Freedom and Learning in the Network Society

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Abstract: Freedom and learning are common themes in many scholarly discussions of network societies. Within such discussions, however, they are usually addressed individually rather than in conjunction with one another. Moreover, claims made about freedom and learning in the context of network societies tend to be sweeping and contradictory. For example, some claims assert the potential and tendency of computing networks to enhance freedom, while others emphasise ways in which they can and do limit freedom; some claims associate computing networks with enhanced learning opportunities and, indeed, enhanced learning per se, while others dwell on their tendency to undermine quality learning. This paper undertakes analytic and substantive critique of freedom and learning under current conditions in emerging network societies like Australia, Britain and the US. It considers a range of current teaching and learning practices in schools and universities that use online environments. Examples include the rapidly escalating use of proprietary learning management systems within university teaching programs and school or district level responses to students being online at school, among others.

Keywords: Freedom, Learning

Introduction

This paper is based on the belief that we are at an historical juncture – namely, an early point in the development of network societies that are increasingly interlinked on a global scale – where it is timely to reflect upon learning in relation to freedom as an educational ideal. ‘Freedom’ provides a particularly useful standpoint from which to address a range of important issues associated with contemporary trends in technology, economics, politics, institutional life and everyday sociocultural practice that shape what we become (or don’t become) in the name of ‘educated persons’. Within the ‘digisphere’ freedom has emerged as a key mobilizing focus for movements contesting intellectual property rights (e.g., the Free Software movement, the Electronic Frontier Foundation), and has already demonstrated its efficacy (e.g., the May 2005 ‘broadcast flag’ decision in the US Appeals Court – see Appendix).

Freedom and Learning in Brief Historical Context: ‘Negative’ and ‘Positive’ Concepts

Freedom and learning have been linked in educational philosophy and theory within the western tradition and was especially significant in Anglo-American educational debate during the twentieth century. Two ‘moments’ can serve to briefly illustrate some of the issues and positions that revolved around the relationship between freedom and learning in 20th century debate.

The first is found in John Dewey’s account of freedom and education that partly underpinned Progressivist educational theory. Dewey (1938: 61) distinguished between what he called an ‘outer’ (or external) form of freedom and an ‘inner’ form of freedom. He thought of the former in terms of ‘freedom of movement’ or, more generally, in terms of ‘the physical or external side of activity’. Being free in this sense means that our physical action is not impeded or coerced by external forces or rules or sanctions. ‘Inner’ freedom, by contrast, consists in the capacity, or power, to ‘frame purposes, to judge wisely, to evaluate desires by the consequences likely to arise from them, to select and order means to carry chosen ends into operation’ (p. 64). Whereas outer freedom is constrained by external constraints to action or movement, internal freedom is constrained by inner impediments to good quality judgment (such as prejudices or compulsions or misguided beliefs and illogicality and the like getting in the way of determining what is truly and intrinsically worthwhile, valuable, good, proper, etc).

In Dewey’s view, one of the biggest mistakes educators can make is to treat outer freedom as an end in itself or as the ‘true’ and important sense of freedom. Outer freedom is at most a means to developing inner freedom. Outer freedom was, for Dewey, a merely negative thing: an absence of restriction. Inner freedom, however, was a positive thing: a capacity or a power. Dewey argued, accordingly, that within education a degree of outer freedom is needed.
in order for learners to undergo the kind of experiences that enhance the development of inner freedom. Regimented systems of desks and desk bound students can, beyond a certain point, become inimical to effective learning out of which the capacity for sound and wise judgment and observation can evolve. Learners should have an appropriate measure of outer freedom, but not as a good or value in and of itself but, rather, as a condition for becoming ‘truly’ free.

Later, in the period immediately preceding the economic and political triumph of neo-liberalism, a ‘rationalist’ philosophy of education associated with people like Richard Peters and Paul Hirst in Britain, and with Israel Scheffler (among others) in the US, enjoyed a brief period of educational influence. This position was structurally similar to Dewey’s. It distinguished between freedom in the sense of non-interference to our wants and freedom in the sense of being an autonomous agent. The autonomous person was one whose choices and decisions were their own in the sense that they flowed from the individual’s own rational deliberation rather than from heterogeneous forces (e.g., peer pressure, advertising, whims and consumerist urges, ideological indoctrination, prejudice, mass opinion, etc.) that ‘push’ the person toward particular decisions, actions, values, etc.

This philosophy was used to legitimate and explain the need for restricting the liberty (non interference to wants) of learners in ways that are required for them to master disciplined modes of thinking or ‘forms of knowledge’. The autonomous chooser/agent/decision maker is one who can arrive at sound judgments courtesy of thinking in the kinds of ways way that trained academics’ minds think. This implies the need to be subjected to the authority of disciplined modes of reason, and mediated by the authority of the disciplinary expert-teacher. Hence, constraints to learners’ wants and to their judgments and tastes could be justified on the grounds that such constraints were necessary for ‘winning through’ to autonomy as an educational ideal.

Around such philosophical perspectives – and the many other variants that could be found – there was plenty of debate about what constituted ‘true’ freedom, or of what freedom really means. Some of those who championed the importance of liberty as non interference with what people want to do or be argued that ‘positive’ freedom was not really freedom at all and, in fact, could easily lead to totalitarianism, where to be free means to do as one ought (such that one could be forced to be free). Some of their opponents argued that only ‘positive’ freedom could really count as freedom. People like Dewey and Peters occupied intermediate positions, recognizing both liberty and autonomy as legitimate, albeit competing, ideals of freedom.

### Freedom as a Triadic Relation

There was sufficient dispute, however, to muddy the conceptual waters, and some of the debates were bitter and antagonistic. One particularly useful response to the confusion came in the form of an analytic tool developed by Gerald MacCallum (1967) and Joel Feinberg (1973), who argued that freedom was best understood as a relationship between three variables: an Agent variable; a Constraint variable; and an End State or Outcome variable. According to this analysis, freedom is best understood as a relational term that always necessarily (whether implicitly or explicitly) involves three variables. If values for all three variables are not apparent in particular freedom claims then these claims are elliptical, and the claimants should be invited to elucidate the values they assign to each variable.

According to MacCallum, freedom is capable of endless interpretations and appropriations so long as proponents can elucidate a ‘subject’ variable, a ‘constraint’ variable and an ‘outcome’ or achievement variable. That is, coherent statements about freedom identify someone (or some group or social entity) who/which is free from some kind of limiting or preventing condition to do or be or become something. Any assertion that can provide meaningful values for these three variables is, to that extent, a coherent or intelligible assertion about freedom (or lack of freedom). In summary, freedom as a triadic relation takes the form:

<table>
<thead>
<tr>
<th>A</th>
<th>is free from X</th>
<th>to do, be, or become Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>An agent, whether collective or individual</td>
<td>Some impediment, limiting condition or coercive force</td>
<td>Something that A actually wants (or might plausibly want) to do, be, become, avoid, and so on.</td>
</tr>
</tbody>
</table>

(Adapted from MacCallum, 1967, and Feinberg, 1973)

So long as we can cash out each of the three variables in an intelligible way we have a coherent account of ‘freedom’ or, as in many of the illustrative cases that follow, restrictions on or impediments to freedom. Claims about freedom can range over all kinds of values being assigned to the variables. They can be admitted as ‘genuine meanings of freedom, or claims about freedom, but thereafter it is a matter of arguing for one’s position or stance against com-
competing views – a matter of substantive debate rather than a matter of correct definition.

**Freedom and Change**

We want to argue that educational thought about freedom has not yet come to terms with the changes associated with the contemporary rise of network societies. The task lies ahead, and this paper is no more than indicative.

Deep and wide ranging changes have occurred during the past 20 years that open up all kinds of new and unexplored implications and values/content for the A, X and Y variables. Such changes include:

1. Epistemological changes involving a marked move from ‘truth’ to ‘use value’ and ‘exchange’ (cf. Lyotard 1984)
2. An increasing emphasis on originality and innovation as the point of knowledge and understanding – the idea that we learn rules in order to break or modify them in pursuit of innovation, freshness, ‘edge’, etc.
3. The role of learning by doing rather than learning by using as a medium of innovation (e.g., Castells 1996)
4. The digital-electronic revolution that has impacted on everyday practices and experiences in diverse institutional and non-formal settings
5. Changed experiences of space and time associated with the global reach of real time communication and exchange
6. The idea of learning as lifelong and life wide.

We think it is important to mobilize the ideal of freedom as one way of bringing home the extent to which formal education and, especially compulsory education, needs to be rethought and reformed. The question arises of what the issues and ‘shape’ of freedom and learning might be like under contemporary conditions of the network society, understood in terms of increasing ubiquity of digital electronic networked computing and communications technologies.

**Revisiting Freedom and Learning Under Contemporary Conditions of Network Societies**

In this section we will use the analytic model of freedom as a triadic relation to begin to explore some of the ways the relationship between freedom and learning might be problematised and opened up in the context of current and foreseeable conditions of network societies. These include things like digitization of media, revamped intellectual property/copy-right laws; surveillance, spam, censorship, file sharing, filtering, etc.

**A Classroom Case**

As part of a recent ethnographic study of young people’s ICT practices Kevin Leander and colleagues observed case study participants in a private girls’ school that made extensive use of mobile computing within a wireless environment. Not surprisingly, many students spent much time in class engaging in self-selected purposes. This extended to gaming, shopping, and downloading music, as well as including ‘more expected’ activities like emailing, private chatting and IMing (instant messaging).

Leander’s fieldnotes contain the following vignette.

![Context: Final exam preparation in a Grade 9 English class; the teacher is focusing on a list of poems they will need to be able to discuss]

Zoe opens her laptop and logs into the network. She accesses Xanga.com – a popular weblog hosting service – and begins reading a weblog. The title of the weblog is, “Thank God I’m an Atheist,” and Zoe laughs while reading the latest entry on this blog.

The teacher asks, “Is there anybody who doesn’t understand imagery?” She walks close by Zoe, who quickly opens a blank Word document and keys in “Imagery” before flipping back to her web browser and reading a different weblog.

Teacher: “Who can describe an image from ‘After Apple Picking’ by Frost?”

Zoe keeps the weblog she was reading open on her laptop, but looks at Alana’s book and gives the first answer of the day: “In the first four lines you get an image of an apple in an apple tree.”

Teacher: “Good, a very realistic one. Read those lines again because they are interesting lines.”

The blog post lines in front of Zoe read: “There is nothing more foul than dissecting a fetal pig.”

Teacher: “Frost especially likes to use the seasons of the year.”

Zoe opens her own blog and begins working on an entry for that day. She types away, occasionally glancing at the teacher. Most of the other girls in the class are looking in their books.

Teacher: “What he is doing? Is he looking in the mirror? Frozen water; again, he tries to strengthen that image, of being old, tired, winter, freezing cold.”

Zoe continues typing her blog entry.
The teacher asks Alana to read the first five lines of “After Apple Picking”, and asks Zoe to read the next line of the poem.

Teacher: “Is there symbolic value to it?”

Zoe: “I was going to say that it stands for him, but I think it stands for something bigger.”

Teacher: “Good intuition.”

The teacher calls on Zoe at least twice more, and Zoe offers her interpretation that the apple picking in the poem stands for death. It is now 22 minutes into the class and Zoe is still typing her blog entry. She also changes her blog template to a blue background and the text colour to purple. She stops fiddling with her new set up to read a few lines from the next poem under consideration.

From Leander (2005).

Some of the students, like Zoe, who engaged most in pursuing self-selected purposes during class time, did not believe they were learning less than they otherwise would as a result of this, and, in fact, even when they were ‘drifting’ on their screens demonstrably participated as much and more in class discussion than their ‘on task’ peers (proficient ‘doers’ of school). Two of these students claimed that being able to go to other places during time in class when they already knew about the matters under discussion alleviated boredom. Their capacity for multitasking seemingly allowed them to maintain one eye on the school task at hand while going about other, more personal business.

Notwithstanding such self-appraisals – although, it could easily be because of intuitive recognition of what lies beneath them – some teachers had already begun limiting the times laptops could be used to points in lessons they deemed appropriate before the research was even completed.

As a notable complementary aside, the researchers found high levels of safety consciousness among the study participants, who avoided communication with unknowns and were very careful about what information they gave out about themselves. As noted, they also found highly proficient multitaskers in the making.

If we take the circumstance of teachers moving to restrict the use of networked mobile computing in class, and think of this in terms of freedom as a triadic relation that can range over ‘outer’ and ‘inner’ or ‘negative’ and ‘positive’ forms of freedom, we can see some of the ways issues about freedom and learning can arise in the context of networked societies.

For example:

A (a student, or students) is free from X (laptop use rules/surveillance) to do Y (do ‘off task’ things during class time/‘multitask’ during lessons, etc.).

Or, as became the case in the study by Leander and colleagues:

A (a student, or students) is restricted by X (laptop use rules) from Y (doing ‘off task’ things).

This would be to focus on a ‘negative’ or ‘outer’ freedom, crudely akin to conventional classroom management issues tied to keeping learners in seats, attentive, etc.

By contrast,

A (a student or students) is free from X (restrictions or opportunities to be ‘on and off task’) to Y (refine their proficiency as ‘flexers’ and ‘multitaskers’)

shifts the focus to an ‘inner’ or ‘positive’ freedom that is crudely akin to a power to operate autonomously and ‘wisely’ in a world that demands and rewards fluent and effective ‘value adding’ multitasking. The learning that students are free or not free to ‘access’ and ‘master’ might be seen as more or less ‘powerful’ in relation to what gets rewarded in the world beyond the poetry lesson. Coercion to attend only to ‘curricular learning’ may undermine freedom to become ‘educated in a sense that resonates profoundly with the times.

Note that we are not implying here that discussing Frost/poetry isn’t a good thing, and/or not more important or worthwhile than ‘flexing’ or ‘multitasking’, etc. We are just saying that the issue that is being raised here – and myriad more like it – can and should arise for consideration, and that this can be done very effectively by reference to freedom as an educational and social value.

Of course, we need also here to consider the perspective of other agents – e.g., the teacher.

A (a teacher, or teachers, persuaded of the value of multitasked/flexed behaviour) is impeded by X (norms inscribed as ‘duty of care’, official norms of good classroom management, state-mandated celebrations of ‘time on task’, etc) from Y (operating a networked mobile computing learning environment).
This can be seen in terms of constraints to a teacher’s ‘negative’ freedom. In parallel with the previous example involving students we can also see how constraints can arise to teachers’ ‘positive’ freedom within institutional settings. For example:

A (teacher or teachers) is impeded by X (constraints to operating a networked mobile computing environment) from becoming Y (an effective, troubleshooting, responsive, savvy, pedagogical expert under contemporary conditions of internetworked learning contexts).

It is important to note that part of our point here has to do with bringing such constraints on freedoms to the surface so that learners and teachers can actively work to find ways around them; to contest them; to build resistance and opposition; to win back ground by employing effective mobilizing devices. In another (non educational) context, the efficacy of mobilizing around freedom to contest has been powerfully demonstrated very recently in relation to an intended initiative to push Intellectual Property Rights protections to draconian levels (see Appendix).

**Learning Management Systems and Pedagogical Constraints**

During the past five years proprietary software ‘learning management systems’ like Blackboard and WebCT have become standard environments for online courses and course components within universities in many countries around the world. In some countries, e.g., Australia, they are practically ubiquitous. In many – although by no means all – universities that have ‘bought into’ learning management systems, some degree of coercion (or ‘encouragement’) is applied to academic staff to integrate use of online environments into their teaching, and to use only the particular learning management system that the university has adopted as its ‘standard’. Increasingly, ‘encouragement’ is evolving into ‘requirement’. Furthermore, where institutions have adopted such learning management systems, they effectively restrict teachers to using only such applications as are permitted by the proprietary owners of the software to be embedded within their learning management system. Even though these learning management systems are costly, university administrations are largely favourable to them because they can facilitate a range of ‘efficiencies’ and, up to a point, provide a ready means for managing teaching activity. The semi-automated nature of the software environment can ‘deliver’ economies of time, and technical support and assistance can be standardised.

Use of learning management systems is still in its early stages and it is not possible to predict the kinds of issues that may emerge in time. At present many teachers find the systems to be a convenient *adjunct* to their work where they are still teaching conventional face to face courses. This might change, however, if university requirements move toward intensified online ‘delivery’ with less (or negligible) face to face teaching. Under such conditions some/most teachers might experience working within prescribed online environments that are circumscribed by proprietary learning management systems as a powerful and unacceptable constraint.

From the standpoint of freedom to teach (or learn) as one does best, or preferably, and to have space and opportunities to grow as teachers and learners, intensified use of learning management systems may generate diverse issues, and diverse ways of cashing out freedom in ‘opportunity – exercise’ terms or, alternatively, as a triadic relation. For example:

1. Imposition of standardised learning management systems (the X variable) may deny teachers (the A variable) the opportunity to have significant input into (the Y variable) the design of the software environments in which to conduct their work as teachers

2. Use of standardised learning management systems may constrain the opportunities academics have to develop proficiency in a range of media that could be put to productive use in teaching and learning activities (including, to participate in open source product initiatives, collaborative experimental software design, etc.)

3. Use of standardised learning management systems may constrain the opportunities academics have to imagine pedagogical possibilities that might result from their experimentation with resources/media like weblogs, wikis, voice over IP, graphic chat spaces, games, iPods, mobile phones, etc.

4. Use of standardised learning management systems may constrain the opportunities learners have to engage in learning activities mediated by cultural artifacts resonant with their experiences and preferences

5. Use of standardised learning management systems may constrain the spaces universities departments have to develop, support and implement solutions that reflect their character/ethos etc.

6. Buying into proprietary software solutions constrains a university’s options for developing, supporting and implementing solutions that it might (otherwise) prefer.

Here and elsewhere it is important to note that freedom should not be understood simply in terms of what people actually want at a point in time. Rather, it should be understood in terms of what they might plausibly want. Many teachers with no previous interest in, or even knowledge of, various com-
puting applications have subsequently become deeply interested in them as a consequence of some contingency occurring in their lives (e.g., parenthood, being challenged by a student or a colleague, moving into a new job, etc.). Given the rapidity of change and the uncertainty of our times, keeping technology options as open as possible should be an institutional default position so far as preserving academic freedom is concerned.

This issue can be extended into the arena of open source software, and the ways in which proprietary software not only limit people’s freedom to copy and distribute programs but also create serious disincentives to acquiring programming knowledge and skills that can be employed creatively and autonomously to produce better solutions, efficacious customizations, and so on. Common Ground Publishing and Common Ground Conferences provide a constructive counterexample to trends associated with proprietary systems. Common Ground uses as far as possible their own open source programming resources to build platforms tailored to their own specific circumstances to enable their publishing arm, their conference arm and their research arm. Much of what the Learning Conference, the other CG conferences, and CG Publishing are involved in would simply not be possible without the forms of savvy and techniques that the world according to proprietary software actively discourages.

If programming is to win its rightful place as a crucial bona fide literacy that has massive implications for the degree of control ordinary people will have over their lives in a digital networked society, it is necessary that the groundswell to break down the dominance of proprietary software continue to grow. At the same time, for the potential fruits of the open source ethos to be democratized it will be important for educators and learners to ‘see the point’ and become active agents and ‘users’ and provocateurs of programming literacy.

Freedom from Offence in Learning and Research Contexts: Intellectual Property and Different Cultural ‘Ways’

Michael Seadle (2002) identifies and discusses a ‘soft side’ to copyright that is concerned with matters beyond what will simply hold up in court with respect to the creation and use of intellectual property. He notes that within almost all legal jurisdictions in the contemporary world there exist diverse indigenous and/or new migrant cultures. Consequently, within and across jurisdictions monolithic legal codes pertaining to intellectual property are presumed to apply equally to multiple or diverse cultural groupings. Taking the USA as a single case, Seadle notes that for the 2 million Native Americans (affiliated with 116 different tribes) and 28 million foreign-born residents, ‘Title 17 of the US Code is supposed to serve as the final, official social contract on copyright. It is the law, and it does not recognize local variants among communities’ (n.p.). He argues that it is becoming increasingly necessary for researchers to pursue ‘access to the conceptual world’ of other cultural groups so that discussion can take place that deals as well as possible with the potential tensions between the desire of social scientists for ‘intellectual goods’ and the right of informants to ‘appropriate cultural respect’.

There is not space to go into Seadle’s argument in any detail here, and it is important to note that he does not address his concerns using the language of ‘freedom’ per se. Nonetheless, some of the most important dimensions of the issues at stake are appropriately addressed in terms of freedom.

Briefly, Seadle looks at three factors central to the issues around copyright. These are Law (under which he includes the ethical codes of professions), Technology (where he emphasises the way digital technologies have fomented new issues, and are often treated differently under copyright law from other recording and publishing media), and Permissions. After addressing aspects of the legal issues around copyright that may arise, with particular emphasis on publishing data and works on the Web), Seadle identifies some of the ways that well-known excerpts in Levi-Strauss’s Tristes Tropiques, Geertz’s The Interpretation of Cultures, and Kluckhorn and Leighton’s The Navaho might have been compromised had their informing data been collected using new digital technologies (and at a time when such technologies had been available) and published as web documents, or had otherwise become publicly available.

The following extract from Seadle’s discussion of permissions illustrates some of the points at which issues of freedom arise.

1. Because of all the implicit assumptions of which neither side may be completely aware, cross-cultural permissions are problematic. Can a community that has little or no direct experience with digital video and the Internet give a meaningful permission that allows researchers to record them and publish the interview on their personal home pages? Probably not. They may just not care, and the bottom line with US copyright law is that the rights owner must object before any legal action can be taken to prevent infringement. Although deliberate and repeated violation can be expensive, thus far most Web publication cases do not go beyond a letter-of-objection and the removal of the offending copy. Such copyright risk-taking appears pragmatic in the short term, but any de
facto violation of US copyright law could also have strong potential for violating the intellectual property customs of a less individualistic community.

2. Some anthropologists recommend getting informants to give a verbal permission at the beginning of each recording. This excellent practice protects researchers from violations of law and should certainly be encouraged. Whether such permission is meaningful in the informant’s conceptual world may not be immediately clear to the researcher. And what to do after finding out that the persons giving permission did not, in their own society, have the right to do so, remains an issue that researchers must come to term with on their own (Seadle 2002, n.p.).

Obviously, there are all sorts of ethical, legal, and political concepts besides ‘freedom’ that can be used to articulate and to focus issues in this area. Freedom, however, is certainly a leading contender. And the range of different facets it can be used to clarify is quite wide, as we can see if we apply MacCallum’s schema (A is free from X to do, etc. Y) to the passage cited above. For example:

1. A researcher (A) is constrained by (X) the fact that her informant did not have the power to convey permission from (Y) developing a paper that would significantly advance her research-related learning.

2. A cultural group (A) is constrained from (Y) protecting sensitive information by (X) the fact that a person entitled to do so gave permission to a researcher to publish his (the informant’s) account of certain facts.

3. A research community (A) is prevented from (Y) being able to use a rich data set by (X) the decision of one of its members to withdraw the data set on the grounds that ‘meaningful permission’ had not been obtained for its use and cultural sensitivity issues were thereby at stake.

This is just one issue among the complex array addressed by Seadle. While it is an indicative issue we nonetheless recommend Seadle’s paper to readers since it provides a rich and accessible overview of issues emerging with the growth of the World Wide Web as a distinctive information publication medium. (See dlib.org/dlib/march02/seadle/03seadle.html)

Conclusion

The concept of freedom as a triadic relation provides a fruitful, albeit elastic, resource for raising diverse issues about learning situations and conditions in the context of emerging network societies. The importance and complexity of many such issues suggests that educationalists should make the effort to revisit freedom as an educational value in this historical juncture. Doing so, however, will involve a significant shift from the kinds of terrain on which educational issues about freedom have been debated hitherto.

Appendix: The Court, the Broadcast Flag and the EFF

The following notes have been excerpted verbatim from an online report sourced at the Public Knowledge website: http://www.publicknowledge.org/issues/bfcase. The online report provides considerable further detail about the case of the ‘broadcast flag’. Further information can be found on the Electronic Frontier Foundation website at http://www.eff.org under the Broadcast Flag link. Public Knowledge report that “The U.S. Appeals Court for the D.C. Circuit on May 6, in a 3-0 ruling, threw out the Federal Communications Commission’s order establishing the so-called “broadcast flag.” The decision came in a case brought by Public Knowledge, Consumers Union, the Consumer Federation of America, Electronic Frontier Foundation, the American Library Association, Association of Research Libraries, American Association of Law Libraries, Medical Library association and Special Libraries Association. The decision can be found here: http://www.publicknowledge.org/pdf/bfcase-decision-20050506.pdf “


The flag’s proponents portray it as a narrow mandate that will only prohibit illegal distribution of digital television content, but in fact it will do much more:
the flag will impose significant strictures and constraints on the design of consumer-electronics and computer products — limitations that will diminish interoperability between new products and old ones, and that even pose interoperability problems among new devices; and

2. the flag will limit what users can do with broadcast television content to a significantly greater degree than they are limited now. (http://www.publicknowledge.org/issues/bfcase No page numbers available)

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