

**No.014**

**Media, Connectivity,  
Literacy & Ethics**

Collective Memory and  
Media Innovation:  
Interdependencies

**Indrek Ibrus**

October 2008

## **EDS Innovation Research Programme**

Is a collaboration between EDS and leading LSE academics from a range of disciplines researching the determinants of innovation, technology, creativity and productivity and the policies needed to foster them.

The Discussion Paper series features the research of the four teams;

1. Public policy and services (Patrick Dunleavy, Department of Government)
2. Intellectual property, technology and productivity (John Van Reenen, Danny Quah, Centre for Economic Performance & Department of Economics)
3. Media, connectivity, literacies and ethics (Robin Mansell, Department of Media & Communications)
4. Complexity, mediation and facilitation. (Patrick Humphreys, Institute of Social Psychology)

# **Collective Memory and Media Innovation: Interdependencies**

**Indrek Ibrus**

Department of Media and Communications, London School of Economics and Political Science

## **Abstract**

This paper is about the relationship between collective memory and innovation processes. It asks the following questions. What is the role of collective memory in the evolutionary dynamics of technology-intense media forms? How does it create a balance between order and disruption and lead to both continuities and discontinuities in media and their productive cultures? How, on the one hand, does it preserve order in production systems that are engaged with the new media development? On the other hand, how does it evoke disruptions that destroy the existing order within systems and establish new points of equilibrium? In order to broaden our understanding of these dynamics of the interdependencies between collective memory and media innovation, this paper suggests the need for further cooperation between these respective domains of academic research.

## 1. Introduction

In most of the existing theories of social evolution, the phenomenon of innovation is usually associated with information crossing various existing boundaries within the society under consideration and its cultural spaces. At the same time, there is a certain amount of disagreement between these theories as to what makes information transcend these boundaries. Still, the understanding shared among various systems-theoretical innovation theories of quite different disciplines such as Niklas Luhmann's sociological systems theory (1995), Yuri Lotman's semiospheric approach to cultural evolution (see Andrews, 2003) or Schumpeterian evolutionary economics - tends to be that systems strive outside their borders in order to interpret and translate the Other, what is alien to them, and acquire new information, once the entropy within the systems increases to an extent that there appears to be a need for disruption. But the questions that can be raised in this context are, how is the need for disruption recognised and articulated in the system and how are the specific bits of information that are going to be translated, the concrete Others from the system's environment, addressed and chosen? This is where memory comes into play – an aspect that has only recently been brought to explicit attention in innovation studies (see Cassiadori, 2003). A system makes its selections as to whether to preserve the existing order or to strive towards disruption and decides where to look for new information on the basis of its existing knowledge and previous experience with similar endeavours. Hence, the memory of social systems can both justify and support the preservation of order in the system as well as evoke disruptive processes. This paper discusses that paradox in the specific context of new media development, putting forward examples from the recent evolution of mobile media and their many forms.

## 2. Uncertainties Behind Media Continuities

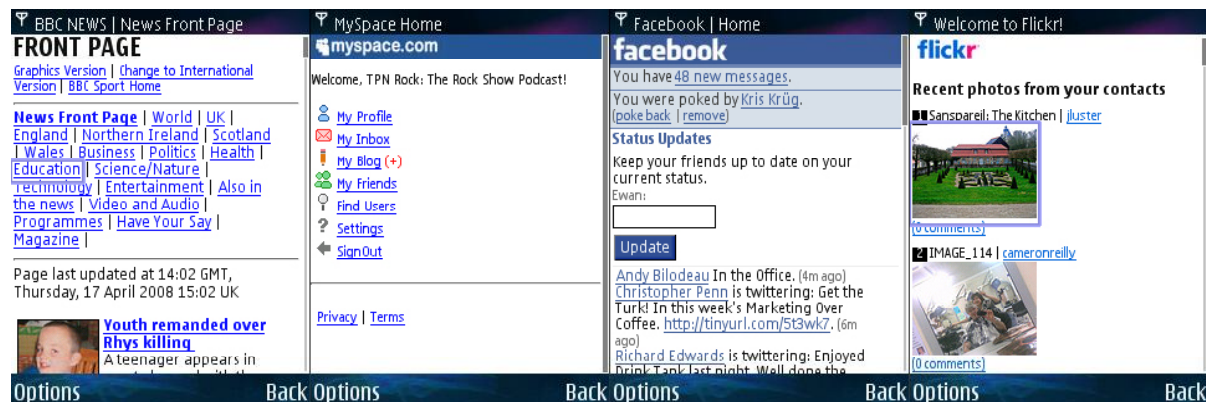
In post-structural new media studies, one of the most dominant theses, despite all the well justified critiques against it (see Baetens, 1999, 2004; Kirschenbaum, 1999), is that of 'remediation'. The authors of the concept, Jay David Bolter and Richard Grusin (1999) posit the following:

...we call the representation of one medium in another *remediation*, and we will argue that remediation is a defining characteristic of the new digital media. What might seem at first to be an esoteric practice is so widespread that we can identify a spectrum of different ways in which digital media remediate their predecessors... (p. 45)

...at this extended historical moment, all current media function as remediators... Our culture conceives of each medium or constellation of media as it responds to, redeploys, competes with, and reforms other media. In the first instance, we may think of something like a historical progression, of newer media remediating older ones and in particular of digital media remediating their predecessors. (p. 55)

However, it would be presumptuous to assume that this practice characterises the current media revolution more than any previous one in history or, indeed, in the future. As repeatedly demonstrated within the media archaeology approach (for instance Huhtamo, 1997; Kittler 1990, 1999, Thorburn 2003, Zielinski 1999), the phenomenon of borrowing from earlier media, repurposing their representational conventions, distribution or business models, at least in the early gestation phases of media innovation, has been a commonplace practice in the history of all media. Television took some of its technology from radio and film together with their early content genres – adaptations of news and soap operas from radio and many audio-visual conventions from the cinema. In the same way, we can see how the current designers of new content forms for mobile platforms are seeing the need to re-cycle existing media forms and other representational conventions from many earlier media, especially the desktop web and the reservoir of Human-Computer interaction (HCI) conventions in general (see Figure 1).

**Figure 1. Selection of mobile websites from 2008.**



But what these layouts also communicate is how immature this new field of interface design still is. We see how all these major web outlets have tried different ways to adapt their existing content to the small screen. Due to a lack of, for instance, well established conventions for site menus on the mobile web, they have developed their own by recycling principles derived one-by-one from the deep reservoirs of HCI. However, the ultimate usability of these varying solutions is still clearly in dispute.

This phenomenon is, however, not uncommon in the history of the media. It often happens that in such early periods of the nascent medium, where the old forms are tried out in new contexts, they eventually end up converging into a rhetorical mess that might be hard for users to make sense of during their encounters with the new medium (Ibrus, 2004, 2008). This, of course, is a paradox of that phenomenon – despite the intentions of its designers to relate the new forms to the old ones, the unavoidable result is still rhetorical innovation, something the wider public is unaccustomed to. This is why scholars have started to talk about this phenomenon using terms such as 'cognitive overload' or 'ontological uncertainty'. This is associated with the argument made by Eco (1977) that modern society, whose communicational patterns are ruled by ever-evolving and innovating mass-media, produces increasingly 'undercoded' texts – i.e. texts that are governed by codes that are too new, undeveloped and unfamiliar for users and hence make the interpretation of those texts a difficult task. That is, the engagement of the users and

producers alike with new media texts is perceived to be a constant semiotic struggle as to how to communicate with all these new forms and applications.

The emergence of such new, rhetorically heterogeneous and, hence, undercoded new media forms may be explained by complex power dynamics whereas, despite the attempts by institutions or agents currently in power to safeguard their established advantages and the existing power equilibrium, the manifold counter control relations between the systems still will introduce change into the systems and disrupt the environment of texts, languages and discourses. In such situations, Lane and Maxfield (2005) argue, what occurs for the productive cultures is the 'ontological uncertainty' that the participants in the dialogic processes experience. They explain that sometimes the structure of the actors' worlds changes so rapidly that the actors cannot generate stable ontological categories that are valid for the time periods in which the actions they are about to undertake continue to generate effects. The entities and relations from which the propositions about relevant future consequences have to be composed, are simply not known at the time the propositions have to be formulated. The main hypothesis about how actors then try to cope with such ontological uncertainty is that they hold it temporarily at bay by interpreting the contexts in which they must act in terms of stories whose structures are familiar from their past experience, and then follow their narrative logic, re-enacting their role in the story. In practical terms this means trying to re-design new media forms and services, always to an extent according to what they are accustomed to – i.e. copying the old forms. This could be exemplified with the way the mobile industry, due to the absence of any other success story to re-enact, is attempting to emulate the triumphant early evolution of the 'regular web'.

The ways that the end-users of new media products are understood to cope with media innovations are similar to those of producers. Ipsen (2003:195) for instance, explained a few years ago with respect to the desktop Web, that as there was, at that point, no coherent approach to presenting or structuring data for public use and few regulations concerning the design of web pages. The result for the users was cognitive overload in design.

"The user is dependent on his or her own decisions, relying on paths forged into the mass of data by others, following predetermined trails that may lead to enlightening clearings of knowledge — or to thick, dark woods of interlinked data from which there is little insight to be gained. A cognitive crisis or overload may result in a collapse (ibid.)."

In such situations, where codes have changed and people are trying to interpret the new kinds of texts, Eco suggests that the necessity for continuous 'under-coding' is imposed.

"The interpreter of a text is at the same time obliged both to challenge the existing codes and to advance interpretative hypotheses that work as a more comprehensive, tentative and prospective form of codification. Faced with uncoded circumstances and complex contexts, the interpreter is obliged to recognise that the message does not rely on previous codes and yet that it must be understandable; if it is so, non-explicit conventions must exist; if not yet in existence, they have to exist (or to be posited) (Eco 1977:129)."

He argues that in this kind of situation the term 'interpretation' should not be employed in the sense of 'decoding'. Instead, it refers to a process of understanding which is based on some previous decoding and the general sense of a vast portion of discourse. In terms of logic, this kind of interpretation is similar to *inference* and to the specific type that Peirce called *abduction*.

According to Wirth (2002) any kind of interactive content browsing relies on the principles of abductive inference. The user of the Web, for instance, is often like a pioneer in an alien territory where it is always easy just to get lost. In such instances, where the investigations venture into an unfamiliar field, the explorer is, as Peirce (1931/58:5.368) points out, very often in danger of losing his orientation. Abduction, as a process of finding explanatory hypotheses in such instances is, according to Peirce, triggered by a 'surprising phenomenon' that rouses our consciousness. He explains that we always presume that all the surprising facts that we have observed, explained and collected, are only one part of a larger system of facts which, as a whole, is unknown to us – it is just a guess. This larger system creates a certain



cognitive context which frames the process of provisional hypothesis adoption. This may be what we do when we first meet a new media application with unfamiliar functions – we probe our hypotheses on the basis of earlier experiences and our conception of bigger structures. Eco calls the same process *undercoding* and defines it as the operation by means of which, in the absence of reliable pre-established rules, certain macroscopic portions of certain texts are provisionally assumed to be pertinent units of a code in formation, even though the combinational rules governing the more basic compositional items of the expressions, along with the corresponding content-units, remain unknown (Eco 1977:135-136).

But if such provisional probing appears to be productive, and the guesses turn out to be right, then there is a chance that the abduction, once performed, becomes a customary social reflex. This is also the reason why abduction represents the first step in the process of the conventionalization of communicative forms. A consistently interpreted ambiguous uncoded context gives rise, if accepted by a society, to a convention.

What this suggests about for media innovators and for the evolution of the media forms, is the feasible pace of the process. The media producers have to take into account the limits of their users when it comes to abductive interpretation or undercoding of the new forms. The innovation cannot be too radical in that, to a significant extent, it has always to rely on existing and widely recognised representational conventions and the 'larger systems of facts' that the audience is assumed to have. It is for this reason that, in the domains of software design and HCI, there is a strong conviction that designs for new applications have to rely, to an extent, on existing conventions from other media so as to give users strong cues and powerful resources for learning by using. "They can do so by shaping their designs to take advantage of what people already know and have the potential to do" (Rheinfrank & Evenson, 1996:71). Brown and Duguid have stressed a similar view, arguing that well-designed media provide 'peripheral clues' that subtly direct users along particular interpretive paths by invoking social and cultural understandings.

"Context and content work together efficiently as an ensemble, sharing the burden of communication. If the relationship between the two is honoured, their interaction can make potentially complex practices of communication, interpretation, and response much easier for designers and users alike (Brown & Duguid, 1996:131) ."

The same need to rely on the 'context' for guaranteeing the workings of the 'textual machine' has encouraged the Nokia interface designers to develop the policy that the optimal user interface strategy is not the one of 'revolution'. Instead, it is argued (Lindholm, Keinonen, & Kiljander, 2003:30) that most of the current Nokia user interface (UI) design and development work is 'evolutionary' development. Therefore, the continuity in design justified by the continuity in interpretative abilities that is formalised by the normative approach of these design-theoreticians can be suggested to be one of the causes of "remediation" – the step-by-step innovation and reliance of the rhetorical dislocations of representational conventions from all earlier and current media.

This also relates to the concept developed in German reception theory – the "horizon of expectations" (*Erwartungshorizont*). The horizon of expectations that an audience might have for a 'media text' – i.e. for a film, a newspaper genre or a website – should be understood as a set of presumptions that mark the boundaries and characteristics of the particular form. It can therefore be suggested that this will condition the evolutionary dynamics of that form. The term – "horizon of expectations" – was coined by literary theorist Hans Robert Jauss (1982) to designate the set of cultural norms, assumptions, and criteria shaping the way in which readers understand and judge a literary work at a given time. But this is a two way process. As also suggested by Jauss, such a horizon is first constructed by these works themselves through the familiar norms or the immanent poetics of a genre in evolution (Holub, 1984:60). The genre can in time establish these expectations about itself and then, after being recognised by wider audiences, could be used in the cause of effective communication. At the same time, the genre is shaped in turn by these expectations as they evolve, being part of the wider dynamics of the culture.

Hence, with the evolution of mobile content and services, there is a dynamic where the content producer creates a new product by relying selectively on the established conventions in culture. As such, the form evokes some expectations about its effect and workings. If these expectations and the 'true nature' of the product correspond, we have potentially a successful product and a process of further conventionalisation and a spread of the related expectations. But, at the same time, as these expectations are also deemed to depend on the dynamic in the rest of the culture, the producer of the particular form needs to respond to these changed expectations and alter the product.

### **3. Stuck in the Webs of Memory**

This phenomenon of constantly establishing and altering characteristics on the level of the object-language (the media form itself) and the expectations and norms on the different levels of the meta-languages (the discourses on that form) takes us to the 'memorialist account' of Lotman's cultural semiotics (Brennan, 2004:203). In other words, all these different accounts of 'larger systems of facts', 'past experiences', reliance on existing texts, their conventions and the audiences' knowledge and expectations with regard to them, refer to the phenomenon of memory, to the troublesome relation between the individual and collective memory, mind and culture and the question of memory as a factor determining the formation of futures. That is, the set of questions that since the works of Halbwachs (1980, 1992) have gradually moved to the very centre of modern cultural studies (see Olick, 2008; Roediger & Wertsch, 2008, Surken, 2008).

One of the early contributors to the now emerging field of memory studies was anthropologist Clifford Geertz. Being inspired by the then emerging approach of semiotics, he started to regard cultures as webs of meaning spun by humans themselves, but where they, paradoxically, also end up being suspended (Geertz, 1973). Similarly to Geertz, also Lotman has decoded the 'universes of the mind' by

defining culture as the 'non-inherited memory' of a group of people, preserved and passed on by means of narratives, models and myths (Brennan, 2004:203). This also suggests that this non-inherited memory is, to a significant extent, 'externalised' and materialised. As Brockmeier (2002:25) explains, according to cultural semiotics it does not suffice to depict cultural memory as a social process in which remembering appears to be the other side of forgetting. Rather, it is important to realize that this process is itself culturally mediated within the symbolic space laid out by a variety of semiotic vehicles and devices. These cultural artifices are comprised, in the first place, of sign and symbol systems, most notably oral and written languages that play the central meta-communicative function of codifying the collective and individual memory (see Andrews, 2003:68). But as Brockmeier stresses, on different levels, other semiotic systems also have a role. Increasingly, these include all the possible memory devices, machines, institutions and architectures in which memory is embodied, objectified and mediated (Brockmeier, 2000, 2002:25; Sturken, 2008).

It is important to recognise how he includes the 'devices, machines, institutions and architectures' in one framework and equates them. This relates to some of the modern theoretical accounts of 'technology' in the sense that the 'technology' should not be seen as only referring to some bounded machinery or to a practical method. Instead, we should perceive and conceptualise it much more widely – more as a process, a technologisation, as Heidegger's (1977) *Gestell* – the purposive 'enframing' of nature and culture, its systematisation, standardisation and automatisisation. Or we should take an example from Foucault's moving towards a broader conception of technology, which implicitly includes a whole penumbra of activity and discourse attached to any particular technology or technique (see Gerrie, 2003).

Let us take, for instance, all the possible normative metalanguages that are currently modelling and shaping the various domains of new media and their technology - usability design, information architecture, web design, industrial design, software engineering, systems design, etc. These, and many others, are rather mature social sub-systems that, in different ways, are participating in the design of the new media

forms and their applications. However, we should also recognize the complex mixture of the words 'engineering' and 'design' in these 'brand names' where these sometimes replace each other rather subtly. On the one hand, we could suggest that this may refer to the merging of the metalanguages for those domains kept distinct since the Enlightenment and the birth of humanism – those of technology and of culture. With the productive cultures of the modern new media it is increasingly difficult to estimate where one ends and the other begins. Our culture is technologised, or 'enframed' – as Heideggerian critics would probably argue. But, on the other hand, this phenomenon refers implicitly also to the 'cultural' in technology. And, as posited by Winkler (2002) and implied by Kittler (2006), we have to start recognising both the technologic in language and the semiotic in technology.

One of the first reasons for this would be to ask what we could learn, if we, accordingly, conceptualise a concrete technology, for instance, a nascent media technology, as a 'text'. That is, as something that is designed to be integrally bound, but is still infinitely heterogeneous in terms of the codes it embraces and creates. A 'text' that is, as such, an act of use and materialisation of a mixed set of culture's codes. And this mixed set includes all – the codes of the forms of content representation on the screen interface, codes of the technology 'underneath' and codes around the screen – these of 'industrial design' – as, together, these are all codes of the particular form of 'writing'. That is, of the particular media form.

In this context, coming back to Lotman's 'memorialist account' (1990; see Brennan 2004), one of his central ideas is that one of the primary functions of language is to create (collective) memory through texts in order to generate new meanings and condense pre-existing ones (Andrews, 2003). The externalisation of individual memory by creating texts for sharing knowledge with a cultural group is essential if human cultures or their individual sub-systems are to continue to exist. Any language or semiotic code that is used in such texts can never be predominantly the property of the individual. Rather, all its languages are shared between one or more 'speech communities' that are embedded in a more broadly defined cultural *milieu*. Hence, all the established semiotic codes or forms of representation shift the burden of

‘memory’ from the individual to an externally given symbolic system that is collectively maintained. After this, if we recognise the vast amount of codes and modes of different materialities that are used for enframing the new media forms as immensely complex ‘texts’, the next step would be to realise that all these codes of design, now being externalised and actualised in the text, become bearers of cultural memory. For Winkler (2002) who equated the hardware, semiotic codes and their handling practices to merge all as *techné*, all such actualisations become the condensed social and material ‘deposits’ that are capable of conditioning subsequent practices.

“...technology per se can be understood as a “deposit” on a social level. At every point in history, single technologies merge into a landscape of technology: whatever we comprehend as the present state of technology is the result of past practices and, at the same time, the point of departure for future practices (Winkler, 2002:98).”

#### **4. The Economics of Deposited Memories**

In innovation studies the same phenomenon is known as ‘path dependency’ or the historical ‘lock-in’ of economic processes. For the first phenomenon, David (2000) offers the following definition: “Processes that are non ergodic<sup>1</sup>, and thus unable to shake free of their history, are said to yield path dependent outcomes.” After that, the historical ‘lock-in’ is, according to him,:

...the entry of a system into a trapping region – the basin of attraction that surrounds a locally (or globally) stable equilibrium. When a dynamic economic system enters such a region, it cannot escape except through the intervention of some external force, or shock, that alters the configuration or transforms the underlying structural relationships among the agents. Path dependent systems – which have a multiplicity of possible equilibria among which event-contingent selections can occur may thus become locked in to attractors that are optimal, or

---

<sup>1</sup> As David (2000) explains it, in physics, ergodic systems are said to be connected in the sense that it is possible to transit directly or indirectly between an arbitrarily chosen pair of states, and hence, eventually, to reach all the states from any one of them.

that are just as good as any others in the feasible set, or that take paths leading to places everyone would wish to have been able to avoid, once they have arrived there (David, 2000).

David points out that in terms of equilibrium theory such configurations are 'self-sustaining equilibria'. That is, in the case of a path-dependent process, some particular historical event initiates the sequence of transitions that effectively selects the configuration that is going to be realised as the system's emergent property. In terms of Luhmann's (1995) systems-theoretic account of social evolution, a system's selections depend on, and are limited by, its memory – by its autopoietic functioning that relies on its texts – both on those that are externalised and those that are internal.

But what is especially important in this context is that, according to David's economic theory, such a locked-in equilibrium point can rely on anything from institutional hierarchy to a technology or behavioural norm (David, 2000). The argument of this paper is that, to some extent, all these and many other interrelated enframings that are part of an autopoietic process of self-creation of a social system that governs the development of a new media form, must ideally be included. As Brockmeier (2002:25) puts it, memory as a social process is culturally mediated within a symbolic space laid out by a variety of semiotic vehicles and devices – making up, in Lotman's terms, a 'semiotic universe' that is constituted by all the sign and symbol systems of a particular culture or community. Starting out with the heterogeneous set of sub-texts and sub-codes that constitute the new media forms, and ending with all the various levels of metalanguages and metatexts of different engaged groups and agents that either passively model or actively standardise this particular form, these all lock each other in, as the first aim of the whole system is to sustain itself. The codes of different levels, as potentially independent evolutionary processes, cannot shake free from each other as, firstly, the different levels of meta- and object-languages simply model each other and are hence interdependent. Secondly, even if the codes happen to evolve due to the communication and information exchange between different systems, it cannot happen too hastily, as the variety of their 'speech communities' – from various producers to the manifold groupings of users – when they are forced to

undercode, need a relatively stable 'larger system of facts' in order to reach a successful and adequate interpretation. It is for this reason that cultural memory could be argued to be behind the continuities in culture and path dependencies behind the evolutionary dynamics of its forms – leading, for instance, to such a phenomenon as Nokia replacing the 'revolutionary' approach to its interface design a few years ago with an evolutionary strategy (see Lindholm et al., 2003).

But what, then, about the discontinuities? As David (2000) explained, it needs the intervention of some external force, or shock, that alters the existing locked-in configuration. This might be needed when the established paths lead systems 'to places everyone would wish to have been able to avoid, once they have arrived there.' The potential for the latter realisation is associated with the perception that has evolved through the writings of Ulrich Beck, Anthony Giddens and Scott Lash – that of 'reflexive modernisation' (see Beck, Giddens & Lash, 1994). Although this concept is generalised to cover the present evolutionary dynamics of the whole of (Western) society, it still marks some of the quintessential forces that drive the innovation processes in modern, complex, techno-cultures. What this concept refers to, is that in modern societies, as well as in their sub-systems, when they observe their environment and subsequently more and more of that acquired knowledge is self-reflectively 'digested' and codified – i.e. it has become part of the system's memory – this accumulation of knowledge leads to reassessments of its current equilibrium points, new differing metalanguages and, potentially, a need to move away and to shake free from the existing path. In Luhmann's terms, new selections are motivated by a need for risk management. As Beck also puts it, 'reflexive modernisation' means, in the first place, creative (self-)destruction (Beck, 1994:2). A self-critical society (Ibid, 11) that has entered into the realm of uncertainty, has become a risk-society characterised by doubt.

Doubt, for instance, which not only serves science but now, applied reflexively, disrupts and destroys the latter's false and fragile clarities and pseudo-certainties, could become the standard for a new modernity which starts from the principles of precaution and reversibility (Beck, 1994:33).



But, it should also be suggested that such potential reversibility or change of paths is a matter of power. David points out that in economic terms, the generic problems of escaping from the lock-in of a system are rooted in coordination costs. That is, from the perspective of this study, in economic power. These costs, however, might be very high when the technology or cultural code supporting the equilibrium is deeply embedded into the structures of the society, into its memory. As for instance is the QWERTY-keyboard, the classical example of path-dependency. Being one of the oldest media interface conventions, QWERTY refers to the importance of avoiding similar mistakes in the current phase of the early development of interface conventions for the mobile media. Therefore, in terms of policy implications, David (2000) suggests that public policy should try to delay the market from committing to the future inextricability, and before enough information has been obtained about the likely technical or organisational and legal implications of an early, precedent-setting decision. According to him, preserving open options for a longer period than impatient market agents would wish is the generic wisdom that history has offered to public policy makers, in all the applications areas where positive feedback processes are likely to be preponderant over negative feedback.

Of the latter, a good example is the current problematic associated with the backwards-compatibility in the mobile sector. Hasty un-consensual standardisation in the early phases of the WAP (Wireless Application Protocol) mark-up languages (WML and XHTML MP) resulted, as the relevant technologies and industry continued to evolve, in rather weak legitimacy of already established standards and hence also in the emergence of their different interpretations by browser and handset vendors. The outcome was *de facto* an exceptionally fragmented domain in terms of the sub-forms of the mark-up languages in use. However, when the industry then entered a new standardisation round (with XHTML MP and XHTML Basic 1.1), for legacy reasons, it was forced to include all these earlier standards as 'odd paths' into the new, technologically more complex standard – i.e. it had to accommodate the established interdependencies. This suggests that also future standardisation rounds will become increasingly technologically challenging. For this reason, among others,

the World Wide Web Consortium (W3C), the dominant body for web standards, has developed lengthy conduct protocols aimed at seeking consensus in a bid to make its standards effectively 'future-proof'. We realise that on a meta-level, this particular industry has accumulated reflective knowledge in its memory of previous unfortunate 'path-dependencies' and has developed ways to take these into account and potentially to avoid them. Therefore, it is generally the memory-enabled potential for knowledge accumulation that offers a basis for a society or its individual sub-systems to re-assess itself, its risks and selections and to re-create itself and change its equilibrium points. Overall, we can say that it is the memory of the system, externalised and materialised in its 'semiotic universe', its different texts, that both enforces the processes that create continuities in culture as well as initiates the mechanisms that bring forth the change. Or, to be more exact, it balances in between, guaranteeing the feasibility of the evolutionary processes and their dynamics.

## 5. Conclusion

In this paper, some of the state-of-the-art literature has been reviewed that discusses the dynamics that we could suggest lie behind continuities in the media. The central message to take from this literature is that continuity in design can often be justified by both uncertainties in production cultures about conduct in a changed environment and by presumed continuities in the interpretative abilities of media users. These two phenomena are interdependent as the latter presumption is often formalised by various normative design theoreticians that suggest relying on the already established, generic representative conventions. It can be suggested that it is this *raison d'être* that is one of the contributors to "remediation" – step-by-step innovation and reliance on the rhetorical dislocations of representational conventions from all earlier and current media. Acknowledging this, the paper turned to theorising this phenomenon from the perspective of (cultural) memory studies. It has showed how culture can, in the terms of Geertz and Lotman, be understood as a multileveled web

of externalised memory where people themselves become suspended. We also saw how technocultures can be analysed as such a web – firstly the media technology consisting of a heterogeneous set of interdependently evolving codes of design; and secondly, as the aggregate of metalanguages that model particular media and their technology. The paper showed how all these codes, when they become articulated and materialised in the actual forms of media/technology (when they become ‘texts’), also become the bearers of memory for their particular ‘speech community’ – i.e. for the communities of practice that were either involved in their production or in their use.

The concept of ‘path dependency’ has been introduced as it is known in evolutionary economics. From this perspective, a ‘locked-in equilibrium point’ has been shown to rely on those dynamics where the object- and meta-languages can’t shake free from each other in their evolutionary processes. This is because, firstly, they are simply generated to model each other and, secondly, the system’s property are also the ‘speakers’ of the particular codes and that property is slow to change – i.e. their collective abilities to decode the codes in change is limited. That is, to an extent, the collective memory decelerates the evolution of a system. However, as the paper also demonstrates, memory can also play a crucial role in enabling systems to shake free of their lock-ins. The accumulation of knowledge in a system’s memory permits reassessments of its equilibrium points and, hence, the potential articulations to shake free from the existing path. Relying on David, the need for public policy makers to be aware of such a dynamic so as to avoid committing to the future inextricabilities – i.e. to paths that would be unfortunate for media/technology to take, has been emphasised. It is for the same reason that this paper also looks forward to a potentially fertile cooperation between the fields of memory and (media) innovation studies.

## References:

- Andrews, E. (2003). *Conversations with Lotman: Cultural Semiotics in Language, Literature, and Cognition*. Toronto, Buffalo, London: University of Toronto Press.
- Baetens, J. (1999). Jan Baetens asks Remediation or Premediation, *electronic book review*. URL: <http://www.electronicbookreview.com/thread/criticalecologies/Adornian> (Accessed 12.07.2006).
- Baetens, J. (2004). A Remediation's Remediation?, *electronic book review*. URL: <http://www.electronicbookreview.com/thread/imagenarrative/designflaw> (Accessed 28.04.2008).
- Beck, U. (1994). The Reinvention of Politics: Towards a Theory of Reflexive Modernization. In U. Beck, A. Giddens & S. Lash (Eds.), *Reflexive modernization : politics, tradition and aesthetics in the modern social order*. Cambridge: Polity Press.
- Beck, U., Giddens, A., & Lash, S. (1994). *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*. Cambridge: Polity Press.
- Bolter, J. D., & Grusin, R. (1999). *Remediation: Understanding New Media*. Cambridge, Massachusetts: MIT Press.
- Brennan, A. (2004). The birth of modern science: culture, mentalities and scientific innovation. *Studies in History and Philosophy of Science*, 35, 199-225.
- Brockmeier, J. (2000). Literacy as symbolic space. In J. W. Astington (Ed.), *Minds in the making* (pp. 43-61). Oxford: Blackwell.

- Brockmeier, J. (2002). Remembering and Forgetting: Narrative as Cultural Memory. *Culture & Psychology*, 8(1), 15-43.
- Brown, J. S., & Duguid, P. (1996). Keeping it simple. In T. Winograd (Ed.), *Bringing Design to Software*. Reading, Massachusetts: Addison Wesley.
- Cacciatori, E. (2003) Total recall? Organisational memory and innovation in project-based firms. PhD thesis. SPRU, University of Sussex, Brighton.
- David, P. A. (2000). Path dependence, its critics and the quest for 'historical economics'. In P. Garrouste & S. Ioannides (Eds.), *Evolution and Path Dependence in Economic Ideas: Past and Present*. Cheltenham: Edward Elgar.
- Eco, U. (1977). *A Theory of Semiotics*. Bloomington: Indiana University Press.
- Geertz, C. (1973). *The interpretation of cultures*. New York: Basic Books.
- Gerrie, J. (2003). Was Foucault a Philosopher of Technology?, *Techné* (Vol. 7, pp. 14-26). URL: <http://scholar.lib.vt.edu/ejournals/SPT/v7n2/pdf/gerrie.pdf> (Accessed 03.04.2008).
- Halbwachs, M. (1980). *The collective memory*. New York: Harper & Row Colophon Books.
- Halbwachs, M. (1992). *On collective memory*. Chicago: The University of Chicago Press.
- Heidegger, M. (1977). *The Question Concerning Technology and Other Essays* (W. Lovitt, Trans.). New York: Harper and Row.

- Holub, R. C. (1984). *Reception Theory: A critical introduction*. London and New York: Methuen.
- Huhtamo, E. (1997). *Elävän kuvan arkeologia*. Jyväskylä: YLE-opetuspalvelut.
- Ibrus, I. (2004). The Struggle for Grammar: Mechanisms of New Media Conventionalisation. In K. Kivimaa (Ed.), *Opening Acts: New Media and Art in Estonia* (pp. 23-37). Tallinn: E-media center, Estonian Art Academy.
- Ibrus, I. (2008). Rhetorics, innovation and new media, *Discussion Papers Series. Media, Connectivity, Literacies & Ethics* (Vol. 10). London: EDS Innovation Research Programme. URL: <http://www.lse.ac.uk/collections/EDSIInnovationResearchProgramme/pdf/EDSdp010/EDSdp010.pdf> (Accessed 03.04.2008).
- Ipsen, G. (2003). The Crisis of Cognition in Hypermedia. *Semiotica*, 143(1/4), 185-197.
- Jauss, H. R. (1982). *Toward an aesthetic of reception* (T. Bahti, Trans.). Minneapolis: University of Minnesota Press.
- Kirschenbaum, M. (1999). Media, Genealogy, History, *electronic book review*. URL: <http://www.electronicbookreview.com/thread/criticalecologies/archival> (Accessed: 28.04.2008).
- Kittler, F. A. (1990). *Discourse Networks 1800/1900* (M. Metteer & C. Cullens, Trans.). Stanford: Stanford University Press.
- Kittler, F. A. (1999). *Gramophone, Film, Typewriter* (G. Winthrop-Young & M. Wutz, Trans.). Stanford: Stanford University Press.

- Kittler, F. A. (2006). Thinking Colours and/or Machines. *Theory, Culture & Society*, 23(7-8), 39-50.
- Lane, D. A., & Maxfield, R. R. (2005). Ontological uncertainty and innovation. *Journal of Evolutionary Economics*, 15(1), 3-50.
- Lindholm, C., Keinonen, T., & Kiljander, H. (2003). *Mobile Usability: How Nokia changed the face of the mobile phone*. New York: McGraw-Hill.
- Luhmann, N. (1995). *Social Systems*. Stanford: Stanford University Press.
- Olick, J. K. (2008). 'Collective memory': A memoir and prospect. *Memory Studies*, 1(1), 23-29.
- Peirce, Charles S. (1931–1958). *Collected Papers of Charles Sanders Peirce*, 8 vols., ed. Charles Hartshorne, Paul Weiss, and A. W. Burks. Cambridge: Harvard University Press.
- Rheinfrank, J., & Evenson, S. (1996). Design Languages. In T. Winograd (Ed.), *Bringing Design to Software*. Reading, Massachusetts: Addison Wesley.
- Roediger, H. L., & Wertsch, J. V. (2008). Creating a new discipline of memory studies. *Memory Studies*, 1(1), 9-22.
- Sturken, M. (2008). Memory, consumerism and media: Reflections on the emergence of the field. *Memory Studies*, 1(1), 73-78.
- Thorburn, D. (Ed.). (2003). *Rethinking Media Change: The Aesthetics of Transition*. Cambridge, MA: MIT Press.
- Winkler, H. (2002). Discourses, Schemata, Technology, Monuments: Outline for a Theory of Cultural Continuity. *Configurations*, 10, 91-109.

Wirth, U. (2002). As we may surf: The relevance of abductive inference for surfing through the internet. *Semiotica*, 141(1/4), 159 -168.

Zielinski, S. (1999). *Audiovisions: Cinema and Television as Entr'Actes in History* (G. Custance, Trans.). Amsterdam: Amsterdam University Press.



EDS Innovation Research Programme  
London School of Economics & Political Science  
Lionel Robbins Building  
Houghton Street  
London WC2A 2AE  
020 7955 7285  
[www.lse.ac.uk/eds](http://www.lse.ac.uk/eds)