the UHF band, the designation of NTSC as the colour standard, and the consolidation of the network system.

The moon landing is another example of network television's experimental character. On the first – and most literal – level, the transmission of the moon landing was an experiment to find out if and how television technology enables us to see the moon and outer space beyond. Very similarly to Gibson's experimental set-up, the technology that guaranteed the television transmission was also used to supervise and control the flight. Moreover, the domestic television screens constantly displayed the control images from Houston and the national television stations added illustrations to explain the technical challenges (Engell 2008: 35). On the second level, the moon landing experimented with addressing a global audience. The commentators addressed the topic of the global audience repeatedly and a global audience could thus watch itself watching: viewers could scrutinize how other viewers reacted to the events and were thus able to reflect on television's dependency on its audience (Ibid.: 37). Beyond this observational set-up, which led to a redefinition of television's ability to monitor the world, the moon landing also allowed for exploring different ways of programming television. As the event was a live transmission it had to deal with unexpected delays. At the same time, it was part of a whole series of transmissions about space exploration. This double character, as both series and live event, epitomizes basic features of television and provoked enquiries into the relations between programme and viewing patterns (Engell 2008: 37; 2009: 141), which in turn provoked adjustments to television programming.

The Gulf War (1990) and the reality show *Big Brother* are two other examples Engell mentions. All these experimental moments established a specific set-up of television relating technologies, programme forms and viewing practices in

a particular manner, thereby questioning a number of television's key elements (its visibility, its reality claim, its liveness, its audience, etc.). These experimental moments not only helped to understand television's functioning and impact, they also, in turn, triggered further transformations as these insights were integrated into the production of television (Engell 2008: 19).

The deployment of US television as *Citizen Machine* in the 1950s (Anna McCarthy 2010) and the introduction of public television in the US in the late 1960s (Laurie Ouellette 2002) can be similarly understood as re-arrangements of television's complex constellations to get better insight into its technologies, audiences or programmes. Though neither McCarthy, nor Ouellette uses the term, both describe television as a kind of 'experimental system' by analyzing how the attempts to educate and govern the American people led to specific well-controlled transformations of television. In each case the 'experiment' not only comprised newly introduced types of programmes addressing newly identified audience groups, but also institutional arrangements, political regulations, and economic strategies, all of which collectively contributed to a reformulation of what constitutes 'the public' and how it relates to television. Moreover, it is possible to discuss the introduction of the remote control and VCR – as well as many other 'moments of transition' – as experimental moments of broadcast/network television. Rather than just establishing a new (post-VCR) mode of television distinct from its prior (pre-VCR) mode, the VCR figures as a re-arrangement that raised new questions and offered new insights into audience behaviour, economic strategies, gender relations, and much more. One of the most comprehensive accounts of experiments in television is John Caldwell's book *Televisuality* (1995) that shows how new broadcasters (e.g., CNN, MTV), new production technology (e.g. digital editing), and new professionals (e.g. art students) contribute to a constant redefinition of what television is and how it addresses its audiences.

All these examples show that constant transformations were already an essential and effective feature of television during the reign of broadcast/network television. These transformations are characterized by procedures similar to Gibson's educational experiments: television is used (and gets reproduced) as a heterogeneous constellation whose elements can be transformed and re-arranged. This process is systematic in that some of the elements are always considered to have certain (more or less 'instrumentally') useful characteristics and capacities, while other elements are monitored for their unexpected/unforeseen variations – the experiment thus establishes its own 'rationality'.[14] The re-arrangement is strategic in that it follows certain interests, questions, and rationalities, but it also allows for gaining unexpected insights into different aspects of television. This means that these experiments do not answer a well-defined question, but instead establish and re-articulate a 'problematization'.[15]

5. Broadcast/network television as an ongoing experiment

Conceptualizing television as an experimental system leads to a different understanding of the daily routines of network as well as post-network television that we will briefly discuss on a more general level. There are at least two basic dynamics that support and enable television's functioning as an experimental system fuelling its constant transformations. As a technology television is generally predicated on the 'perfectibility of technology',[16] meaning that television is always considered to be 'improvable'— be that through brighter images, more channels, or more 'realistic' sound. Such expectations had always accompanied television and facilitated experiments. As an institution that indiscriminately reaches a vast but anonymous audience in public and in private spaces, television comes with the promise that these people might become accessible – but also with the urgency to make sure people are actually watching television. These technological and institutional expectations, promises, and insecurities are necessarily interrelated with political, economic, educational and other institutions that define and govern the following actions.

The competing and often contradictory rationalities of different practices, as well as the unforeseen effects of the re-arrangements of complex television constellations, guarantee the endlessness of this process. Policymakers or industry actors, for example, constantly discover audience segments they have not thought of before (and that maybe did not even ever exist as an identifiable group before), or they use a certain programme, genre, or technological device in a surprising way. Such discoveries are often capitalized on to enact laws, introduce new programmes, or install new technologies.[17]

Of course these day-to-day experiments in television produce a completely different kind of knowledge and are less systematic and controllable than the freeze, the moon landing, Gibson's educational experiments, or even 'real' scientific experiments. The constant re-arrangement of the constellation of broadcast/network television nevertheless follows certain experimental rationalities: it presupposes a definition of (and reflection on) the specific potential of some of television's elements, and it also produces phenomena (e.g., the 'target audience') which only 'make sense' as part of the experimental system that produces knowledge about these phenomena and enables their manipulation.[18]

The status of television as an experimental system (and of television history as a series of ongoing experiments) can thus be sketched out as follows: television consists of a constellation of heterogeneous elements (institutions, technologies, practices). The principal transformability of the constellation and its elements (which is most explicit in the idea of the '*perfectibility of technology*') promises the usefulness of television for many different applications and different practices. However, the specific requirements to each different practice do not only incite the constant transformation of television, but they also initiate a constant reflection on its uses and characteristics.

Although the broadcast/network mode of television had a stable institutional setting it nevertheless has to be conceptualized as a constellation consisting of a certain institutional structure *plus* the inseparable and constitutive transform-

ability. It is characterized by constant efforts of transforming television but also the wishes, promises, and demands that it could or should be transformed. The broadcast/network mode is – just like the scientific experimental system – less defined through a particular set-up than through a certain combination of questions, 'problematizations', and ambivalent objects that animate the transformation. To be effective and to continue as cultural machinery, television has to constantly produce differences that are used for its own reproduction.[19]

Such a re-conceptualization of television as a heterogeneous and constantly transforming constellation definitively affects the understanding of television's cultural and social impact. The 'power of television' lies less in its stable institution than its general transformability that establishes certain social and cultural concepts as natural, rational, desirable, or unavoidable. By functioning as an experimental system, television becomes a focal point for the formulation of certain problematizations whose plausibility and manageability is guaranteed by television because these problematizations conversely structure the transformation of television.[20] In contrast to the notion of cinema as a dispositif, which points at the rigid and unavoidable positioning of projector/screen/spectator as foundations of cinema's ideological effectiveness, television's dispositif is not defined by the spatial structure of its elements but by the logic (the 'problematizations' and 'rationalities') articulated by its re-arrangements.

To illustrate this rather abstract argument, we briefly want to touch on the 'nationwide audience'. Just like the fixed programming schedule, the nationwide audience was an important characteristic of broadcast/network television, but it was never a simple and unambiguous certainty – even not before it became less important in the 1990s (see Turner and Jay 2009). In fact, the 'nationwide audience' was one of many topics (or, better: problematizations) that structured policy and programming decisions, economic strategies, and viewing behaviour. This does not mean that it was not an important part of 'the power of television'; on the contrary, the 'nationwide audience' was of major importance *because* it was at stake, and reformulated again and again. It provoked changing strategies to realize, address, and change the 'nationwide audience', which thus became a plausible, self-evident phenomenon one had to (and could) reckon with.

6. Post-network experiments

Re-conceptualizing broadcast/network television also has consequences for our understanding of television's most recent transformations. There is no doubt that current post-network television is more heterogeneous, more difficult to define, and even subject to more dynamic transformations than broadcast/network television. However, conceptualizing television as an experimental system leads to a slightly different take on the recent transformations, since 1) the difference between network and post-network television becomes less clear; and 2) the key features of post-network television become more ambivalent if they are considered as 'problematizations' instead of straightforward 'characteristics'.

1) If we do not understand (broadcast/network) television as one stable entity,

but as an experimental constellation that consists of different strategies and articulates different problems, the difference between the current and the traditional modes of television gets blurry. The fact that television studies at certain moments discovered that its concepts (inspired by the broadcast/network mode) no longer fit the changing modes of television, does not guarantee that these concepts ever really fit all relevant aspects of traditional television. That we have now come to realize that notions of programme flow or mass audience do not describe the current mode of television, does not guarantee that current television is aptly described by access and classical television by programme flow.[21] Instead of comparing television now and television then (and thereby implicitly stipulating what constituted broadcast/network television), we consider it more productive to analyze the different topics, problematizations, or supposed 'potentials' as incentives that structure transformations, and to trace their respective emergence, development, and turning points. Most of the prominent (and far from inadequate) characterizations of current television have a history that goes back long before the transition to 'deregulation' (the 1980s), digital signal transmission (late 1990s), or online/convergence television (the 2000s): The target audience, mobility and flexibility of use, the multiplication of programmes, individualization of access – all these topics, problems, or 'potentials' of television have a very long and uneven history (e.g. Pearson 2011). They are not coherent elements of a single process (or moment) of transition to a post-network mode of television; rather, they are (and have always been) heterogeneous incentives for constant transformation, each with their own specific dynamic and history.

Instead of displacing old forms of television (and their related topics, problems, or 'potentials'), post-network television often re-articulates already existing topics, problematizations, or supposed 'potentials' with different emphases and strategies. The example of Gibson's *Experiments in television* showed that 'flexibility' and 'individual access' were already topics of concern in the 1960s. The current development thus does not form a clear change (or transition) from national audience to target audience, or from scheduled programme to individual access; rather, the long established tension between different forms of address (respectively of organizing and transmitting programmes) simply gets reorganized. Although the focus of experimentation shifted to the question of the individual, the 'nationwide audience' is still part of the experimental set-up (just as the individual was part of it in the 1960s and 1970s).

2) The most characteristic features of post-network television – plentiful programming, individual access, mobility, and so on – are not unique features or results of the new constellations but, just as the 'nationwide audience' of the broadcast/network mode, they figure as problematizations, as topics, or supposed 'potentials' that become plausible through the constant rearrangements that aim at producing them. Television might now be more individualized, but it still continues to redefine what 'individualized' means and to offer (together with other media) models and instruments to realize and articulate 'individuality'. As we have seen, Gibson used television technology of the

> 1960s, the VCR and CCTV, to articulate or 'realize' individual access. It is too simple to say that the constellations he set up were less individual than the ones of today; rather, they defined individuality in a different way. Similarly, today's TiVo, Hulu, IPTV, and so on, are neither simply fulfilling the 'dream' of individual access, nor do they merely disguise the cultural industry with the ideology of individuality; rather, they are 'experimenting' with individuality: their interfaces realize individual access by making it visible and manageable. This realization of individual access, however, is always accompanied by the promise of future modification and improvement.

Individual access, plentiful programming, and mobility are formulated as tasks and problems that structure the upcoming transformations. At the same time, they are all endowed with reality and plausibility through these transformations, as they help establish individuality, plentiful programming, and mobility as objects that can be improved and managed. This, by the way, also makes it clear that just because post-network television is more heterogeneous and dynamic, it is in no way less powerful than the broadcast/network mode. When the experimental system becomes more complex and allows for more flexible manipulations, this does not mean that the phenomena made plausible by these experiments have less of an impact.

7. Closing remark on television studies

Understanding television as an experimental system not only enables us to rethink the historical dynamics of television's development, but also its social and cultural impact. The distinction between network and post-network television can thus be readily re-conceptualized. While television is currently changing in a particularly dramatic fashion, this transformation cannot be reduced to a transition from one mode of television to another; the many different developments simply do not follow a coherent logic, nor are they synchronized – neither through the technological change from analogue to digital, nor through the economical tendency towards (further) commercialization. If we take Amanda Lotz' suggestion seriously and start to speak of televisions (instead of television), and if we also adopt it for broadcast/network television we have to describe which of the manifold problematizations that were established at different moments of the broadcast/network era are continued, transformed, or ended by post-network televisions – and which are indeed newly introduced (and for what reasons).

The notion of the experimental system can be more generally applied to mass media. All media that promise to reach an entire population and that principally allow for technological improvement provoke their constant rearrangement to acquire knowledge of phenomena 'outside' the media (knowledge of the people, circulation of money, etc.) and transform them through these insights. Compared to the newspaper or film/cinema, however, television sharpens this experimental fervour: television's ability to connect the most intimate domestic spheres with the most comprehensive (and temporally synchronized) reach of its transmis-

sions, the anonymity of its audience, the heterogeneous programme elements integrated into a structured schedule – all these features share an urgent need to gain knowledge and a particular strong promise to grant access to previously inaccessible spaces and behaviours.

We believe that television studies has developed a particular competence dealing with its strange and heterogeneous object. Television studies could make it one of its central tasks to describe and theorize how constellations of technologies, institutions, and practices become (mass) media by inciting and undergoing processes of transformation. In response to the emergence of new media cinema/film studies has changed into a discipline that not only claims responsibility for the subject of film, but also for the much broader phenomenon of 'moving images'. Film studies can nowadays weigh in on YouTube or media art as well. Its insights and perspectives may have emerged from dealing with the narrowly defined object film/cinema and its particular mode of illusion, but it is not restricted to it anymore (Koch 2009). Similarly, one of the aims of television studies could be to analyze the social and cultural effects of media through analyzing media's ongoing transformation. The constant redefinition of core features (or better: problematizations) of television – liveness, mass-audience, programming, etc. – are ideal test cases to develop appropriate concepts to analyze objects – without classifying them as television or not.

Notes

1. We thank the editors of this volume and Florian Duijsens for their insightful and constructive remarks that helped to improve this paper.
2. Amanda Lotz makes a similar argument: 'Current changes in the institutional and cultural functions of television do not indicate its demise but enable us to see more clearly the dominant industrial practices of the network era and the forms, texts, and cultural role of the medium in that formative period' (Lotz 2009: 51). However, her differentiation between the 'old' and the 'new' television is too clear-cut in our view. Thomas Elsaesser (1998: 222) suggested approaching new technological developments (e.g. digitization) less as new media, but rather as 'a new medium of "knowing" about [...] media'. More generally, Critical Theory has pointed out that the task of concepts is not to be 'appropriate' to an object but to open up new – that is critical – perspectives (Horkheimer [1937] 1972).
3. A very explicit use of the lifecycle concept can be found in Alex Magoun's television history (2009).
4. This uncertainty in laboratories is one reason why scientific instruments are increasingly discussed as media and not as instruments – a development which turns Gitelman's comparison of media and scientific instruments upside down.
5. For an overview, see: www.rdlx.com/ncet/intro.html.
6. We owe not only the discovery but in fact our copy of that book to Ulrike Bergermann.
7. These workshops were organized between 1961 and 1967 in cooperation with, among others, the BBC, the National Committee for Audio-Visual Aids in Education and the Hertfordshire TV Experiment.
8. In contrast to the still customary translation of the French term *dispositif* as 'apparatus' we find it important to distinguish a medium's technical elements (*apparatuses*) from the relation between, and organization of, the technologies and practices which define its specific historical constellation: the *dispositif*.
9. The very first paragraph of *Experiments in television* compares television to the notorious elephant patted down by three blind people, one of them describing it as a snake, the other as a palm tree, and the third as a barrage balloon. Gibson continues: 'compare the uses made

of the medium by the producer of a long-established BBC or Independent television series; by a biologist televising dissection techniques for the benefit of his class; by a training college tutor using television to observe a learning situation' (Gibson 1968: 7).

10. 'At its best, broadcasting has the mastery and the means to create a work of art, to speak with power and authority, to widen horizons, to distil meaning from a wealth of knowledge and experience.' (Gibson 1970a: 24).
11. Already in the 1960s, Gibson used a vocabulary of individualization and (time-related) flexibility to describe the advantages of video tape and CCTV: 'Low-cost video-tape recorders now enable teachers to store broadcast material and re-use it at discretion, to fit their own timetables and to match their children's pace of learning. The development of versatile, portable closed-circuit television units, requiring modest space and manpower, brings the production of his own material within the teacher's reach' (Gibson 1970a: 7).
12. Here we again refer to Rheinberger's definition: 'I consider an experimental system to be a unit of research, designed to give answers to questions we are not yet able to ask clearly [...] it shapes the questions to be answered. An experimental system is a device to materialize questions' (Rheinberger 1998: 288).
13. In his analysis of laboratory work in molecular biology, Rheinberger describes how 'epistemic objects' can become instruments in the process of experimenting (1998: 291).
14. Experiments always aim at adapting phenomena ('nature') to reasoning. However, they do not adhere to one ahistorical mode of reason but can be based on (and conversely support) very different 'rationalities'; that is, different ways of thinking about truth, cause and effect, and so on. (Rheinberger and Hagner 1997; Latour 1990).
15. A problematization defamiliarizes a given situation or object and 'develops the conditions in which possible responses can be given; it defines the elements that will constitute what the different solutions attempt to respond to. This development of a given into a question, this transformation of a group of obstacles and difficulties into problems to which the diverse solutions will attempt to produce a response, this is what constitutes the point of problematization and the specific work of thought' (Foucault [1984] 2010: 389).
16. Lorenz Engell (1998: 26) adapts this term from Ernst Jünger.
17. Just like an experimental system, television can also bestow a 'natural' reality on these unexpected phenomena: 'An epistemic thing may not even be imagined when an experimental arrangement is in the course of being established. But once a surprising result has emerged and has been sufficiently stabilized, it is difficult to avoid the illusion of a logic of thought and even a teleology of the experimental process.' (Rheinberger 1998: 290).
18. The fact that the causalities of television e.g. between a commercial and the success of a product or between demographic classifications and genre preferences – always remain unclear cannot be taken as proof of the non-experimental character. Ambivalent causality is one specific characteristic of experimental systems.
19. Rheinberger says of this experimental systems' 'differential reproduction': 'such systems must be capable of differential reproduction in order to behave as a device for producing epistemic things whose possibility is beyond our present knowledge, that is, to behave as a 'generator of surprises'. Differential reproduction refers to the allowance, if not to the necessity of shifts and displacements within the investigative process; in order to be productive, an experimental system has to be organized so that the generation of differences becomes the reproductive driving force of the whole experimental machinery' (Rheinberger 1998: 287).
20. Rheinberger and Hagner (1997: 20) similarly describe the experimental system.
21. For the changing meanings of television studies' key concepts see Jostein Grisprud (1998) and William Uricchio (2004).

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