

CONNECTING INTERNET SECURITY AND COPYRIGHT PROTECTION: TELE-CYBERNETICS

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ABSTRACT

We review the recent literature, noting the reports of federal court decisions dealing with copyright protection, particularly as concerns digitally recorded musical performances. We underscore the theme of the National Research Council's report, "The Digital Dilemma" [National Academy Press, Washington, DC (2000)]: viz. that to transmit a digital version of an artifact is to make a copy of it.

The application of digital watermarking at copyright registration will significantly improve copyright protection, just as it would improve Internet security via a "national electronic postmark".

In further consonance with the theme of AN EPISTLE TO DR. BENJAMIN FRANKLIN [NY: Exposition-University Press, 1975(1974)], we question the judicial extension of copyright protection, itself constitutionally restricted to "promoting the progress of science and the useful arts", to recorded performances (rather than to sheet music and scripts).

We conclude that the existence of the Constitutionally-mandated "National Electronic Postal Service" will serve both to enhance Internet security and to provide copyright protection.

INTRODUCTION

"Tele-cybernetics" is a term which we introduced [1, 2] much earlier, defined as "scientific politics in our Age of Tele-communications". The introduction was in direct response to C West Churchman's observation [3] that reason no longer seems to be prevailing due to an American "hidden leadership", one resting in the heads of the television-broadcasting industry.

Most today seem to still accept electrical engineer Wiener's [quite erroneous] claim [4] to have himself coined the term, "cybernetics: communication and control in the animal and the machine". The fact that he repeated this claim subsequently—but in a book [5] of a peculiarly political title—prompted our investigation, particularly because not only had Plato used the original Greek term for 'steermanship' but also the electrical scientist Ampère had, in an extensive categorisation of human knowledge, introduced the French term, 'cybernétique': "the very art of knowing [politically] not just what can be done, but rather what must be done: statesmanship".

We two, therefore, noting that we as a nation have entered somewhat unwittingly into our Age of Tele-communications from our earlier 'Age of Written/Printed Communications', agreed only slightly with Wiener in order to note that the success of science has depended on some implicit, nearly self-regulating, 'controls' (e.g., reviews by peers and/or publishers) of its communications. Thus, we conclude therefore that not only do we require as a definition for 'tele-cybernetics':

- A) “tele-communications + (proper) tele-controls”, but also, more pertinently and correctly:
B) “scientific politics in our Age of Tele-communications”.

SCIENTIFIC POLITICS

We take, as an exemplar of the political structure which Ampere would have recognised (viz., the constitutional republic) as that which should best guarantee that each political decision would be that option which must be taken: *THE CONSTITUTION OF THE UNITED STATES OF AMERICA*.

In this document, two requirements of the Congress now require attention as a direct result of our having entered our Age of Tele-communications from the earlier Age of Written/Printed Communications:

(A: *Clause 7*): “to establish post-offices and post-roads”; and

(B: *Clause 8*): “to promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries [emphasis added]”.

The two titular sub-topics of the present paper (A: Internet Security; and B: Copyright Protection) relate respectively to the two Constitutionally-mandated Congressional responsibilities.

A. The National Electronic Postal Service:

In our Age of Tele-communications, the introduction of the computer into person-to-person tele-communications networks has only served to emphasise the fact that Congress had, even in the late 19th-Century, failed to appreciate that there is a governmental role (not necessarily a monopolistic one!) to be filled not only in the telegraphic but also in the telephonic technologies. The European nations led the rest of the world in establishing national “PTT’s”: Post, Telephone, Telegraph” while America took pride in typically establishing better services in these two technologies via private enterprises, ones operating virtually exclusively (military operations excepted).

As we pointed out earlier [6, plus its referents], each of these two Congressional responsibilities arose because of one of the six reasons for having government: In the *Preamble* one finds: “to ensure domestic tranquility”. Though the Founding Fathers (authors of the *US CONSTITUTION*) could not have been aware of the text of Alexander Dumas’s 19th-Century novel, *The Three Musketeers*, the fact that one of the novel’s central characters, the Cardinal Richelieu, is now considered historically to be the founder/father of the national postal service only reveals that they must have been aware of the theme of of Dumas’s novel-to-be:

In order to ensure public trust, to establish confidence, in postal despatches in an era of multiple carriers operating on essentially unregulated roadways, each nation is better served by a governmentally-operated and –secured national postal service. A citizen’s letter/despatch, once sealed and entered into the postal service, remains both sealed and the sender’s property until it is placed in the hands of its addressee (at which point it becomes the property of the receiving party).

‘Twas quite natural that the republic would assist in ensuring domestic tranquility by operating a National Postal Service.

Where, then, is the National *Electronic* Postal Service, one issuing ‘enhanced electronic postmarks’ which would, by direct analogy with the earlier postal service, require content-markers (such as ‘book enclosed’ or ‘pornographic contents’)? Would not it provide the means by which, under penalty of law, illicit hackers would of necessity reveal either their location or initiating machine’s serial number?

B. The Library of Congress’s Tele-copyright Office

To ensure the “domestic tranquility” which would suffer as a result of ‘priority rights’ over competing claims to have written about or to have invented something new, copyright (and patent, respectively) protection is a second Congressional duty.

The matter, now that we have moved into our Age of Tele-communications, is concisely characterised in the title, “The Digital Dilemma”, of the National Academy of Science’s century-terminating report [7]: viz., to transmit electronically a copy of a machine-readable text/document is to make a copy of it.

Congress seems to be even further under the sway of the broadcasting and its ‘sister’ recording industries. The 1998 Copyright Act was essentially their handiwork, with little attention being called to it (i.e., to the ongoing effort to enact the law) by the broadcasting medium. In effect, the recording of performances—particularly as recorded in digital media—has been now granted, with respect to copyright protection, the equivalence of writings and/or designs for products. Clearly, Benjamin Franklin and James Madison could have hardly anticipated that recordings of performances would be available, much less available for subsequent reply; yet, these musical and stage performances would hardly have been considered to be either science or a useful art, as was clearly the intent of the copyright protection clause of *THE US CONSTITUTION*.

Regardless, we shall relate how the issue of copyright protection of digital documents (Item B) can be essentially resolved by the same technology as will resolve the issue of Internet security (Item A).

DIGITAL WATERMARKING

We recommend to the reader our much longer paper [6] for the details of the proposed “National Electronic Postal Service”, one to be operated and secured by the national government, yet which, we repeat, need not be monopolistic. Private tele-communicative carriers can continue to exist, much like the Pony Express, United Parcel Service, or Federal Express have, though many remain unaware that, when using most of these alternative carriers, one is forfeiting the very virtue (the “sealed letter” guarantee) which Richelieu had instituted in the 17th Century.

Similarly, if one among several alternative carriers should happen upon bad economic times, then could not as much profit can be gained by intercepting as by delivering messages, particularly tele-communications.

A. Internet Security:

This observation should help to underscore the requirement for a nationally-operated and –secured Electronic Postal Service. By employing digital watermarking, this governmental “IntraNet” can, together with time-dependent encryption technology, come closer and closer to obtaining the desired ‘electronic sealed letter’, one ‘wrapped’ in its enhanced electronic postmark.

Though we have (hopefully only temporarily) become enamoured with the oft-broadcast “right to a free Internet”, the presumably low cost per electronic despatch should overcome most objection. As for establishing such a secure IntraNet, the Marine Corps and US Navy have already begun their own [AFCEA West: I.2003].

Adequate Internet security should follow as a nearly direct consequence. Private digital carriers could on their own compete to provide more or greater assurance of their own transmissions’ security, though the long-established (Richelieu; and the American Constitution) practice of leaving this as a matter of the public’s trust in the ‘Governmental Internet’ will need to be made to prevail.

We have earlier [6, e.g.] discussed the matter of concerns of privacy and of free speech vis-à-vis the digital transmittal of pornography. We would add here that perhaps we are now witnessing an ideal opportunity for the Congress to initiate the National Electronic Postal Service: viz.,

(α) Calls by Senator Burns for “E-Government” could be answered by instituting a Federal Intranet as the precursor of the National Electronic Postal Service; and

(β) Calls by Congressman Moran to include the “V-chip” in all new television receivers (so as to be able to prevent the reception of objectionable materials) could be even better answered by means of the “second-generation V-chip” [6: cf. Section 4], one which avoids any suggestion of governmental censorship.

B. Copyright Protection:

As for the second issue, copyright protection, of this paper, the implementation of an initial “E-Government” would serve to acquaint the public to electronic copyright markings/dates by providing (using digital watermarking and, as might be necessary, encryption) with each Federal form or document or publication sufficient information as to indicate whether the electronic document transmitted to his screen/monitor is indeed the latest/current form.

The experience gained by means of an initial “E-Government IntraNet” would be valuable in learning of any difficulties to be overcome in subsequently providing electronic (say, on-line) copyright-labeling. Means by which monetary charges can be electronically assessed for governmental services (“fees”) would also be refined so as to be more readily recognised whenever one receives or transmits portions of already copyright-registered materials, just as one’s fees, whether despatch-by-despatch or by periodic access charges, to the ‘Electronic Postal Service’, would become ‘routine’, or standard operating procedure.

A NOTE ASIDE

At this Festival last year (2002), we became aware of a (somewhat slight, we hope) oversight in our presentation dealing with librarians’ perceived conflict with the *US Constitution*’s First Amendment, a conflict generated whenever they are asked to use ‘filtering’ technologies in order to restrict the reception of material objectionable to readers, particularly non-adult readers/viewers, of the monitors within their libraries. When connected to the Internet, such library-situated monitors are serving as “electronic postal stations”, so that librarians are being asked to act as local postmasters when asked to provide such Internet-connected monitors.

Surely, there is no violation of any Constitutional right for libraries, even governmentally-operated libraries, to refuse to act as ‘electronic post-offices and post-roads’ without (or until) being granted the same operating rules as the postal service itself: e.g.,

a requirement for content-markers, even those from (now, essentially passive) transmissions to be received upon request from any accessible Web-site;

the “Master List” maintained by the [Electronic] Postal Service of [Email] addresses to which the transmission to oneself (and/or family members) of objectionable material(s) will constitute a crime;

a source of “electronic postal inspectors” available immediately to any library or citizen who has [electronically] advised his “electronic postmaster” of his desire not to receive any further transmissions from an offending party [Email address].

One can refer to U.S. Codes 18, ΔΔ1460-1470 and ΔΔ2251-2257 to refresh one’s memory that it is illegal to send, transmit, ship, or distribute obscenity or child pornography.

Local governments, with the assistance of a National Electronic Postal Service, once established, can then decide whether to operate separate “city electronic postal stations”, quite apart from the local (city) library. Issues of confrontation with the First Amendment—just because there is “Internet in the Library”—can therefore be avoided by municipalities and/or organisations who seek to separate the functions of the [electronic] library and the [electronic] postal station [8].

CONCLUSIONS

In this brief presentation, we have connected the issues of Internet security and [digital] copyright protection by noting that these issues can be readily corrected technologically and politically. The *US CONSTITUTION*, including its elements dealing with the governmental requirement “to ensure domestic tranquility”, gives the US Congress the duty of establishing post-offices and post-roads. By establishing such a National Electronic Postal Service, perhaps initially as an E-government connecting agency-to-agency transmissions and/or connecting thereto any citizen requiring governmental forms/documents, one can implement (by means of digital watermarking technology--augmented if necessary with encryption techniques), both Internet security and digital copyright protection.

In addition, we underscore how the appreciation of the benefits of correcting the Congressional oversight regarding a national electronic postal service can be further rewarded by recognising that we have also been remiss in asking librarians to serve as “electronic postmasters”, yet without the benefits of a ‘national electronic postal inspection service’.

The reader is referred to our earlier (and lengthier) publication [6], as well as to the set of slides which were employed [9] at a lengthy presentation at the 1999 Computer Security Conference and Exhibition.

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