Finding a voice: Learning from history

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The evolution of the connected home is of vital interest to much of the technology sector. The convergence of telecom, computer, and consumer electronics offers players in these areas opportunities for expanding their sales and influence, and also the threat of being marginalized. Who will be the biggest winners in the emerging contest is impossible to predict. Not only are there formidable technical challenges to overcome, but success will often depend on corporate alliances, political maneuverings over standards, and, above all, on consumer choices, which are notoriously hard to forecast.

Yet there are some guidelines that can help determine who will win and who will lose. In particular, there is an abiding, widely held, and damaging misconception that clouds people's thinking about communications, and especially broadband. Companies that continue to hold onto this myth risk losing the race to build the connected home.

Subscribers to this dogma regard the Internet as first-and-foremost a content delivery system. It isn't. The Internet is primarily a tool for person-to-person communication. But policymakers, investors, and telecommunications companies have too often fallen for the plausible slogan that 'content is king'. What systems and equipment providers as well as service providers in this area should worry about is giving people what they really want, which is to be connected to other people. This has direct implications for the products and services that are likely to be successful, as will be discussed towards the end of this essay.

Content - material prepared by professionals for consumption by large audiences - undoubtedly plays a big part in consumers' lives. Many businesses based on movies, book publishing, recorded music, professional sports or news dissemination are large and prosperous. And content is certainly a more glamorous business than providing 'dumb pipes'. But the truth is, content has never been as essential to consumers or as economically vital as connectivity.

To put the comparison in perspective, the annual movie theater ticket sales in the U.S. are under $10 billion. The telephone industry collects that much money every two weeks! Just the spending on voice services is over 50 percent higher than all advertising outlays, so there's little point in looking to content-dependent advertising to provide the generous revenue streams that are needed to support a communications infrastructure as large as the phone system.

The primacy of connectivity over content explains why, on the Internet, it is email that is still the true 'killer app.' Ask people whether they would rather give up email or the phone, and the responses will typically be split. However, when a similar choice is offered between the Web and email, there is no contest: email wins by a mile. (And this isn't just true of the home market, it's even more true for large organizations. Intranets are all the rage, but it is email that makes them truly valuable.)

The telecom hits of recent years back this up. Phenomena that have taken industry observers by surprise, such as the enthusiastic embrace of IM (Instant Messaging) on personal computers and SMS (Short Message System) text messaging on cellphones, show the primacy of communication over content in the consumer's set of priorities. By contrast, delivering content to mobile phones via WAP (Wireless Application Protocol) has been a disappointment despite enormous industry hype and considerable marketing efforts. Providing pop videos or movie trailers for consumers to watch on 3G cellphones has provoked a similarly underwhelming reaction from end users. What does appear to be more popular in the new generations of cellphones is the ability to take pictures and send them to friends and family, a typical connectivity application.

Content isn't king and never has been. But the preoccupation of decision makers with content and broadcast communication is nothing new. In the early 19th century, the explicit policy of U.S. government was to promote wide dissemination of newspapers. They were regarded as the main tool for keeping the citizenry informed and engaged in building a unified nation. Hence newspaper distribution was subsidized from profits on letters. The policy of the U.S. government to promote newspaper 'content' at
the expense of person-to-person communication through letters arguably harmed the social and commercial development of the country by stifling circulation of the informal, non-content information that people cared about. Letters were bringing in 85% of the money needed to run the postal system in 1832: The Post Office would have thrived on letters alone, but would have gone bankrupt instantly had it been forced to survive on newspaper deliveries. Thus content was king in the minds of policy makers, but it was definitely not king in terms of what people were willing to pay for. That is similar to the current situation.

Such preoccupation with content has historically been all too common. For example, it was often thought (even by Alexander Graham Bell) that one of the principal uses of the telephone would be in broadcasting. Several substantial experiments in delivering content over the phone were attempted in Europe and U.S. but in the end, the phone emerged as the prototypical example of point-to-point communication.

There was one prominent technology that initially moved from connectivity towards content, namely wireless. It started out as a point-to-point communication system, the 'wireless telegraph', but after about two decades of experimentation, it became primarily a broadcast medium based on content. Yet in the last few decades, with the development of cellular services, wireless transmission has started to move back to its roots as a point-to-point communications service and the revenues from wireless telephony now far exceed those from radio broadcasting and are even greater than those of radio and television combined.

This predominance of point-to-point communications spending is not new; it has been the historical pattern for ages. Communications is growing relative to the rest of the economy in a process that goes back centuries: as a fraction of the U.S. economy, it has grown more than 15-fold over the last 150 years. Most of this spending is on connectivity, the standard point-to-point communications, and not for broadcast media that distribute content.

Pure connectivity, in addition to attracting more revenues, also has additional advantages. The proponents of the 'content is king' myth almost universally neglect to mention a key aspect of content, namely that it is expensive to generate. The sports stars, reporters, singers, and Hollywood actors do not work for free. Hence even if revenues from selling content are large, much of that will go to pay for content, not just for the network. On the other hand, in the 'dumb pipes' model of voice telephony, wired and wireless alike, all the money stays with the service provider.

Still, we mustn't take the argument that 'content is not king' too far. All it says is that most of the money is in point-to-point communication. It does not say that content does not dominate in volume of data: the argument is about value to customers, and not about volume. Equally, that content is not king does not mean that content is unimportant in shaping political or social views. But the entire content piece of the economy is not all that large, and its contribution to network costs is much smaller than that of point-to-point communication.

Certainly, content can be profitable. Numerous media companies are doing very well. Content can also be of value to a network, even aside from providing traffic for the network to carry. However, it is probably best to think of content as either catnip or icing on the cake; something to attract new users, or enhance user experience. That is what broadcast TV programs do for the advertisers who pay for them. That may also have been the main role of the Web in bringing more people to the Internet - essentially as bait. It is worth remembering that the most successful of the public online services, AOL, started out as a game network. It would never have grown as large as it has if it had not changed its business model. Today, the majority of the time AOL subscribers spend online is devoted to email and chat.

By focusing attention on centralized delivery of content, the Web may have led decision makers astray and prevented a proper appreciation of the importance of point-to-point communications that are often chaotic and generally hard to predict. Part of the problem is a kind of snobbery. Polished, glamorous, professionally-produced content tends to be overrated by decision-makers while everyday gossip is downgraded. Sociability has frequently been dismissed as idle gossip, and especially in the early days of the telephone, was actively discouraged. For example, a 1909
study of telephone service commissioned by the city of Chicago advocated measured rate service as a way to reduce 'useless calls'.

Yet the most successful communication technologies, the mail and the telephone, reached their full potential only when they embraced sociability and those 'useless calls' as one of their main attractions. That seemingly idle chit-chat not only provided direct revenues, but it encouraged the diffusion of the corresponding technology, and made it more useful for commercial and other applications. Such social interaction frequently functions to grease the wheels of commerce.

Not only is there a lot of money in carrying gossip, but gossip plays a crucial role in all human interactions. Yet the myth of content as king has repeatedly led telecom firms to waste huge amounts of money trying to get into the content business, even though providing pipes for connectivity has always brought much more revenue than content distribution.

What do these historical lessons tell us about the future? The telecommunications sector has traditionally grown faster than the economy as a whole. There is no reason for this trend not to resume, once the overinvestment of the bubble years is dealt with, since we are moving towards an 'Information Society'. But we should expect a continuation of major restructuring in delivery of services as well as provision of systems, and the eventual winners are yet to be determined.

Traditional telecommunications carriers do have the technology and marketplace position to play a key role. Unfortunately they are handicapped by their culture, which includes belief in many misleading myths, the most prominent the 'content is king' one we have been discussing. As just one example, they are neglecting voice services.

It is worth remembering that the real communications success story of the 1990s, whether measured in terms of revenue growth or number of subscribers, was not on the Internet at all. It was in wireless voice communications. But carriers are so mesmerized by data and especially by content that they are blind to what this implies. Even though voice will eventually be just one of many services delivered at low cost over broadband pipes, it will continue to be vital to consumers, and so should be improved and exploited. Note that a similar evolution has taken place with email, which continues to be the killer app of the Internet. It is offered for free, but it continues to be improved (in terms of user interface, spam filters, and so on), since it is understood to be of critical importance. Not so with voice.

And yet voice has not reached its full potential. Not only can it be integrated with various other forms of communication, but even its basic quality can be enhanced. The current 'toll quality' wireline voice standard simply does not provide very high quality. Broadband offers a way to change this easily. This is especially true in wireless telephony.

The current quality of cellular voice is terrible. Many industry observers say this proves that users don't care about quality. But that is likely to be mistaken. Cellular subscribers have never had a chance to choose, and tolerated low quality in order to get mobility. But now, with the extra bandwidth that 3G offers, they can get both. Moreover, there is an opportunity for service providers to offer several levels of quality at different prices, segmenting the market.

Such major changes could transform the way consumers think about and use their wireless connectivity at the home as well as on the move. Other substantial changes in thinking are needed, also driven by the need to make connectivity, and not content delivery, central. For instance, most broadband access links, such as cable modem and DSL ones, are designed to be asymmetrical, with higher capacity on the link to the home than to the network. Why? Because the expectation has been that these connections will be used primarily to push content to the consumer. However, since the consumer places much higher value on personal communication than on content, the case for symmetrical connections will grow far stronger and we are seeing this already in Korea, for example.

In the connected home (and home office) we can expect a growing demand for real time multimedia traffic, for applications such as videoconferencing. However, such applications are likely to be swamped by ordinary file transfers. The dominant mode of operation is likely to be fast download to local storage, fast transfer to whatever display device one wishes to
use (often a mobile information appliance), and then playback. That is already the model we see emerging with appliances such as Apple's iPod MP3 player for music and the TiVo digital video recorder for television.

The presence of huge local storage capacity in local PCs or cable TV set-top boxes will make it much more attractive to send content as files, not as real time transmissions. Hard disk storage capacity is doubling each 12 to 18 months. For residential users, pictures and especially video are the leading candidates for filling those disks. Ease of use, lower cost, and instant gratification all stimulate use, and digital camera owners appear to be taking many more pictures than they ever did with regular film. The same electronic technology that is producing better disks and processors is also producing better cameras.

Most of the shots that are taken will be of very limited interest to the world at large. But many will be of intense interest to a few. For example, your mother will cherish a video clip of your newborn baby. Historical evidence strongly suggests that the high value placed by a few people on very specialized collections of bits (such as the video clips of the newborn) will in the aggregate be far more than the sum of the relatively low values placed by the masses on professionally prepared content.

The main lesson to be drawn from the falsity of the 'content is king' myth is not that content should be neglected. Rather, it is that one should avoid to the maximal extent possible systems that are designed just for content delivery. We have many historical examples, such as the French Minitel and the American Prodigy systems, which were designed for content, yet what limited success they did achieve in the marketplace was due primarily to accidental features that subscribers could use for person-to-person connectivity. What this suggests is that systems designed for video, for example, should provide an easy way for users to load, edit, and distribute the video clips they take. In particular, no oppressive Digital Rights Management (DRM) schemes should be imposed that would interfere with such home generated material. Even for commercial content, relatively permissive schemes that allow and encourage customers to take some of the commercial content and incorporate it into their own creations are likely to be the most successful.

It should be kept in mind that the variety of information generated by users will be growing. It is not just a matter of video clips of newborns or family picnics. There will also be security monitoring (automatic cameras at the door), healthcare applications (checking up on the elderly or infants, or keeping detailed records of heart function, for analysis by automated systems), as well as sensors worn during sports play (to provide feedback on one's performance afterwards). Those home systems will be most successful that can handle the greatest variety of such informal and individual information sources.

The chances are that the most important applications and services that emerge in the connected home will not originate with traditional service providers. In spite of many attempts, the established service providers and their suppliers have an abysmal record in innovation in user services. If anything, we should expect an even greater fraction of innovations to come from users at the edges of the network - just as email, the Web, browsers, search engines, and peer-to-peer file-sharing did. The variety of services will be growing, and the ranks of potential creators of those services will also be growing. It will require ever more knowledge of what users need to take advantage of the growing opportunities, and we can't expect centralized organizations to be able to do it.

The Internet now carries and will continue to carry a spectrum of different types of service. In the past, you had on the one hand content prepared for wide distribution, such as newspapers, books, concerts and radio broadcasts. At the same time you also had one-to-one connectivity, such as the mail system or telegrams. Today we have a wealth of things in between, such as weblogs, which might be read by only person, by nobody at all, or by millions of people. Telecoms businesses can take aim at various parts of this spectrum but the most significant part will always be one-to-one connectivity: people-to-people. Content has never been king, it is not king now, and is unlikely ever to be king. Companies that understand this will have a substantial advantage in the competitive race that is just starting.
Note: This essay is based on and draws from several earlier papers by the author, in particular 'Content is not king' and 'Telecom dogmas and spectrum allocations'. Those papers provide more details, statistics, arguments, and speculations. All these papers are available on the author's home page, http://www.dtc.umn.edu/~odlyzko.