New Technologies and the Law: Precedents via Metaphors

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In many ways it is futile to think about the future. There are far too many variables involved and it is almost impossible to make accurate predictions. But, in the arena of information and communications technologies (ICT), the sheer pace of technological change forces us to confront it. We have to factor in the future when we make investment, regulatory, and other decisions about ICT.[i]

The preferred device is a formal model which allows us to make predictions with a high degree of accuracy. Such a model requires a comprehensive understanding of the phenomenon and availability of accurate data. Unfortunately, the sheer complexity of the processes leading to the development of a large technical system such as the "information superhighway" does not readily lend itself to precise modelling. The processes tend to be ambiguous and ill-defined and accurate data are a rare commodity. In such situations metaphors and analogies offer a viable alternative to formal models. They help us handle situations where there is "high uncertainty, missing data, unclear goals, and poorly understood parameters".[1]

We have to accept the fact that although the use of metaphors is not a particularly elegant or sophisticated technique, it is perhaps the only conceptual tool we have for understanding the development of a new technology. We should therefore direct our energies towards understanding the peculiarities of this tool: How can we leverage it to maximise the potential payoff? What are the pitfalls and how can we avoid them?

In the case of technology and law, there is an added dimension—metaphors help establish precedents. As Pool points out, "courts like to treat new phenomenon by analogy to old ones".[2]

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[1] **G. KLEIN,** "Applications of Analogical Reasoning", *Metaphor and Symbolic Activity*, Vol 2, Issue 3, pp. 201-218, 1987, at p. 202.

[2] **I.D.S. POOL,** *Technologies of Freedom*, Cambridge, MA, Harvard University Press, 1983, at p. 100.

For example, in the mid-1970s when FCC removed the resale restrictions on telephone services, "the fundamental legal principle underlying the decision was a 1911 Supreme Court decision which prohibited the railroads from refusing service to freight forwarders who purchased railroad service in bulk (carload lots or greater) and resold it to smaller shippers".[3] This mode of legal reasoning has formed the basis for the development of much of the communications law. Each new communications technology has been shaped by legal precedents created by the previous ones.

The problem is that the precedents are often not readily available or clear.

The Interstate Commerce Act developed for regulating the railroads has continued to influence the development of the legal framework for all the subsequent network technologies—petroleum pipelines, trucking, civil aviation, and telecommunications, among other technologies. Here metaphors were effective vehicles for the transfer of conceptual frameworks from one technology to another because they were all point-to-point networks for the movement of materials and information from one point to another. However, the process broke down in the case of radio. For example, in the beginning radio was conceptualised as "wireless telegraph" or a point-to-point communication technology. Even Marconi, the inventor of radio, saw the tendency of radio waves to scatter as a major nuisance. In fact all the institutional forces guided by the telegraph analogy were working in the 1920s towards casting radio as a point-to-point technology. The eventual emergence of broadcasting was a total surprise, and it undermined all the institutional structures set up on the wireless telegraph metaphor. The radio was clearly a case where a metaphor based on an old technology failed to shape the new one in its image.

The development of broadcasting created what we call a "metaphor vacuum"—there were no readily available metaphors to think about the new technology. The term "broadcasting" was appropriated from a realm far removed from communication. The original meaning of broadcasting signified the act or process of scattering seeds.[4] Later, at the turn of the century, the

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[3] **G. BROCK**, *The Telecommunications Industry*, Cambridge, MA, Harvard University Press, 1981, at p. 270.

[4] **E. BARNOUW**, *A Tower in Babel*, New York, Oxford University Press, 1994.

women suffragists used the word broadcasting to describe the act of distributing leaflets on street corners.[5] This mode of disseminating something came closest to serving as an analog for describing the dispersive tendencies of radio.

Although "broadcasting" was an appropriate label for the new phenomenon, it was not very useful from the legal point of view, which is the focus of our paper. It described the physical phenomenon—point to multipoint communication. But it did bring with a legal framework. We are interested in understanding how the legal system dealt with the central problematic of the "metaphor vacuum." Here, on the one hand, there was a radically new technology for which no clear precedent was available. On the other hand, the case law could not proceed without a precedent. The one way this tension could be resolved was by taking an established metaphor and stretching it. We are especially interested in understanding how this stretching process works.

In this paper we first trace the legal developments from the very first case—*Marconi Wireless Telegraph vs. Northern Pacific S.S. Co.* (1918) to *Great Lakes Broadcasting vs. Federal Radio Commission* (1930), when the framework for radio regulation became a settled issue. In the subsequent section we analyse the radio case on a conceptual plane and draw lessons for the future.

I. Evolution of radio law and regulation

The initial cases dealt with minor issues. For example, the earliest court case we found, *Marconi Wireless Telegraph vs. Northern Pacific S.S. Co.* (1918), was primarily a contract dispute between two parties**.** At this stage, the potential for broadcasting was not well understood. Wireless was basically being used in ways that mimicked the telegraph.[ii] Consequently, the issues it raised were relatively minor, as opposed to paradigm shifting. The ambiguity was low.

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[5] **J. HIJIYA**, *Lee de Forest and the fatherhood of radio*, Cranbury, NJ, Associated University Press, 1992.

Subsequently, the cases started getting more complex. With increasing number of actors, new issues started emerging, such as copyright violations, jamming, etc. The earliest set of radio court cases—*M. Witmark & Sons v. L. Bamberger & Co. (1923), Pastime Amusement Co. vs. M. Witmark & Sons (1924),* and *Jerome H. Remick & Co. vs. American Auto Accessories Co. (1925)* —involved copyright infringement and primarily concerned broadcast of music through radio.[6] In all these cases broadcasters contested copyright infringement allegations, arguing that their broadcasts of live concerts were not "for profit" as they did not charge their audiences. Similarly, broadcasters also argued that their broadcasts were not "public" as they were received in the privacy of their audiences' homes. The courts, however, rejected these arguments in favour of the plaintiffs stating there was infringement of music copyrights because a performance by an artist for radio broadcast is "consciously addressing a great, through unseen and widely scattered audience".[7] The second set of early court cases involved re-broadcasting of radio music over closed circuit audio systems in hotels. One early case, *Buck vs. Jewell LaSalle Reality Co.* (1931) is particularly illustrative of this.[8] In this instance too, Justice Brandeis, commenting on the innovative ways in which radio broadcasting technology was being exploited, remarked that, "while this (form of exploitation) may not be possible before the development of radio broadcasting the novelty of the means used does not lessen the duty of the courts to give full protection to the monopoly of public performance for profit which Congress has secured to the composer". [9]

On parallel lines there was also an increasing realisation that the commerce clause alone was not adequate for regulation of radio since it gave the government ability to only issue licenses to operate but not actually regulate behaviour.

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[6] **J.C. GINSBURG**, "Copyright and Control over New Technologies of Dissemination", *Columbia Law Review*, 2001, Vol. 101, No. 5, pp. 1613-1647.

[7] *Ibid*, at p.1620.

[8] *Ibid.*

[9] *Ibid* at 1621.

In the beginning radio was regulated on the basis of the Commerce Clause of the Radio Act of 1912. The Department of Commerce argued that since radio waves transcended state boundaries and radio broadcasting was a commercial activity, radio could be regulated on the basis of the commerce clause. Here the analogies were the telegraph and the telephone, where transmission of messages by electronic means had been construed to be interstate commerce.[10] The case of *Whitehurst vs. Grimes* (1927), presents an interesting illustration of the application of the commerce clause to the field of radio communication. The plaintiff operated a radio station in the city of Wilmore in Kentucky, under license from the Secretary of Commerce. The city of Wilmore passed an ordinance requiring all persons operating a radio station to pay a tax to the city and imposed a penalty for failure to do so. In its decision the court held that radio was inherently an interstate commercial activity and hence the ordinance by the city of Wilmore was void given that Congress had placed radio under the purview of the commerce clause.[11]

While the commerce clause became the basic framework for radio regulation, there was increasing uncertainty about its legal basis. For example, in a legal review article, C.K.U (1928) challenged the application of the commerce clause to radio broadcasting.

> "Today, however, by far the larger part of radio broadcasting consists of music and other entertainment distinguishable in many respects from the conveyance of commercial messages. The act makes no distinction and its administration has included both types. It would seem that here the arguments in the telegraph and telephone cases, that those companies were "agencies in interstate commerce" or "common carriers of messages" among states, would be scarcely applicable. Indeed, such broadcasting is more like a free band concert on one side of a state line being enjoyed by the public on the other side. If the state in which the band was playing undertook to regulate its time and place of playing, would such state be interfering with interstate commerce"…[ ] "Is a man who places a large advertising sign on one side of a state border engaged in interstate commerce because it can be seen across the line? Yet the act extends its operation to pictures sent through the air by radio".[12]

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[10] **C.K.U,** "The Radio and Interstate Commerce", *Michigan Law Review*, 1928, Vol. 26, No.8, pp. 919-921.

[11] *Ibid.*

[12] *Ibid*, at p. 920-921.

At the same time, the advancement of radio and aviation technologies had started a debate among legal experts who stressed the increasing need for laws regulating the usage of air space. An interesting point of view emerged in conferences and publications that the air above an individual's property must be treated as that individual's property and the government must make laws that regulate the proper use of air space. With regard to radio broadcasting, there was increasing consensus among legal experts for the establishment of a federally controlled radio board for regulating the radio industry's use of air space.[13]

Nevertheless, the commerce clause continued to be the basis for radio regulation until two land mark court decisions—*Hoover (Secretary of Commerce) vs. Intercity Radio Co.* (1923), and *Zenith Radio vs. United States* (1926), changed it all. In both these instances the Secretary of Commerce refused to renew broadcast licenses belonging to the plaintiffs who in turn initiated legal action challenging the legal basis for the denial of licenses. The courts ruled in favour of the plaintiffs arguing that the Secretary of Commerce had no discretion to refuse licenses.[14] These landmark court decisions "totally laid bare the absence of a legal basis" for regulation of radio broadcasting.[15]

The Radio Act of 1912 was largely conceived to function as a registry device for issuing licenses to all those who applied for one. However, the subsequent policies and actions pursued by the Department of Commerce were both allocative and regulatory in nature. The decision rendered in these two cases completely annulled the regularly role of the Department of Commerce by holding that "the Secretary of Commerce had no power to make regulation and was to issue licenses".[16]

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[13] **BAR ASSOCIATION OF TENNESSEE,** "The Law of the Air", in *Proceedings of the 43rd Annual Session of the Bar Association of Tennessee*, 1998, Chattanooga, Bar Association of Tennessee, 1924, pp. 190-198.

[14] **J.R. MINASIAN**, "The political economy of broadcasting in the 1920's", *Journal of Law & Economics*, 1969, Vol. 12, No. 2, pp. 391-403.

[15] **Y. BENKLER,** "Overcoming an agoraphobia: Building the commons of the digitally networked environment (wireless telegraph regulation)", *Harvard Journal of Law & Technology*, 1998, Vol. 11, No. 2, pp. 287-400, at p. 316.

[16] **J.R. MINASIAN**, *o.c.*, at p.401.

Once the potentiality of broadcasting was fully understood—it raised a whole new set of legal issues. With the court decision in *Zenith Radio vs. United States* rendering the Radio Act of 1912 and the Department of Commerce's legal authority over radio broadcasting virtually ineffective, radio broadcasting between 1926 and early 1927 was characterised by chaos and confusion.[17] Walter S. Gifford, President of Bell Telephone Company, noted "Nobody knew…where radio was really headed. Everything about broadcasting was uncertain".[18] Recognising the fundamental deficiencies of existing regulatory tools, the then Secretary of Commerce convened four annual national radio conferences where he advocated the concept of "public interest" in radio communication. Subsequently, Congress passed the Radio Act of 1927 that led to the establishment of the Federal Radio Commission with broader powers to regulate radio broadcasting. The 1927 Radio Act employed a utility based regulation model under which broadcasters were deemed to be public trustees who were "privileged" to use a scarce public resource.[19]

After the passage of the Radio Act of 1927, a number of court decisions followed that firmly established Public Interest Convenience and Necessity (PICON) as the basis for radio broadcast regulation.[20]

In *Technical Radio Lab vs. Federal Radio Commission* (1929) the court reaffirmed Federal Radio Commission's authority to limit access to airwaves where applicants outnumbered channels available (Le Duc & McCain, 1970). In a similar case *Carrell vs. Federal Radio Commission* (1929), the court affirmed the commission's right to deny licenses to one particular class of operators in order to reduce interference.[21] *Great Lake Broadcasting Co. vs. Federal*

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[17] *Ibid.*

[18] **J. BROOKS**, *Telephone: The First Hundred Years*, New York, Harper & Row, 1976, at p.161.

[19] **E.G. KRASNOW and J.N. GOODMAN**, "The 'Public Interest' Standard: the Search for the Holy Grail", *Federal Communications Law Journal*, 1998, No. 50, No. 3, pp. 606-636.

[20] *Ibid.*

[21] **D.R. LE DUC and T.A. MCCAIN**, "The Federal Radio Commission in Federal Court: Origins of Broadcast Regulatory Doctrines", *Journal of Broadcasting*, 1970, Vol. 14, No. 4, pp. 393-410.

Radio Commission (1930) was the next milestone in radio regulation. The case involved a conflict among three Chicago area broadcasters about modification of their technical facilities to minimise interference. In the process of accessing their claims, the court made nature and quality of content and its value to the community the station is serving as a basis for assessing the performance of a station under public interest standard. The Great Lakes Broadcasting decision is considered significant in the history of radio broadcasting as it set the precedent for content as a criterion for assessing public interest.[22]

II. Lessons for the future

Most new technologies easily get beaded into the ongoing transfer of metaphors from one technology to another. The development of infrastructure networks—electric grids, highway systems, telegraph, railroad, and telecommunications networks—was marked by the transfer of frameworks from one technology to another. As noted earlier, the frameworks developed for the railroads were transferred to subsequent technologies, especially through the Interstate Commerce Act. Later, the deregulation of transportation industries in the 1970s set the stage for the deregulation of the telecommunications industry in the 1980s.[23] More recently, we have been seeing the migration of deregulatory concepts from telephone regulation to electricity regulation, especially with regard to competition in local markets. These transfers tend to occur relatively fluidly because all these infrastructures are point-to-point networks that transport materials and information from one point to another. Metaphor vacuums occur when we are confronted with a radically new technology such as radio.

In this concluding section, using the radio case as a springboard, we conceptualise the processes that lead to the creation of a metaphor vacuum and also its eventual resolution. In specific we focus on: (1) when metaphor vacuums occur, (2) how they are resolved, and (3) how the metaphors used early in the process shape the possibilities down the line.

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[22] **E.G. KRASNOW**, and **J.N. GOODMAN**, *o.c.*

[23] **B. CHERRY**, "Back to the Future: How Transportation Deregulatory Policies Foreshadow Evolution of Communications Policies", *The Information Society*, 2008.24, No. 5, pp. 273-291.

III. The process leading to the metaphor vacuum

Even in the case of an unprecedented technology like radio, the metaphor vacuum does not occur right after the arrival of the new technology. The reason is that initially the new potentiality of the technology is not fully understood. In the early stages, the new technology is employed in ways that mimic old technologies. In our particular case, the radio was deployed as wireless telegraph. Accordingly, the cases that arise at this stage are of a relatively minor nature. As discussed earlier, *Marconi Wireless Telegraph vs. Northern Pacific S.S. Co.* (1918), the first case we found, dealt with a contract dispute between two parties. In general the ambiguity tends to be low in the initial cases because the new technology is used in old and familiar ways.

Later, as usage spreads, trial and error generates insights into new possibilities opened up by the new technology. These opportunities are capitalised on by various interests and the resulting cases are much more complex than the initial ones. Now, the ambiguity is significantly higher because the new usages do not simply mimic the old technologies but open up new and often unprecedented patterns of organisation and behaviour. In the case of radio, we had, on the one hand, the problem of applying old frameworks such as copyright and the commerce clause to a new mode of communication, and, on the other hand, the unprecedented problem of jamming. These complexities are dealt with by stretching the established metaphors and frameworks until a breaking point of sorts is reached which creates a metaphor vacuum or a realisation that we need a radically new framework.

IV. The filling of the metaphor vacuum

When a metaphor vacuum is generated, one would expect that a systematic process for identifying an appropriate metaphor would be in order. One such approach would be what Peirce (1931) calls abduction, wherein metaphors are treated as provisional hypothesis, which are held only as long as the facts permit. The following description of the process by which the researchers deciphered the Egyptian cuneiform descriptions illustrates abduction:

> "In the first steps that were made toward the reading of the cuneiform inscriptions, it was necessary to take up hypotheses which nobody could have expected would turn out true,—for no

> hypothesis positively likely to be true could be made. But they had to be provisionally adopted,—yes, and clung to with some degree of tenacity too,—as long as the facts did not absolutely refute them. For that was the system by which in the long run such problems would quickest find their solutions".[24]

But in reality the process is quite chaotic mainly because it unfolds amidst the cacophony of the political arena, as opposed to the deliberateness of a seminar room discussion. When the two land mark court decisions—*Hoover (Secretary of Commerce) vs. Intercity Radio Co.* (1923), and *Zenith Radio vs. United States*—set aside the commerce clause as the basis for radio regulation, there was need for another legal framework. According to Krasnow and Goodman (1998), the legislators, while deliberating the 1927 Radio Act, were groping for a standard that would spell out the obligations of the licensees. They were looking for something that was concrete enough to provide clarity for current needs and yet flexible enough to accommodate unanticipated uses of the technology in the future. Within this context, a chance conversation between Senator Clarence Dill and a young lawyer on loan from the Interstate Commerce Commission (ICC) provided the solution. The ICC lawyer suggested "public interest, convenience and necessity" (PICON) as a standard and it caught the senator's imagination.[25] Thereby broadcasting ended up with a standard from the world of transportation systems and public utilities.[iii] As Le Duc and McCain note, the public interest standard meant "a revolution in practice, at least as to broadcasting . . . and with the exception of common carrier or utility matters, the idea of . . . public convenience as a condition for entry into interstate commerce was unique in Federal legislation".[26] This choice had its consequences, as discussed later.

It is important to note that PICON did not fill the conceptual vacuum. It filled the metaphor vacuum. This distinction [iv] is important in the case of radio because the public policy discourse had started moving towards "public interest" ever since the realisation that the

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[24] **C. PEIRCE,** "Pragmatism and Abduction", pp. 112-127 in **C. HARTSHORNE and P. WEISS** (eds), *Collected Papers of Charles Sanders Peirce,* Vol. 1, 1931, Cambridge, MA: Harvard University Press, p. 142.

[25] **E.G. KRASNOW and J.N. GOODMAN**, *o.c.*

[26] **D.R. LE DUC, and T.A. MCCAIN**, *o.c.* at p. 396.

spectrum is limited and that behaviour of a licensee has an impact on those of the others. In fact, as mentioned earlier, the Secretary of Commerce Herbert Hoover himself talked about the public interest in his speeches at the radio conference. Furthermore, it was not entirely a new metaphor since it also came from the railroads framework, which was already being stretched before the metaphor vacuum occurred. But there was a qualitative difference between the stretching of the railroads framework in the pre and post metaphor vacuum phases. What we call the first order and second order stretching.

In the first-order stretching somewhat forced connections are made between technologies. For instance, radio was linked to railroads via the telegraph and telephone connections. In other words, it would have been difficult to establish a connection between railroads and radio because there is little similarity between them. The telegraph and telephone allowed for the establishment of this connection because they were similar to railroads and also to radio but in different ways. The similarities between railroads and telegraph and telephone networks are rather immediate because they all are composed of nodes and links. On the other hand, the similarities between telegraph and telephone networks and radio rest on the fact they are electronic means of communication. The telegraph and telephone served as intermediaries in linking railroads to radio. This stretched framework functioned as long the new technology was employed in ways that mimicked the old one. The stretching, which was minimal at first, kept widening as new uses of the new technology were found that had no clear analogies in older technologies. Eventually, a breaking point was reached when the old analogs did not work anymore and we had a metaphor vacuum.

In the post-metaphor vacuum phase the breakthrough came with stretching at a higher level, what we call the second-order stretching. In the pre-metaphor vacuum period, the analog at the technology level was the basis for the transfer of legal concepts. In other words, after an analog was established between railroads and radio via the telegraph and telephone connection, concepts employed for regulating railroads could now be transferred to the radio arena. In the second order stretching, there is stretching at the level of the concepts also. For instance, PICON in the realm of railroads meant something quite different from that in the realm of radio. In the realm of railroads, PICON was based on the logic that since the railroads were granted rights of ways they could be asked to undertake activities in public interests. The same logic was easily

transferred to the telegraph and telephone because they also relied on rights of ways. But radio did not use rights of ways. Here the stretching occurred at the level of the rationale for PICON. In the case of radio, the basis of PICON was located in the construction that the licensees are trustees of a scarce public resource, spectrum, and their activities impact the overall culture, especially the socialisation of children. Thus the PICON in the radio context was no longer the same as PICON in its original railroad context. The former was a stretched version of the later.

In the case of radio, the metaphor vacuum was filled by the insertion of a new metaphor of sorts, which brought along with it a legal framework. The other possibility would have been a direct examination of the essential features of the new technology and the development of a brand new framework from scratch based on the first principles of law. We did not see the latter approach in the development of radio regulation. With regard to the Internet, Stephanie Gore asks a provocative question: "Why pick an analogy to begin with? . . . Why shouldn't courts simply make the effort to understand the technological underpinnings of the Internet and achieve a 'metaphor-free' understanding of the technology?"[27] In fact, in the case of the Internet, where also metaphors based on old technologies have dominated the thinking, we at times see the courts recognise the inadequacies of these metaphors and search for new frameworks. For instance, consider the court's struggle with the applications of libel laws to the Internet Service Providers (ISPs).

In *Stratton Oakmont Inc vs. Prodigy Services Corporation* the plaintiffs sued Prodigy for defamatory statements made by an unidentified user on Prodigy's bulletin board service. In its decision the courts held Prodigy to the strict standards normally applied to original publishers of defamatory statements as opposed to treating them as mere distributors, as argued by Prodigy. The court reasoned that Prodigy acted more as an original publisher than as a distributor when it "advertised its practice of actively screening and editing messages posted on its bulletin boards".[v] In sharp contrast to the above judgment, in another court case, *Zeran vs. America Online,* the court rejected analogies with traditional forms of publication such as print, radio and television and refused to impose either a distributor's or a publisher's liability on an online

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[27] **S. GORE**, "A Rose by Any Other Name: Judicial Use of Metaphors for New Technologies", *University of Illinois Journal of Law, Technology, and Policy*, 2003, Vol. 403, pp. 425-431, at p. 415.

service provider. In this case, the plaintiff Kenneth M. Zeran ("Zeran") who was the victim of a malicious hoax perpetrated via America Online's (AOL) online bulletin board services sued the company for letting these notices remain posted despite his repeated complaints.[vi] Countering this accusation, AOL mounted a defence under section 47 U.S.C. § 230, which prohibits the treatment of an ISP as a "publisher" or a "speaker" and therefore the imposition of publisher liability in online defamation cases.[vii] In order to go around these section 47 U.S.C. § 230 arguments, Zeran sued AOL as a "distributor" rather than as a publisher.[viii] Thus the question before the court in this case was whether to treat AOL as a publisher or a distributor of libellous material. Ruling against the plaintiff, the court said:

> [...]"If computer service providers were subject to distributor liability, they would face potential liability each time they receive notice of a potentially defamatory statement - - from any party, concerning any message. Each notification would require a careful yet rapid investigation of the circumstances surrounding the posted information, a legal judgment concerning the information's defamatory character, and an on- the- spot editorial decision whether to risk liability by allowing the continued publication of that information. Although this might be feasible for the traditional print publisher, the sheer number of postings on interactive computer services would create an impossible burden in the Internet context [...].Thus, like strict liability, liability upon notice has a chilling effect on the freedom of Internet speech".[ix]

Here we see the courts embrace the metaphors based on old technologies in one case involving libel laws and ISPs and reject the same metaphors in another case. We see similar back and forth movements in other areas of Internet law. Gore (2003) charts such movements in cases involving jurisprudence of jurisdiction. She notes that in Maritz, Inc. v. Cybergold the court concluded that "because the internet is an entirely new means of information exchange, analogies to cases involving the use of mail and telephone are less than satisfactory . . ."[28] There is similar divergence of court opinions in cases involving the application of the Single Publication Rule to libel cases on Internet based publications.

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[28] *Ibid*, at p.18.

Like the radio, much of Internet regulation is based on frameworks from old technologies. The difference is in the cases noted above where the courts rejected parallels with old technologies, something we did not see in the case of radio. Perhaps it was because the radio introduced only one radically new configurational potentiality[x]—point to multipoint communication or broadcasting. This new configurational potentiality could be accommodated by a second-order stretch, PICON. What makes the Internet peculiarly different from radio and also other technologies is that it supports not just one radically new configurational potentiality but numerous configuration potentialities, including many that were difficult to imagine a just few years ago. Furthermore, many more radically new configurational potentialities are likely to surprise us in the future. This rapid succession of new developments creates constant strain on the existing frameworks and the courts are often frustrated enough with old metaphors to abandon them. However, they have not yet been able to generate major conceptual breakthroughs that could provide a basis for the development of new frameworks. The establishment of special courts for high-tech cases, as recommended by the Maryland Task Force, would perhaps facilitate direct examination of new technologies. The specially trained judges, with command over technical issues, would be less likely to take refuge in simplifying but inadequate metaphors and make an extra effort to understand the new technology on its own terms.[29]

The suggestion of PICON as a standard was only half the story. Its ready acceptance by the policy makers and the courts is the really critical part. According to Levi (1948), legal process is the application of a "system of rules," rather than a "known rule," to diverse facts. Levi notes that, "the rules are discovered in the process of determining similarity or difference. However when attention is directed towards finding of similarities and differences, other peculiarities appear. The problem for the law is: when will it be just to treat different cases as

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[29] *Ibid.*

though they were the same?"[30] Therefore a working legal system should be capable of "picking out (intrinsic) similarities and to reason to the justice of applying a common classification".[31]

The reasoning process using metaphors tends to make similarity a pivotal concept in explanations. However, similarities do not always make analogical reasoning rationally compelling,[32] and legal justifications must be rationally compelling.[33] Therefore in instances where metaphors based on older technologies are invoked or when metaphors from dissimilar technologies are stretched and applied to create regulatory frameworks for new technologies or a brand new metaphor is generated, this process is likely to succeed under one important condition. That when rationally compelling arguments can be made and such reasoning relies on seemingly not obvious but intrinsically essential relatedness rather than extrinsically obvious but less essential similarities. In addition such rationally compelling arguments based on metaphors find legitimacy and validity and gain precedence over other arguments when they fit into the existing economic, legal, and regulatory frameworks that have gained legitimacy in the legal system. PICON was readily accepted because it met these conditions, especially those about legitimacy.

Wasserstrom (1961) suggests that when making legal reasoning, we should be careful about dividing reasoning into the "logic of discovery" and the "logic of justification".[34] While logic of discovery is concerned with insightfulness that can help to find logical connectedness between the two cases, the logic of justification is concerned with whether the reasoning connecting the two is morally justifiable, that is, whether it can have legally compelling justification. In the process of establishing radio regulation systems based on public interest

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[30] **E. H. LEVI**, *An Introduction to Legal Reasoning,* University of Chicago Press, 1949, quoted in **D. HUNTER**, "Reason is too Large: Analogy and Precedent in Law", *Emory Law Journal*, 2001, No 50, pp. 1197-1243, at p.1252.

[31] *Ibid* at p. 1252-1253.

[32] **S. BREWER**, "Exemplary Reasoning Semantics, Pragmatics and the Rational Force of Legal Argument by Analogy", *Harvard Law Review*, 1996, Vol 109, No 5, pp. 923-1028.

[33] **D. HUNTER**, "Reason is too Large: Analogy and Precedent in Law", *Emory Law Journal*, 2001, No 50, pp. 1197-1243.

[34] **R.A. WASSERSTROM**, *The Judicial Decision –Towards a Theory of Legal Justification*, 1961, Stanford, California: Stanford University Press, quoted in **D. HUNTER**, "Reason is too Large: Analogy and Precedent in Law", *Emory Law Journal*, 2001, No *50*, pp. 1197-1243, at p. 1249.

standards, we can say, what the courts did was to make serial attempts to find the logic of justification, whereas what the Congress did was to an attempt to make an insightful discovery, which can be morally justified rather easily in the judicial arena.

V. The impact of metaphors used early in the process

The radio case alerts us to the strong likelihood that the metaphors used in the early stages of the development of a new technology may not prove to be appropriate over the long run and when the new technology is more developed there may be a need for new metaphors. In the legal context, this could become a sticky problem because precedents set by initial metaphors could make change later on difficult. This problem did not occur in the case of broadcasting where initial metaphors were not an impediment for the adoption of PICON. However, the broadcasting case still demonstrates the stickiness of a metaphor once it is deployed. When Congress considered the 1927 Radio Act, the primary imagery the legislators had for broadcasting was that of airwaves as critical resources like a "public utility," such "electricity or water pipe lines".[35] Accordingly, they focused on the optimal use of a valuable public resource that could be degraded by interference absent appropriate regulation. This conception of broadcasting pushed radio into the public utilities framework, even though the legislators were aware that they were dealing with a form of speech. On the other hand, if the focus had been on speech, they would have had to treat radio as press, with all its first amendment protections, and not a public utility. Therefore, by treating radio as an electrical carrier like telegraph and telephone, they ended up regulating free speech.[36] Later, when the broadcasting aspect of radio became dominant in the 1920s, "the sensitivity of the Supreme Court to the First Amendment" arose.[37] Yet, Congress could go ahead and regulate radio speech without getting stuck in First Amendment litigation because it could point to the special characteristics of radio, especially the fact that it could influence citizens' children in their own homes. Thus the use of the public

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[35] **C. MCLAREN** "A brief history of the public interest standard", 2005, www.stayfreemagazine.org/ml/readings/public_interest.pdf.

[36] **I.D.S. POOL**, *Technologies of Freedom.* Cambridge, MA, Harvard University Press, 1983.

[37] *Ibid* at p. 232.

utilities framework stymied the subsequent full adoption of the framework traditionally applied to the press.

The impact of the initial metaphor was much stronger in the case of a related technology—cable. It started as rural extensions of TV wherein a local entrepreneur set up an antenna on a mountain top to catch the broadcast signal from a nearby city and then channelled it via coaxial cable to subscribing homes whose direct reception was blocked by the mountain. Since cable was an appendage to broadcasting, at that stage of its development, the policy makers viewed it via the broadcasting framework. Later, after the microwave and satellites links interconnected local cable systems into national networks, cable was transformed into a competing system, as opposed to a mere appendage. Now, in its fully developed form, it seemed too many observers that cable should be regulated as a common carrier and not as a broadcaster.[38] The critical difference would be in the control of the delivery system and control of content. Under the broadcasting regime, a cable operator controlled both the wires and the content that was delivered over them. The common carrier regime would require a separation, i.e. cable operator would have no control over the cable networks (e.g. HBO, CNN, etc) the system carried. The cable operator would lease out bandwidth to other entities that would provide the programming. While the common carrier model has its merits and is worth considering, the changeover was no longer practically feasible because by now cable was deeply entrenched within the broadcasting framework. This is not an isolated case because there is a history of new technologies starting off as appendages of the established systems and in unanticipated ways developing into competing systems. [xi]

In this paper we offer the above thoughts based on the analysis of a single-case—radio. Quite clearly that it is an insufficient basis for generalisation. But we do hope that we offer a useful starting point. Perhaps the insights offered here will trigger in the readers' minds connections with other cases and thereby get the proverbial snowball rolling. While our specific observations need further testing with other cases, we can quite confidently say that one of the reasons the process proceeds in the way described above is that the metaphors focus our attention

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[38] *Ibid* at 32; **M.O. WIRTH**, "Should Cable Television Be Regulated as a Common Carrier?", Paper presented at the Law and Economics Division of the Law and Society Association Annual Meeting, Denver, Colorado, 1983.

on the similarities, a tendency that is reinforced by the legal process that seeks precedents and coherence. Conversely, the peculiarities of the new technology are overlooked. But it is in the peculiarities we get glimpses of the future possibilities opened up by the new technology. In effect, it is the peculiarities that eventually bring about a metaphor vacuum. It therefore behoves us to remain alert to the peculiarities even when we continue to employ metaphors based on old technologies because of the lack of any other device.

Endnotes

[i] The introductory discussion excerpts from **H. SAWHNEY**, "Information Superhighway: Metaphors as Midwives", *Media, Culture & Society*, 1996, No 18, pp. 291-314.

[ii] Edison mimicked gas to get electricity, which was then a radically new technology, accepted by consumers and thereby gain a toehold in the marketplace. Aware that interior lighting generated 90% of the revenue of the gas industry, Edison poured his energies into developing a small 16 candle-power electric light (equivalent to the standard gas jet of 1880s) that would be appropriate in doors. In Edison's own words, as he noted in his notebook, "Object. Edison to effect exact imitation of all done by gas so as to replace lighting by gas by lighting by electricity . . . Edison's great effort not to make a large light or a blinding light but a small light having the mildness of gas." (**H.C. PASSER**, *The Electrical Manufacturers 1875-1900*, Cambridge, MA, Harvard University Press, 1953, at p. 82).

Also see (**H. SAWHNEY** and **X. WANG**, "Battle of Systems: Learning From Erstwhile Gas-Electricity and Telegraph-Telephone Battles", *Prometheus, 2006, Vol 24, No.* 3, pp. 235-256) for a more complete description of how Edison mimicked gas. Also see (**D. LEONHARDT**, "A Voice in the Calling Wilderness", *New York Times*, 18th Dec. 2003, p. E1) for a discussion on how Internet phone service providers are piping in fake dial tone to make the new technology feel familiar.

[iii] This notion of trusteeship, unlike the commerce clause, allowed for the regulation of licensee's behaviour because the commission could revoke the license or deny renewal if a licensee was deemed to have violated public trust.

[iv] As noted, this distinction is important in the case of radio. It does not preclude the fact that a metaphor may also fill in the conceptual vacuum in other contexts.

[v] See *Stratton Oakmont, Inc. vs. Prodigy Services Co*., 1995, WL 323710 (**N.Y. Sup. Ct.** 1995).

[vi] *Zeran v. America online Inc*, 129 F.3d at 327, 333 **US Court of Appeals 4th Cir** (1997).

[vii] *Zeran v. America online Inc*, 129 F.3d at 327, 333 **US Court of Appeals 4th Cir** (1997).

[viii] This is possible because under common tort law a publisher can be held liable for defamatory statements contained in the works they distribute if they have actual knowledge of the defamatory materials. Given that Zeran had given sufficient notice to AOL about the defamatory statements, he argued that AOL must be held liable as a distributor.

[ix] *Zeran v. America online Inc*, 129 F.3d at 327, 333 **US Court of Appeals 4th Cir** (1997), at 333.

[x] In **H. SAWHNEY** and **S. LEE**, "Arenas of Innovation: Understanding New configurational Potentialities of Communication Technologies", *Media, Culture & Society, 2005, Vol* 27, No.3, pp. 391-414) the authors develop this concept based on Cherry's notion of "new liberty of action." While Cherry did not explicitly define the term, he illustrated it with the example of a telephone exchange. According to him, the new liberty of action made possible by the telephone exchange was the "*choice* of social contacts on demand" (**C. CHERRY**, "The Telephone System: Creator of Mobility and Social Change", pp. 112-126 in I. Pool (ed.), *The Social Impact of the Telephone*, Cambridge, MA: The MIT Press, 1977, at p. 114). In other words, for the first time in human history, the telephone exchange offered random access to subscribers dispersed across space. This new technological capability enabled the emergence of new institutional forms that changed how our society is organised. Sawhney and Lee's reasons for using "new configurational potentialities" instead of "new liberties of action" were twofold. One, the word "liberties" in "liberties of action" generated confusion because of its political overtones. The readers were prompted to see a political dimension in the concept. For example, one reader thought "new liberties" meant empowerment of disenfranchised populations via communication technology. On the contrary, the concept is limited to purely mechanical aspects of how communications channels are configured in a new communications system, point-to-multipoint communication in the case of broadcasting. The new term "new configurational potentialities" avoids this confusion. Two, Cherry's conceptualisation was limited to features intrinsic to the very nature of a technology. Internet, however, is a multi-modal platform on which myriad configurations, some quite surprising as that of Napster, can be realised. The term "new configurational potentialities" brings forth this broader understanding of the phenomenon.

[xi] For other such cases, see **H. SAWHNEY**, "Public Telephone Network: Stages in Infrastructure Development", *Telecommunications Policy*, 1992, No 16, pp. 538-552; **H. SAWHNEY**, "Wi-Fi Networks and the Rerun of the Cycle", *Info: The journal of policy, regulation and strategy for telecommunications, information and media*, 2003 Vol 5, No.6, pp. 25-33; **H. SAWHNEY**, "Wi-Fi Networks and the Reorganization of Wireline-Wireless Relationship", pp. 45-61, in **R. LING** and **P. PEDERSEN** (eds.), *Mobile Communications: Re-negotiation of the Social Sphere*, London: Springer-Verlag, 2005.