Beyond Liberalization II: The Impending Doom of Common Carriage

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This article argues that the institution of common carriage, historically the foundation of the way telecommunications are delivered, will not survive. The article first discusses the meaning of common carriage and how it emerged. It then analyses the present and future pressures on the common carrier system. Finally, it speculates about a future without common carriage and the impact on the free flow of diverse information.

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This is the second in a series of three articles by the author to appear in *Telecommunications Policy* on the theme 'Beyond liberalization'. The previous one was 'Beyond liberalization: from the network of networks to the system of systems', 1994 **18** (4) 286–294. Forthcoming is 'Beyond liberalization: reforming universal service'.

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[1]New York State Public Service Commission *Opinion and Order Adopting Regulations Concerning Common Carriage* Case 89-C-099, issued and effective 20 February 1990; proceedings initiated by the author when he served as a Public Service Commissioner for New York State

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This article argues that the institution of common carriage, historically the foundation of the way telecommunications are delivered, will not survive. To clarify: 'common carriers' (the misnomer often used to refer to telephone companies) will continue to exist, but the status under which they operate – offering service on a non-discriminatory basis, neutral as to use and user – will not.

This conclusion is reached with considerable reluctance. Common carriage, after all, is of substantial social value. It extends free speech principles to privately owned carriers. It is an arrangement that promotes interconnection, encourages competition, assists universal service and reduces transaction costs.

Ironically, it is not the failure of common carriage but rather its very success that undermines the institution. By making communications ubiquitous and essential, it spawned new types of carriers and delivery systems. But the argument is not that the blows to traditional common carriage originate from regular competition by new rival telecommunications carriers operating as common carriers too. Rather, the pressures on common carriers come from two other directions: next-generation private networks offered by systems integrators, and broadband services offered by cable television operators. Neither of them operates as a common carrier, nor is it likely to. The conclusion of this article is that it will not be possible for traditional common carriage to prevail in head-to-head competition with contract carriage. In consequence, we are likely to witness a gradual erosion of the common carriage principle among those carriers that today are held to it by regulation and common law. To preserve some of the policy goals behind common carriage, one will therefore have to rely, where market failures occur, on other protective legal arrangements, and one such alternative system – neutral traffic interconnection – is proposed.

In the USA regulatory proceeding into the nature of common carriage for new telecommunications were undertaken by the New York Public Service Commission,[1] and by the Federal Communications Commission proceeding on video dial tone.[2] Recent US legislative initiatives[3] as well as the Clinton administration's proposal of a new

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regulatory category for switched interactive digital broadband ('Title VII') have pursued the common carrier theme.

Yet these policy proceedings are conducted in a partial-equilibrium setting. They fail to take fully into account the system-wide dynamics of interaction, in this case between common carriers and contract carriers. The policy conclusions therefore address merely a temporary phase, because the long-term viability of a mixed common carriage/contract carriage is not considered.

The plan of this article is as follows. First we will discuss what common carriage is, and whence it arose. Then we will analyze the present and future pressures on the common carrier system. Finally we will speculate about a future without common carriage and the impact on the free flow of diverse information.

Origins and nature of common carriage

One must distinguish the notion of common carriage from several other intertwined concepts that are frequently but inaccurately used as synonyms. A common carrier need not be a 'public utility' or a 'regulated monopoly', and vice versa; for example, public buses operating as common carriers are usually neither utilities nor monopolies; conversely, public utilities in electricity provision are not usually common carriers. Another concept, the 'universal service obligation', is the requirement of a carrier to reach every willing user and desired destination, wherever located, while common carriage refers to service obligations toward users *given* a physical plant. Finally, 'affordable rates', though often tied to common carriage, are a monopoly and utility issue; where common carriage is concerned with prices it is not with their absolute levels but rather with relative ones, to prevent price discrimination as a way to unduly differentiate among users or uses.

For centuries, common carriage principles have played an important role in the infrastructure services of transportation and communications. They intended to guarantee that no customer seeking service upon reasonable demand, willing and able to pay the established price, however set, would be denied lawful use of the service or would otherwise be discriminated against. For a century these principles, despite their often confused application and interpretation, have aided telecommunications users' access, and thereby also stimulated the development of networks. In return for reduced discretion, a carrier obtained certain benefits, including limited liability for the consequences of its own actions. Some types of common carriers have been given, by statute, powers of eminent domain, use of public rights of way and protection against competition.

Precursors to common carriage go back to the Roman Empire and the legal obligations of shipowners, innkeepers and stable keepers.[4] In England early common law placed certain duties on businesses which were considered 'public callings'. Common or public occupations included those of bakers, brewers, cab drivers, ferrymen, innkeepers, millers, smiths, surgeons, tailors and wharfingers.[5] 'Common' in that context meant 'open to serving the general public' or 'general'.

In 1701 an English court found that 'If a man takes upon him a public employment, he is bound to serve the public as far as the employment extends; and for refusal an action lies, as against a farrier refusing to shoe a horse . . . Against an innkeeper refusing a guest when he has

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[2]Federal Communications Commission *In the Matter of Telephone Company-Cable Television Cross Ownership Rules* CC Docket No 87-266 (FCC 91-334) (first report and order adopted 24 October 1992) Ss 63.54–63.58

[3]US Congress, National Communications Competition and Information Infrastructure Act of 1993, 103d Congress, 1st Session on HR 3636, 20 November 1993

[4]The author acknowledges the contribution of Thomas Aust to this section, and to references to other court cases that follow.

[5]See Phillips, C, Jr *The Regulation of Public Utilities* 2nd edn, Charles Franklin, Arlington, VA (1988) 83

room . . . Against a carrier refusing to carry goods when he has convenience, his wagon not being full."[6] By 1814, with the coming of the industrial revolution and *laissez-faire* economics, common callings were generally limited to what we would today call infrastructure services in transportation and communications, together with associated facilities such as inns. Common carriage was applied to freight or carriage companies and inland and ocean water carriers. By common law, common carriers were (1) required to serve, upon reasonable demand, any and all who sought out their services, (2) held to a high standard of care for the property entrusted to them, and (3) limited to incidental damages for breach of duty.

The concept of common carriage crossed the Atlantic and became part of the US legal system. Common carriage was broadly applied to railroads and later other transportation as well as communications media. In 1901, following many state courts, the US Supreme Court held that at common law – ie even without a specific statute – a telegraph company is a common carrier and owes a duty of non-discrimination.[7] Thus the concept of common carriage does not depend on public utility regulation, and a user's rights of service from a common carrier do not rely solely on statute. Statutory public service regulation augmented common law common carriage rather than supplanted it.[8]

US local, state and federal governments also enacted legislation prescribing common carrier type duties on various businesses, usually to help enforce users' rights at common law, as well as to attain broader social objectives not necessarily embraced by common law common carriage, such as universal service.

In 1848 New York State required telegraph companies to provide non-discriminatory service to competing telegraph companies as well as to individuals. State regulatory boards soon replaced detailed legislative regulation, first in Illinois and Massachusetts. The first independent, broadly empowered commissions to regulate common carriage facilities and utilities were set up in 1907 in Wisconsin and New York, soon regulating telecommunications, too. The Interstate Commerce Act codified in 1887 the duties of rail carriers serving the public, recognizing particularly liability and non-discrimination. Communications companies were included in 1911. In 1934 oversight of interstate and radio communications was transferred to the new Federal Communications Commission.

Title II of the 1934 Communications Act (47 USC Ss 201–221) established regulated telecommunications common carriers, defined in a circular fashion as 'any person engaged as a common carrier for hire'.[9] Common carriage was defined, unhelpfully, as '[a]ny person engaged in rendering communications service for hire to the public'.[10] Even so, in Congressional debates leading to the 1934 Act, assurances were given that 'common carriage' was well understood and needed little explanation.

When does common carriage arise? For common carriage, service must be offered, on demand, to the public at large or to a group of people generally, and the carrier 'must hold himself out as ready to engage in the transportation of goods for hire as a business, not as a casual occupation . . .'[11] 'Whether a carrier is a common carrier . . . does not depend upon whether its charter declares it to be such, . . . but upon what it does'.[12]

The following factors are important in determining common carriage:

[6] *Lane* v *Cotton* 1Ld Raym 646, 654 (1701), per C J Holt
[7] *Western Union Telegraph Co* v *Call Publishing Co* 181 US 92, 98 (1901)
[8] See *Hewitt* v *New York, NH & HRR Co* 284 NY 117 (1940) (involving discrimination charges against a rail carrier); *Trailways of New England, Inc* v *CAB* 412 F2d 926, 931 (1st Cir 1969) (regarding an air carrier)
[9] 47 USC 153(h)
[10] 47 CFR 21.2
[11] Story, J *Law of Bailments* S 495 (1832)
[12] *United States* v *Brooklyn Eastern Distr Terminal* 249 US 296 (1919)

- Service is regular.
- Customers are not readily predictable and are changeable.
- The carrier solicits business from the general public, for example by advertising.
- Law and regulations define the responsibilities of the parties.

For contract carriers, on the other hand:

- Service may be occasional.
- The clientele is identifiable and stable.
- Carriers solicit business on a targeted and individualized basis.
- Contracts define parties' responsibilities.

The duty to carry does not mean that a carrier cannot refuse service, such as in circumstances of potential damage or unreasonably high risks, or beyond a reasonable capacity.

The prohibition on unreasonable discrimination is the most important component of the common carrier obligation.[13] However, this is not absolute. Courts have recognized that some categorization of users is possible. '[A] specialized carrier whose service is of possible use to only a fraction of the population may nonetheless be a common carrier if he holds himself out to serve indifferently all potential users.'[14]

Carriers offering services only to a limited group of users have been held to be still common carriers for that limited group of users.[15] But where terms and conditions are too narrowly drawn, for instance limiting the class to essentially a single customer, they can violate common carriage principles. For example, certain customized tariffs filed by AT&T (Tariff 12) were initially rejected by the FCC as being too narrowly drawn. In interpreting the existence of common carriage, courts have not let the statutory definition be determinative, perhaps because of its circularity. Instead, they applied common law principles to establish who is a common carrier, and did not let the FCC ignore common law definitions of common carriage.[16]

The common carrier system has served telecommunications participants well: it has permitted society to entrust its vital highways of information to for-profit companies, without the specter of unreasonable discrimination and censorship by government or private monopolies; it was an important element in establishing a free flow of information, neutral as to content; it reduced the administrative cost and the burden of liability of a carrier, since it needed not, at least in theory, inquire as to a user's background and intended use; and it protected the telephone industry from various pressure groups who would prevent it from offering service to their targets of protest or competition.

The application of common carriage requires continuous updating. Given the changes in the telecommunications industry, are these principles, going back to Elizabethean times, still relevant?

Rationale for common carriage

In the last two decades one of the major intellectual currents in the law has been the 'law and economics' movement. One of its central observations has been the fundamental efficiency of the common law. Common law courts, through a process of gradual decisions, would reach overall economically efficient arrangements. Examples were specific performance in contracts, foreseeability, damages, unconscionability, negligence, trespass and many more.[17]

[13] *Leighton* v *New York Tel* 61 NYS 2d 112 (1946), citing *Public Service Commission* 148 NYS 583 (1914) (involving electric service)

[14] *NARUC I* 525 F 2d 640, 642 (DC Cir 1976)

[15] For example, telecommunications common carriers legally made service available only to: theater owners, *Theater Television Serv* 9 P&F Rad Reg 1528, 1538 (FCC 1953); stock exchange members, *Western Union Tel Co Sicom Serv* 11 FCC 2d 1, 9 (1967); television broadcasters, *TelePrompter Corp* 13 Rad Reg 111 (FCC 1955); the US Postal Service, *Graphnet Sys Inc* 73 FCC 2d 283, 298 (1979)

[16] *NARUC II: Telelocator* v *FCC*

[17] See eg Posner, Richard A *Economic Analysis of Law* 2nd edn, Little, Brown, Boston, MA (1977); and Calabresi, Guido 'Some thoughts on risk distribution and the law of torts' 70 *Yale Law Journal* 499, 1961

The implication of these analyses is that common carriage, as the product of common law judges, is likely to have been an economically efficient institution. Among its purposes are the following.

Reduction of market power

Historians debate whether monopoly was instrumental in the development of common carriage. Businesses found to be 'public callings' in early English common law were often franchised by the Crown under privileged terms and exercised market power. On the other hand, in many areas there was competition among such public callings as innkeepers, blacksmiths and tailors.

In the USA many trucking companies and airlines are treated as common carriers even though significant competition exists. And at the time the telephone industry was first made subject to regulation at the state and federal levels, there was some competition for local service. Conversely, most firms with market power are not common carriers. Thus market power is neither a necessary nor a sufficient condition for common carriage. But common carriage reduces the scope of discrimination that market power would permit.

Assurance of essential services

Common carriers are considered to be private businesses which are 'affected with public interest', to use the language of the US Supreme Court's landmark case on regulation. Being essential, they are accorded special treatment.[18] But the notion of an 'essential' service as a prerequisite to common carriage is often circular. Telephones, for example, started out as a specialized service for a few users; its essentiality is as much the result of its broad use as the other way around. Essentiality is a contributing factor for the establishment of common carriage, though it is neither a necessary nor a sufficient condition.

Spread of basic infrastructure

'Infrastructure' is a term of considerable vagueness. It can best be described as those services that are a basic input to most other economic activities, and which provide substantial positive externalities to the economy as a whole. Transportation, energy, communications, education and protection are prime examples. Network industries, in particular, are considered infrastructure services. The positive externalities to members of the network increase positively with added membership, for example by the greater reach of the telephone.[19]

Infrastructure services can greatly contribute to the economic growth of individuals, regions and the nation. In consequence, in most countries they are provided by government. When historically they were provided by private firms, English common law courts often imposed some quasi-public obligations, one of which one was common carriage. It mandated the provision of service to willing customers, bringing common carriage close to a service obligation to all once it was offered to some.

Reduction in transaction cost

There are some advantages in setting uniform terms for a business transaction rather than negotiating each separately. There are also benefits in assuring an unobstructed flow of commerce and information.

[18] *Munn* v *Illinois* 94 US 113 (1877)

[19] Noam, Eli 'A theory for the instability of public telecommunications systems' in Antonelli, Cristiano (ed) *The Economics of Information Networks* Elsevier (1992) 107–128

In telecommunications, information travels across numerous subnetworks until it reaches its destination. If each of these networks sets its own rules about which information is carried and which is not, information cannot flow easily. While it may be in the interest of every carrier to maintain full control over 'its' segments, in the aggregate this could be as inefficient as if, say, each commercial bank issued and used only its own money for its transactions and would not accept a common legal tender.

In that sense, common carriage is another instance of legal institutions whose purpose is to reduce transaction costs. Other examples are limited liability for corporations, legal tender for currency, and commercial paper for business debt.

Limited liability

It would be impractical and inefficient to require a carrier to accept any shipment or message while being exposed to huge potential liability of unknowable consequential damages. Thus the extent of liability by a common carrier is usually limited to the price paid for the communication or transportation, unless otherwise agreed. Incidental liability lies on the sender as the party which has the best information about the value of the message.

Extension of basic freedoms – personal and commercial

Under the US Constitution the free speech protection of the First Amendment operates against restrictions by government, but it deals only indirectly with restraints by private parties. For private telecommunications carriers, common carriage is the foundation of free speech exercise, because it provides for content and use neutrality. Thus carriers cannot be selective based on content, and cannot be censors.

In one case a customer's telephone service was disconnected because it might be used for transmitting gambling information. But the court reinstated service since the telephone company 'is not at all qualified, in the absence of evidence of illegal use, to withhold from the petitioner, at will an essential and public utility'.[20] In another case where the police exercised veto power over telephone installations, a California court found the arrangement unenforceable and stated, '[p]ublic utilities and common carriers are not the censors of public or private morals, nor are they authorized or required to investigate or regulate the public or private conduct of those who seek service at their hands'.[21]

More recently carriers, reacting primarily to outside pressures and concerns about corporate image, have attempted to ban or restrict sexually oriented audiotex entertainment programming based on content, even where the messages were lawful. In other instances they required users to make special prior arrangements such as mandatory pre-subscription to access such information services, without requiring similar pre-subscription for other forms of information.

The issue of content-based treatment moves beyond fringe social behavior to the question whether telephone network operators can prohibit lawful uses of their network, whether on grounds of corporate, political or moral preferences, business strategy, different assessments of the business potential of a new usage, or pressure by customer groups. This is an important issue in light of telephone companies' near-term ability to deliver high-quality video signals over their net-

[20] *Navel* v *New York Tel* 170 NYS 2d 95 (1957). And in a similar case, *Chelation* v *Valentine*, 53 NYS 2d 127 (1945), the court stated that absent illegal use, 'a telephone company may not refuse to furnish service and facilities because of a mere suspicion or mere belief that they may be or are being used for an illegitimate end; more is required': 53 NYS at 131.

[21] *People* v *Brothy* 49 Cal App 2d 15, at 33, 120 P 2d 946, at 965

work, either on fiber or by compressed digital signals over copper lines (ADSL).

It is easy to imagine organized pressures on telephone carriers to deny service, for example to the Cuban national airline, to the computer bulletin boards of abortion clinics or abortion foes, to a publisher whose toll-free number takes orders for *The Satanic Verses*, or to a competitor to a big customer of a carrier.

Facilitation of competition

Common carriage access is provided to all customers, even where they are economic competitors of the carrier. This reduces the entry barriers for competitors, since they can supplement their partial service with service elements of the common carrier. For example, MCI could reach end users over AT&T's local networks rather than having to first build local distribution facilities.

Interconnectivity

Reasonable opportunities for interconnection are an essential element of the common carrier's duty of service. Railroads, for example, are required to interconnect at the point of choosing of the tendering carrier, unless otherwise specified by the shipper.[22]

Interconnectivity is important to many social and economic processes and is therefore often encouraged. In telecommunications the establishment of interconnectivity was at the core of most regulatory battles, going back to the days of Theodore Vail and the establishment of the AT&T system.

The challenge to common carriage by private contract carriers

The challenge to common carriage is not telephone competition *per se*. MCI, Sprint and other new long-distance carriers competing with an established carrier such as AT&T are usually common carriers. (The primary way in which competition as such can affect non-discriminatory service is by making carriers more vulnerable to targeted boycotts. Suppose, for example, that anti-abortion groups decry the existence of an 800 abortion hotline which uses AT&T as a carrier. Under the old monopoly system the groups had little credible leverage on AT&T except to forgo service themselves. But with MCI as an alternative, they can try to pressure AT&T to drop the abortion hotline, or lose their members' business.)

The new long-distance companies had no problem becoming common carriers themselves, as indicated by the designation 'other common carriers' (OCCs) which they took. In Japan, similarly, the new entrants are known as 'new common carriers' (NCCs).

If competition by other telecommunications carriers is not a direct threat to common carriage, what then?

There are two fundamental and related challenges to common carriage. The first is the increasing overlap between the common carrier system and well-developed mass media contract carriers such as cable television networks. The other is the emergence of systems integration. Neither operates as a common carrier.

Following Ithiel de Sola Pool, it is often observed that telephone companies operate on common carriage, private publishers follow free

[22] 49 USC 10742 and 10763 (1983); see also *McKinney's Consolidated Laws of New York* Transportation Law, Ss 97, 106, 112, which require interconnection with shippers and other railroads; and *Louisville & Nash RR* v *United States* 238 US 1 (1915)

speech principles, and broadcasters and cable companies operate on some not entirely free basis since they are licensed and regulated.[23] What happens when the walls separating these realms crumble?

The cable television industry, in a remarkably short period, has wired the USA with a second and powerful network system. It is on the verge of entering point-to-point, switched and mobile telecommunication services. Broadcasters (with the brief exception of an AT&T proposal in the 1920s to serve as a general broadcast service provider under a common carriage obligation) were never common carriers. Cable television, too, was never treated as a common carrier, being viewed at first as essentially a passive antenna system. 'Must carry' requirements for over-the-air broadcasters, public access, leased access and various local government channels created some access rights. In the early 1970s the White House's new Office of Telecommunications Policy proposed a common carrier status; however, the idea never got very far.

Cable television companies are not considered, in providing most of their traditional services, as common carriers.[24] The 1992 Cable Act did not change that, but provided for a limited access to programming, ie content, where it is vertically linked to local cable distribution networks. The Act also required cable companies to treat sexually explicit but otherwise lawful programs in a different fashion from other programs, by segregating them on a single channel.

In 1994 the Clinton administration proposed the enactment of a new regulatory category ('Title VII' of the 1934 Communications Act) under which providers of switched interactive digital broadband services could elect to be regulated under a new system rather than the old. This new system would require interconnection, universal service, payments to local governments and 'open access', a term not specified other than that it would apply to 'anyone, including end users and information service providers to transmit information, including voice, data, and video programming, on a non-discriminatory basis'. It was not clear, however, why a cable television company would ever elect to voluntarily accept these multiple burdens. The only possibility might be if existing cable regulation (Title VI) and its implementation by localities and states would be so onerous as to make cable companies flee for the alternative regulatory regime. The concept of voluntary Title VII regulation is hence flawed, for reasons developed further below.

Both cable and telecommunication segments have begun to intrude into each other's service markets. This development has been duly noted, but analyses of the relative competitiveness have usually been framed in terms of technology, architecture, regulation, cost structure, content supply, etc – but not in terms of common carriage versus private contract carriage.

The problem for common carriage is not other common carriers, but private contract carriers without the need to serve everybody on equal terms. In head-to-head competition between a common carrier and a private contract carrier the former is at an inherent disadvantage. The reasons are as follows:

Differentiated pricing

A common carrier cannot use differentiated pricing in the same way that a private contract carrier can, due to its non-discrimination obligation and because it cannot prevent arbitrage. A simple numerical example will illustrate this. Let there be two carriers, a common carrier (CC) and

[23]Pool, Ithiel de Sola *Technologies of Freedom* Harvard University Press, Cambridge, MA (1983); also Pool, Ithiel de Sola (ed Eli Noam) *Technologies Without Boundaries* Harvard University Press, Cambridge, MA (1990)
[24]See 47 USC 541(d)

a private contract carrier (KC). Suppose there exist three video program channel providers (A, B and C) who are potential customers for transmission over a broadband network. Due to their different expectation of demand for their respective channel, their willingness to pay is $D(A) = 30$; $D(B) = 20$; $D(C) = 10$. Suppose the fixed cost of providing the network is $FC = 30$ and the variable cost of providing each a channel capacity is $MC = 2$. Both types of carriers face the same cost function. Let us now analyze the implications:

Situation 1: A monopolistic common carrier, unregulated except non-discrimination obligation. The optimal price set by the monopolist CC would be $P = 20$. At that price it would attract customers A and B for a total revenue of 40, minus the total cost of $30 + (2 \times 2) = 34$. Total profit is thus $\pi = 6$. Trying for a lower price in order to include C (ie $P = 10$) or to charge 'as much as the market will bear' (ie $P = 30$) will result in lower profits.

Situation 2: A monopolistic unregulated contract carrier. KC would charge each customer up to their reservation prices. Hence A, B and C would have to pay, respectively, 30, 20 and 10. Total revenues would be 60, costs $30 + (3 \times 2) = 36$, and profits $\pi = 24$, substantially higher than in situation 1. It is a straightforward comparison of a discriminating monopoly (KC) with a non-discriminating one (CC). This raises the obvious question why CC would not try to price discriminate, too, given the obvious advantages of such a course. But, even if it could do so legally (which means negating common carriage principles), it would be stymied by a single right: *resale*. As soon as such a right of resale exists – which is simply use neutrality, with the use being a resale – arbitrage becomes possible, and with it vanishes most of the opportunity to price discriminate.[25] Contract carriers, meanwhile, could simply prohibit resale, not being under the obligation to be use neutral.

So far we have not assumed competition. Let us now consider it.

Situation 3: Head-to-head competition between an established common carrier and a newly entering private contract carrier. CC would set initially the same terms as before, $P = 20$, and provide service to A and B, for a profit of $\pi = 6$. KC, which can individualize prices, can counter by offering a price vector of: $P(A) = 19$; $P(B) = 19$; $P(C) = 10$. In that fashion, it will serve C (which was not served by CC), and underprice CC for customers A and B. Total profit will be $\pi = 12$, twice as much as CC's. CC could counter KC's prices by lowering its own. But it could not lower them below $P = 17$, where its profit is only $\pi = 0$. KC, on the other hand, can charge A and B 16, C 10, and make a profit of $\pi = 6$. Thus KC will dominate. Importantly, all three of its customers are better off than under CC's service, which means they are not likely to complain to the regulators. Everyone is better off except for CC itself, which has no customers.

Asymmetry

A second reason for KC's superiority is asymmetry: a common carrier must provide service to a contract carrier, but not vice versa. The transmission paths of CC and KC are often substitutes. In some instances CC might be the lower-cost provider. But KC could then simply use CC's service as part of its system, and in effect become a reseller for it. Yet for those segments where KC has the cost advantage,

[25]Even in those situations where regulators establish price discrimination (in order to cover the customer C who would otherwise be left without service), a permission to resell would undermine such a policy.

it is under no similar obligation. Therefore, heads KC wins, tails CC loses.

Non-discrimination

A contract carrier can pick customers. It can avoid high-risk customers, or those that negatively affect its image.

Competition among customers

A contract carrier can manage the competition among its customers and benefit from it. A, B and C directly compete for the same audiences. Suppose that each would be willing to pay up to 100 if it is assured that its rivals receive no service and cannot therefore enter the market in competition. KC, if alone in the market, would provide such an exclusive arrangement, charge 100 for it, and have a tidy profit of π = 100–30–2 = 68. CC, if it tried to do the same – assuming no regulatory restriction – could not guarantee exclusivity. Even where one channel prevailed temporarily, it could never be certain that another channel would not jump in later. This uncertainty and instability translates itself into a lower willingness to pay, and hence into a lower revenue for CC.

Where CC and KC compete head to head in this situation, KC could not assure exclusivity, either, because CC could service the other two. But by pre-empting the most profitable customer, KC might make CC's entry unprofitable. Using the numbers of the example, if KC agrees to a deal with A for P = 100, it will not be possible for CC to enter and break even by servicing B and C at 10 or B alone at 20. CC could try to lure A away from KC, but since it could not assure exclusivity, as discussed, A would not leave KC even for the lower price offer by CC if CC could not, with just B or C as customers, make a rival system break even.

This analysis has centered on the advantages to a carrier of contract carriage on the access side of content. Parallel arguments can be made for such a carrier's advantages on the recipient side, ie on audiences for the video programs. An unregulated contract carrier could, for example, differentiate between different classes of customers, depending on their ability to pay, charge different prices, select customers, prevent resale, etc. In the USA the federal anti-economic discrimination Robinson-Patman Act does not apply to services. Other anti-discrimination laws may make differentiation unlawful, unless it can be legitimately explained, if it is based on 'suspect categories' of race, religion, national origin or sex; but elasticity of demand or income are not such unlawful categories.

The ability to price differentiate on the two sides of a communications pipe are interrelated. Where the audience of a particular program conduit channel is charged more by the carrier, demand of the channel is negatively affected and with it the channel provider's willingness to pay. Conversely, a regulated equal price for viewers of any program channel could be undercut by charging the content providers different prices for access, which they presumably would pass on partly to viewers in the form of differentiated content prices. Thus price regulation, to be effective, would have to be placed on both ends of the chain – on the prices viewers pay for reception and on the access charges programmers pay for access.

The conclusion of this stylized analysis is therefore that a contract carrier will be economically more profitable than a common carrier,

essentially because it has more flexibility in setting pricing, service conditions and choice of customer. This is not to say that an established common carrier is without advantages. It may be subject to regulatory favoritism. Its fixed costs are sunk. And it may have economies of scale and scope that make its average and marginal costs lower. The empirical evidence, on the other hand, suggests that traditional telephone common carriers are often high-cost operations. They have accumulated cost elements that are often not borne by younger firms. Second, as discussed, a contract carrier could benefit from a common carrier's economies of scale and scope by subscribing to its low-price service elements and reselling them. And thirdly, the advantage of economies of scale may erode over time as a rival grows.

The challenge to common carriage by systems integration

It is important to understand that the emergence of a partly competing, partly collaborating network of networks is the foundation for a change that is fundamental in the long term, and which has received but little understanding. It is the move from the *network of networks* to the *system of systems*. This was discussed in an earlier contribution to this trilogy of articles in *Telecommunications Policy*.[26] The initial step in that direction is the emergence of 'private' networks. Such networks serve organizations' or groups' communications needs, utilizing a carrier's transmission facilities by leasing 'dedicated' lines, later often 'software-defined' or 'virtual' service that in effect creates segments of the networks that are not 'public' but 'private' in the sense of access.

The underlying transmission and switching segments of such a network are most likely provided by common carriers under common carriage provisions. Some elements may also be provided by contract carriers, or by the users themselves. However, the private networks themselves that are fashioned by the common carriage elements are *not* governed by common carriage principles. Whether the private network is Citicorp's, Columbia University's, the US federal government's, Wall Street's clearing system or the amazingly successful Internet, the user entity itself can determine who can use the system and under what terms. This means, for example, that a university could limit students' access to controversial political groups, employers could block calls to labor unions, or a government entity could record political conversations on its system.

The principle of user control has the powerful potential to expand, and in doing so it collides with common carriage.

The various new physical network segments that are created by the emergence of new carriers provide the elements for the matrix of the 'network of networks' that will envelop us electronically. There is a tremendous need for integration of the various pieces. It is possible for customers themselves to integrate, or to let a carrier do so; but the most promising scenario for the integration of the bits and pieces of networks is by specialized systems integrators, and indeed a new class of such service providers is emerging. Their role is to provide the end user (corporate, governmental, affinity groups) with access to a variety of services, in a one-stop fashion. These specialized integrators, also known as outsourcers or managed data services providers, assemble packages of services and hardware, customizing these packages to the special needs of their customers. To these customers the identity of the

[26]Noam, Eli 'Beyond liberalization: from the network of networks to the system of systems' *Telecommunications Policy* 1994 **18** (4) 286–294

underlying carriers and their technology might be unknown and transparent as transmission becomes a commodity. Today, systems integrators exist for large customers only, and for group networks. But tomorrow things may be quite different. The additional step would be for systems integrators to emerge that also put together individualized networks for personal use, or *personal* networks.

One of the questions is whether in such an environment content and user discrimination would exist. At present, common carriage does not apply to systems integrators. They can institute restrictions on their systems, such as the exclusion of certain types of information, subjects, speakers or destinations. It is true that a user could pick another systems integrator, but the need for the systems to access each other, and for information to travel over interconnected carriers, means that the restrictiveness of any one of the participants might require others to institute content and usage tests before it hands over traffic, or to agree to the most restrictive principles.

Systems integration is part resale, part enhanced service. Although the FCC originally determined that resellers are common carriers,[27] it subsequently reconsidered its approach to resale, and has forborne regulation. However, non-discrimination requirements remain in effect.[28] For enhanced services, the FCC has ruled that they are not common carrier activities.[29]

The fact that system integrators could operate as contract 'carriers' to their customers while the underlying carriers may have to serve as common carriers will have far-reaching implications. Essentially, the same dynamics of KC versus CC analyzed above for carriers are at work here, too. The systems integrator can successfully compete against the underlying carriers in the provision of services to customers.

The reasons are the following:

- In putting together a service package, the systems integrator (SI) can pick and choose among the lowest-price component providers, while the CC is likely to offer its own. (A CC could organize its own SI and instruct it to ignore its own parent for a lower-cost provider, but that would take a drastic redefinition of its business purpose, and if successful still lead to an SI-based system, with an SI simply owned by a CC.)
- Competition for transmission and other services will lower their price for SI to short-term marginal cost, which is likely to be far lower than the average cost that CC has to expend to provide it. The presence of real-time capacity markets would exacerbate this tendency.
- SI can offer all elements of a service, while CC may well be restricted from offering end-to-end packages, if past regulatory action is an indicator.
- Perhaps most importantly, SI, as a private contract 'carrier', can price differentiate. The previous analysis of KC versus CC applies again. SI can offer services to some customers at a low enough price to induce them to sign up, and use their contribution to revenues to underprice CC for high-demand customers.
- SI can pick its customers.
- There is no reciprocity. SI can use valuable parts of CC's operations, but if it has a unique feature, either hardware or software based, it need not share it with CC.

As a result of these advantages, systems integrators, who are presently

[27] *AT&T* v *FCC* 572 F2d 17, 24 (2nd Cir, 1978)
[28] *Policy and Rules Concerning Rates for Competitive Carrier Services* 91 FCC 2d 59 (1982)
[29] *Final Decision (Second Computer Inquiry)* 77 FCC 2d 384 (1980), etc, affirmed *Computer and Comm Ind Assn* v *FCC* 693 F2d 198, 209 (1982)

merely in their early stages, may well emerge in the future as service providers superior to common carriers themselves, even though they use the latter's underlying transmission facilities. A similar analysis shows that a systems integrator is also superior to a competitive private contract carrier, for the following reasons.

Systems integrators, by aggregating the demand of many small customers, can provide them with a higher demand elasticity with respect to carriers, and thereby generate low prices and low shares in fixed costs. Systems integrators thus serve, in effect, as arbitrageurs in demand elasticity. This is also likely to increase their attractiveness to customers over staying as customers of carriers, and this accelerates the move to systems integration. On the other hand, those customers not able to obtain systems integrator service, perhaps because they are only reached by a monopoly carrier, would end up bearing a greater cost share. Also, systems integrators, absent some support mechanism, would de-average prices for their customers, and charge, for example, rural customers a price that reflects the greater cost of serving them.

The advantage of systems integrators is that they pay to competing carriers a price based only on the latter's short-term marginal costs and can pass this low cost on to their customers. Yet a significant part of cost in a capital-intensive industry such as telecommunications networks is fixed, and would not be compensated in such an arrangement. The long-term result might be a gradual disinvestment in networks, the re-establishment of monopoly, or price cartels and oligopolistic pricing.

Thus common carriage will not be sustainable in a competitive environment.

It is not likely that the common carriers will simply sit by as their competitors prevail. They will therefore, in addition to operating their own systems integrators, also move to price differentiation according to customers, partly based on the argument of 'meeting competition'. And that is, indeed, what is already starting to happen, especially in long-distance service provision, where customer-specific pricing – official or unofficial – abounds. The 'de-averaging' of prices would become standard, and negotiated rates would spread. As common carriage begins to unravel, its greatest supporters (but only as applied to others) are likely to be the contract carriers, who will want to preserve their competitive advantage.

This kind of erosion of common carriage is unavoidable. The only way to prevent it might be to force systems integrators to become common carriers, a requirement which would have to be extended to most private networks, enhanced service providers and systems integrators. This seems neither possible nor desirable, especially since it would probably not be enough to solve the problem addressed.

The Clinton administration's 1994 proposal of 'Title VII' regulation is mindful of the asymmetry in regulation between common and private carriers, and of the importance of common carriage's open access. It therefore proposes a unified treatment for new switched interactive digital broadband services. But the voluntary nature of this regulation makes this approach meaningless. Contract carriers are unlikely to voluntarily assume the obligations of open access, plus universal service, mandatory interconnection and local franchise fees, for the reasons analyzed above. Title VII is not likely to accomplish an opting-in of these new services to common carriage, but to the contrary, it will legitimize an opting-out.

A mixed system?

Where two principles – common carriage and private contract carriage – are fundamentally in conflict, it is natural to seek some reconciliation. The wholesale conversion of contract carriage into common carriage seems improbable. The reverse – the erosion of common carriage – is more likely, as this article argues. Where alternatives are stark, the possibility of a mixed system suggests itself. But what can that be? There are several possibilities for a hybrid system. None of them is likely to work.

Separate and unequal

Some competitors are common carriers while others are contract carriers. Resellers could have intermediate obligations. As argued in this article, the CC would lose out. One would have to force the CC to remain under such a status, but this could not go on indefinitely.

Hermaphrodite

Another possibility would have to be internal hybridization within carriers themselves. Telephone companies, for example, might offer some services within and others outside of common carriage. (This is partly happening in the tailored Tariff 12 offerings of AT&T, or in the billing and collection of LECs.)

Historically, even if a carrier is cast as a common carrier, not all of its activities are covered. For example, railroads have long been active in real estate activities which have no relation to common carrier obligations.[30] Common carrier responsibilities of access and non-discrimination are not likely to attach to such 'overhead operations' as personnel administration, real estate and the like, or to 'incidental services' such as the marketing of computers, because these are not a part of core telecommunication service. It is more difficult to classify the middle category of 'operational services', for example signalling channels, operator services, billing and collection, and directories.

The question is whether an 'internal hybridization' can be stable. The advantages to a firm of resorting to contract carriage will continue to assert themselves, and thus will invariably lead it to expand contract carriage in a process that might be called 'creeping self-privatization'. This process will take place in particular where a CC service of a carrier faces a competing contract service of a rival. For example, if the microcellular service of a common carrier competes against those of a contract carrier, it might find itself at a disadvantage, and demand the same status.

Regulators may try to hold the line. For example, for contract carriers all mass media and all other 'old' services would be subject to contract carriage, but all 'new' telecommunications-type services, for example switched voice, would be operated under common carriage. This, in part, is the approach of the White House proposed Title VII of the 1934 Act. Such an approach might work for a while, but eventually the separation of two principles within the same carrier, the same facilities and the same bitstream cannot work. Switched digital video would be common carriage, but unswitched analog video not? Narrowband videophones would not, but broadband would? How is one to maintain the definitional separation?

[30]See *National Assn of Reg Util Com'rs* v *FCC* 533 F2d 601, 608 (DC Cir 1976) (*NARUC II*) ('one can be a common carrier with regard to some activities but not others')

Distinguishing customers

May a carrier structure its operations so that it is a common carrier for some customers, but is a private carrier for others? Such 'dual operations' have been subject to limitations in a transportation context in the past, in order 'to prevent the use of the private contract carriage for avoidance of the carrier's legal duties as a common carrier. In particular, common and contract carriage cannot be performed in the same vehicle at the same time.'[31] The concern was that a carrier with bottleneck power could discriminate, with the economically powerful making use of the private carrier for customized rates and service, and the economically weak obtaining an inferior or more expensive service. There is also the issue of whether common carrier liability could be reduced via a contractual relationship.

In a telecommunications setting it is often difficult to distinguish different transactional uses of the same network, which could make the effort to distinguish between common and private carriage complicated. And in the context of a regulated public utility there also arise concerns over cross-subsidies between the regulated common carrier and the unregulated private carrier. Even if separate subsidiaries were involved, dual operation would raise cost allocation issues.

Upstream, downstream

The nature of the telecommunications network permits, in terms of technology, dual operations on each end of the transmission path. Different relations could exist between a network provider and its customers at the two different ends of any particular communication. The upstream end could be contractual, while the downstream users would be common carriage. The same problem of mixed usage arises. Also, as discussed earlier, a carrier could use an ability to price discriminate at one stage to undermine a non-discrimination regulation at another stage.

The Berlin Wall

Another possibility is to assign certain services to a common carriage status across all carriers, in an attempt to level the playing field. But this, too, cannot be a stable solution. Services are not neatly separable into categories; they are dynamic, overlapping, use the same facilities, and consist of largely indistinguishable bitstreams. Add to that the incentive for the provider of a common carrier service to modify its service slightly to get it out of common carriage, and one has all the prescriptions of a built-in regulatory quagmire.

Common carrier rights of way

This approach would be based on reciprocity. This approach was proposed by the author elsewhere.[32] A contract carrier would not have to operate as a common carrier. But if it interconnects with or accesses other networks by taking advantage of common carrier access rights, then it must offer such rights reciprocally on part of its capacity upstream. Thus a contract carrier which does not demand interconnection with a common carrier may refuse to carry the signals of any user or of another network. However, once it does make use of common carrier access to another carrier, it would have to reciprocally open up part of its own capacity to the other in an upstream direction. In such a fashion,

[31]Grossman, William Leonard *Fundamentals of Transportation* Simmons-Boardman, New York (1959) 149

[32]Noam, Eli 'The superstructure of infrastructure: principles for a future without a public network' *Communications and Strategies* 1994 1 (13) 103

one creates common carriage 'rights of way'. Such rights of way would function like public roads and highways that pass private property, or like easements that allow public passage through private land. They would permit the unimpeded transmission of content and services across the various interconnected networks and enable end-to-end connectivity, although not on the entire bandwidth of a transmission, only to the extent of the transmission capacity required in the opposite direction.

This system ensures a coexistence of common and private carriage in a static sense. But, as has been analyzed, in a dynamic world the duality of common and private carriage will not be stable. In that situation a different approach needs to apply to assure the information free-flow goals of common carriage, as will be discussed below.

Also if the reciprocal rights are defined too extensively, their burden might be too high, and common carriage access by the contract carriers would not be undertaken. Instead, it would build or use contract carrier segments only. It would in effect 'bypass' common carriage for purely regulatory reasons, or forgo offering the particular service altogether. The reciprocity approach is hence limited in its effectiveness for the long term, though it could serve as an interim arrangement.

A contract carrier based telecommunication system?

The conclusion of the analysis has been that common carriage will erode in time, and that a hybrid coexistence will not be stable. This is not to say that the common carriers *qua* carriers will become extinct; many of them will remain significant players, but they will conduct their business as contract carriers. Common carriage as such will disappear. This will not happen overnight, of course. Intermediate arrangements can buy several decades of transition time. But the basic dynamics will eventually assert themselves.

This conclusion is reached with much regret, because the socially positive aspects of common carriage are strong, and because the absence to common carriage often means gatekeeper power. But we should not let preferences obscure the clarity of analysis.

Let us therefore imagine a communication system based entirely on contract carriage and systems integration. What are the implications? To discuss this question, we now return to the underlying objectives of common carriage that were described earlier in the article, and see how they would fare under a private contract system.

Free speech access. A diverse carrier and integrator system would have room for a large number of voices, probably more than the traditional system. However, the diversity of such voices might be narrower, because private carriers would not want to be identified with certain types of uses and users. Competition will not necessarily resolve this problem since all carriers will be under similar pressures. Take as an example, again, birth control information by a hotline of an abortion clinic. Faced with negative publicity and pressure, service providers with discretion in the choice of customer may drop the service as a business decision. It is of course likely that 'alternative' carriers and systems integrators will emerge to serve such uses. Yet this solves only part of the problem. The need for the various systems to access each other, and for information to travel over numerous interconnected carriers, means that the restrictiveness of any one of the participants would require

everyone else to institute content and usage tests before they could hand over or accept traffic, or they must agree to the most restrictive principles. As mentioned, information travels across numerous subnetworks until it reaches its destination, and one cannot easily tell one bit apart from another. If each of these networks and systems integrators sets its own rules about which information is carried and which is not, information would not flow easily or cheaply.

Reduction of market power and essentiality of service. The creation of a system that is diverse in both carrier and upper-level integration should remove market power. Anti-monopoly laws can deal with continuing or new problems.

Promotion of basic infrastructure. The future communication system is likely to be dynamic in generating infrastructure. On the other hand, without a mandate to deal with all interested customers, there is no service obligation, and some customers and areas may suffer. To help them will require a revamping of the existing subsidy system.

Reduction in transaction costs. Transaction costs would rise. Some standardized arrangements might be set up, along the model of a commercial code, but contractual arrangements would still be more complex than the set tariff arrangements.

Limited liability. There should be no problem in limiting the liability of carriers by contract.

Facilitation of competition and interconnection. There are two conflicting tendencies. On the one hand, without common carriage it may become more difficult for small entrants to reach customers. On the other hand, the ability to price discriminate makes it easier to be profitable.

Interconnectivity is critical to the future network system. Yet interconnectivity does not happen by itself; that is the lesson of decades of US experience. Open network architecture, comparably efficient interconnection and collocation are part of this evolution.

Such interconnection arrangements do not depend on common carriage, though they are inspired by it. Therefore it is possible, where contractual systems do not result in the desired extent of interconnectivity, and thus threaten to fragment the national communications infrastructure, to set interconnection rules by regulation.

What for the future?

To sum up: The primary problem of a contract carrier based network system is its reduced openness to a wide diversity of voices in comparison to a common carriage system, an increase in transaction costs, and its potential reduction of service to marginal customers. (This assumes that interconnection and market power would be dealt with otherwise.) Thus, even if common carriage erodes, its neutrality principles still remain important for economic efficiency and free speech.

On the other side of the ledger are a more flexible and dynamic carrier and integrator system, and greater managerial control.

The juxtaposition of positives and negatives may give the impression

that a policy choice exists. But, as has been argued in this article, once the basic choice has been made, correctly and unavoidably, in favor of competitive and non-compartmentalized transmission media and upper-level services, the eventual unraveling of common carriage is also inevitable. Even if contract carriers are stronger than common carriers in a micro sense, the aggregate system may be weaker in a macro sense.

This suggests that new policy instruments will have to be found to deal with the negative effects on information diversity and flow.

A way to do so is by replacing the principle of common carriage by a new principle of *neutral interconnection*. A carrier can elect to be private by running its own self-contained infrastructure, and having full control over its content, use and access. But if it interconnects into other networks and accepts transmission traffic from them, it cannot pick some bits over other bits. This means that while a private carrier can be selective in its direct customers, whether they are end users or content providers, it cannot be selective in what it accepts from another interconnected carrier.

Among interconnected carriers, no carrier can selectively transmit traffic passed on to it by another carrier, based on content, uses or usage, or refuse interconnection on these grounds. Any carrier offering interconnection to some carriers must offer it to other carriers, too, within technical constraints.

This does not require interconnection on equal terms, as in the case of common carriage. But it establishes the possibility of arbitrage if differentiated pricing occurs. All of common carriage's goals of free flow, low transaction cost and no liability are thus preserved by a system of (a) non-exclusive interconnection, and (b) neutral traffic acceptance.

This proposal of a neutral interconnection system suggests that there are ways to uphold the values which common carriage protected, even in an open and competitive communications environment. It can be done, provided we focus on traditional goals rather than traditional tools.