AT&T: The Path Not Taken

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We've all known for some time that AT&T was going to be taken over some day by one of the regional Bell operating companies (RBOCs). Having sold its cellular and cable properties, and having lost big-time in the regulatory wars, AT&T was a declining annuity and the end was inevitable. This doesn't, however, reduce our sense of loss that a part of history will soon be gone.

What went wrong? It's easy to point to key mistakes over the years, in particular:

- The decision in 1983 to keep Western Electric and Bell Labs while giving up the RBOCs; and
- The simultaneous 1983 decision not to keep the cellular phone licenses, which AT&T could have owned for free.

Certainly, had AT&T gone down that path, it would have been the owner of all 23 Bell Operating Companies, competing with a substantially weakened CLEC industry (after all, the biggest CLEC in the post-1996 market turned out to be…AT&T). And since AT&T would have had near-national wireline and wireless local footprint, it wouldn't have incurred huge debt exposure buying McCaw, TCG (the metro fiber company) and TCI (and subsequent cable acquisitions). So in all likelihood, we wouldn't today be writing obituaries about the company.

Even so, the decisions made in 1983 didn't, by themselves, doom AT&T. Given the information available back then, we think (admittedly with 20/20 hindsight) that AT&T, even after divesting the RBOCs, could have taken a very different and much more successful service provider path than it did.

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An Alternative Approach

As a starting point, AT&T should have taken a cold-hearted look at the Modified Final Judgment's (MFJ's) legal separation of telephony into local telephone monopoly and competitive IXC businesses, and recognized that this was a legal construct that eventually would disappear.

This shouldn't have been much of a stretch. After all, just a few years earlier, the 1978 Airline Deregulation Act spelled the end of regulated oligopolies in airline transportation, and by the early '80s, the Reagan free market revolution was clearly moving government away from regulated industries generally. Plus, the rise of MCI showed that competition in telephony was possible and was a good thing for consumers.

So the handwriting should have been on the wall that MCI (or Sprint or other equivalents) would be pushing to compete in local telephony; and with this, the RBOC long distance prohibition would go away.

That being the case, the next step for AT&T in 1983 should have been to consider how it could best position itself to compete in a re-integrated all-distance telephone business when the MFJ separation disappeared. Remember, 50 percent of AT&T expenses as an IXC was network access, so why not take a long-term view of reducing your single biggest ongoing cost?

The answer, apparent back then, was that in a totally free market, AT&T as IXC would be in serious trouble. In the near-term both the RBOCs and AT&T controlled vast assets with substantial barriers to entry. However, in the case of local service, the long-term barrier to entry was based on the vast network of local loop, end offices and intra-city transport, which would be extremely expensive for anyone (AT&T included) to replicate.

In the case of long distance, while transport was still expensive in 1983, technical advances in fiber—not yet commercialized but well understood at Bell Labs—would dramatically reduce costs in a manner analogous to the way that microwave relay had supplanted coax within the Bell System. Ditto for the costs of next-generation packet switches using high-speed digital local area network architecture.

So going forward, the RBOCs would continue to enjoy huge local barriers to entry, while the long distance barriers to entry would erode. Indeed, the pre-MFJ emergence of MCI and Sprint in long distance competition showed that this was starting to occur.

What Could AT&T Have Done?

Based on this understanding of the situation, what might AT&T have done to address the local vulnerability? Three things:

First, since the MFJ meant that AT&T was freed from prohibitions against buying CATV companies, AT&T could have bought enough CATV multiple system operators (MSOs) to have a near-national footprint; alternatively, AT&T could have joint-ventured with CATV MSOs who were in the midst of building out urban CATV plants, offering to put in the network infrastructure and assist in its operations, while the CATV MSOs could concentrate on developing greater content and content bundles. This would have taken advantage of the perceived strengths of each side, in addition to using AT&T's access to low cost capital.

The price of an acquisition or deal in 1984 would have been a far cry from what AT&T paid for Media One and TCI in the late 1990s, and would have given AT&T a new monopoly-based set of wires with video product that the RBOCs could not match. AT&T could then have thought about how to use these wires for other services like telephony, leveraging its talent at Bell Labs and preparing for the day when the local telephone monopoly would end.

Secondly, AT&T could have been a driving force in developing local rings in each downtown business district that would connect to major office buildings and provide special access lines to corporate PBXs. By 1984, a fiber network had already been set up in Southern California for the Summer Olympics, and large companies were setting up private networks to connect their facilities. By the early '90s, Merrill Lynch along with four CATV MSOs had created Teleport Communications Group (TCG) as the

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AT&T And Data Communications (Circa '70s-'80s)

Data communications began in the 1960s, when businesses, including telephone companies, began to purchase and integrate computer hardware and software into operations, and then began to use communication links to transport data between computers. Many at AT&T recognized this in the middle 1960s, and AT&T first developed private-line modems at 1.2 kbps, a rate that climbed to 9.6 kbps in the 1970s. AT&T also offered private-line point-to-point analog links for rent, for point-to-point private networks for business and public service sectors.

In 1974, AT&T launched its first digital tariffed service, Dataphone Digital Service (DDS), offering point-to-point and point-to-multipoint polled digital transmission at 2.4 kbps, 4.8 kbps, 9.6 kbps, 56 kbps, and 1.536 Mbps. In 1975, Bell Laboratories began studies on how to deploy a circuit-switched multirate digital service, and in February 1976, a development organization was chartered to develop the necessary hardware and software.

The vision was overarching: Computers would connect via a standard telecom industry digital interface, via a wall jack with a plug, at say 2.4 kbps, with a special data communications number (just as all telephones have numbers). A supervisory signal would request that a path be set up through the network to another data communications number operating at the same 2.4 kbps. If the request for a path were successful, the two computers could then send bits back and forth, using software resident in each computer to control this interchange, over an all-digital, reliable and ubiquitous network.

Two-wire digital transport at 2.4–9.6 kbps was envisioned, at increasing price points. Higher transmission rates—e.g., 1.536 Mbps, for the first point-to-point digital transmission system deployed by the Bell System in 1962 (T1)—would require four copper wires, using one pair to transmit and one pair to receive signals, and would be priced higher. Over time, speeds would increase from tens of kilobits per second to tens of megabits per second, all circuit switched, and cost would be driven out of equipment to provide high bit rates for longer time durations for lower costs, such as had happened in voice telephony.

If this had been launched and supported by the Bell System, computer vendors and third parties would have developed hardware and software to take advantage of it; simply having as a standard connector the RJ-45, cousin to the RJ-11 voice telephone jack, would have saved hundreds of millions of dollars per year in communication equipment costs! Directory services, billing, provisioning, operations, traffic management, fault management, security management—all would have been addressed within the existing organizational structure of AT&T and its operating companies.

So data communications was not something that people in the Bell System were unaware of. What happened to keep AT&T from offering switched digital communication services connecting computers and terminals throughout the 1970s and into the 1980s? AT&T's internal organizational dynamics.

In 1976, the switched DDS development team at Bell Labs ran into a new organization at AT&T: General Departments, a marketing group headed by Archie McGill. A former IBM VP, McGill attracted a very capable staff, many from IBM, to join him in transforming AT&T into a customer- or market-driven organization, in contrast to being an engineering- or product-driven organization (as AT&T then was).

The switched DDS development team's vision was technically clear, so Archie demanded that a business case be prepared to justify the new service. Archie and his team argued that the economies for the new service, assuming different pricing scenarios and different subscriber penetration rates, showed that the offering at best was marginal measured on internal rate of return (IRR). This was due to two factors:

- The circuit switching technology (4ESS), had just been launched and was priced high early in its product lifecycle to recoup development costs.
- The price per port of the digital interface was high (this was before integrated circuitry entered into the picture to drive cost out of both the access and the switching system).

Having shot down the DDS plan, Archie and his staff embraced an alternative and marketing-driven vision of data communications. In this vision, one connected all terminals and all computers together, using minicomputers from Digital Equipment Corp.(DEC) running Bell Labs Unix system software with applications put together by Bell Laboratories development teams.

The business case assumed customers would store large amounts of their records on computers in the AT&T network—in the face of the reality that many businesses were moving to minicomputers and that PCs were just then emerging (Tandy TRS 80, Apple Computer Apple II). Businesses were doing this to gain control over their information, not to give it up to central data processing organizations.

In 1978, AT&T filed with the FCC a Notice for Advanced Communication Services (ACS), a new service that would connect all computers and all terminals. This was not a tariff: there were no rates or prices in this document, but it did alert the entire global computer industry that AT&T was up to something big. IBM, DEC and HP, among others, immediately reviewed this filing, and internal groups at each company subsequently concluded this was technically infeasible at any type of price point for service that customers would accept.

In the spring of 1979, Archie pushed for an internal review of ACS, wanting to launch this as a service as soon as possible. The internal review suggested that it was premature to launch a service and that additional work had to be done. Nevertheless, in mid-1982, AT&T decided to launch this new service through an FCC-mandated Fully Separated Subsidiary (an oxymoron, but what the hey) of AT&T named American Bell. On Jan. 1, 1983, American Bell was launched, with its flagship new data communications service—for a service that, it turned out:

- ignored the PC/LAN revolution and the resulting dispersal of intelligence to the edge of the network; and
- had a price that was far too high to gain primary demand penetration.

As a result, the business went nowhere and it was shut down in the mid to late '80s.

Various sources estimate that AT&T spent in excess of $4 billion from 1976 to 1982 on all of these different data communications activities□

Synopsis of a 1990s Network Task Force

Based on the experience of working there, a typical AT&T task force process for addressing facilities-based networks would generally look something like this:

- The CEO wants to see transformation of the telco's network. "This time we'll get something done!"
- To show he means business, the CEO creates a high-level task force. Appoints a senior vice president to head the team. The SVP is a general manager in charge of one of the large sales/marketing organizations, and is not an engineer.
- The SVP is busy with his day job. He therefore appoints a trusted Director-level person as his chief of staff, who will manage the task force.
- The Director knows that he needs input from different disciplines, so he wants to staff his team with subject matter experts (SMEs) from Engineering, Finance, Marketing and Government Affairs. He contacts the SVPs in charge of each, and gets a representative from each group to be the SME for that area on the task force. The SMEs are Division Managers. Each of them continues with his/her day job.
- The Finance SME recognizes that he will need to put together a financial model, and that this will take some time to do. He therefore appoints a member of his staff (a District Manager) to work full time on financial modeling for the duration of the project.
- The Engineering SME recognizes that he will need to put together a network architecture and cost estimates, and that this will take some time to do. He therefore appoints a member of his staff (a District Manager) to work full time on network modeling for the duration of the project.
- On the task force, the Finance SME plays a key integrative role, based on assigning specific business case model inputs to the different SMEs. The following inputs are assigned to different SMEs:

—**Marketing SME:** Number of potential customers; customer penetration; minutes of use per customer; mix of different offer bundles; price of each offer bundle; customer acquisition/retention costs; customer churn. Inputs for base (do-nothing) case versus build case.
—**Government Affairs SME:** Forecasts for: Long distance access rate; other mandated changes; UNE availability in different geographies; TELRIC rates by UNE by geography
—**Engineering SME:** Capex of new network.
—**Finance SME:** Cost of capital; terminal value calculations; risk adjustment.
—**Left unassigned:** SG&A (sales, general and administration) costs, opex.

- Having been assigned their key inputs, the SMEs develop their factor inputs.
- The engineering SME says that in order to develop a new network architecture, they need to get a marketing demand forecast (so that they can scale the size of the new network). He suggests that Engineering take over control of the business modeling, with the other groups sending their inputs to Engineering. This is rejected, and Finance stays in charge of integrating inputs and developing a model.
- Engineering develops its inputs.

—No discussion of options or tradeoffs between cost/quality/functionality. Simply provides capex costs for years 1–10.
—Don't discuss network options and tradeoffs with Marketing. "The Marketing people don't know enough to understand the tradeoffs." "Marketing should just tell us what their demand forecasts are, and we will generate the right networks."
—Underlying network is oriented toward reliability, with much less focus on low cost or high (next-gen) functionality.
—Underlying network is based on pre-existing Engineering plans and reflects currently available technology only. No attempt to seek outside opinions.
—Generated costs are not activity-based. Focuses on total capex by year, no visibility as to the network elements and what drivers trigger costs for each element (i.e., costs incurred on a per-mile basis; costs incurred to service X hundred homes passed; costs incurred at the time of provisioning a new customer; costs incurred on a percent-of-revenue basis).
—Network costs assume current costs, with relatively modest cost reductions over time. No consideration of Moore's Law effect.
—Network costs focus solely on capex. No consideration of opex effects, or effect on customer costs or lowering churn.
—No consideration of what happens if certain regulatory events occur.

- Marketing develops its inputs.

—Hasn't received any input from Engineering regarding alternative cost, quality, or functionality tradeoffs. Marketing assumes it can provide broadband, but no other detail.
—Marketing would like to understand more about possible advanced features, but they don't feel comfortable having a discussion with Engineering about network issues. They don't know much about engineering, and the engineers are not very approachable about engineering issues.
—Develops base case, based on existing plans that call for a shallow drop in market share and price if the company sticks with the old network. No one really believes that the decline will be this shallow, but this is the official budget and no one wants to challenge this.
—Develops build case. For existing services, extrapolate off historical trendlines, increasing these by single-digit percentage increases. New services limited to providing broadband ISP services. No plans to get into video delivery in competition with CATV providers. No plans to provide virtual private networks (VPNs), Web hosting or other value added services. No link to the wireless business.
—No consideration given to differential functionality/customer attractiveness of build versus rent options; different local loop options. All options get the same take rates. Minimal consideration for primary or secondary demand elasticity.

- Finance develops its inputs.

—Assume "do nothing" plan has a low cost of capital and low risk.
—Assume "build" plan has a high cost of capital and high risk.
—Accept the SME inputs without criticism or testing for consistency (after all, the SMEs are the subject matter experts).
—Develop 10-year business plan models rather than considering option values.
—Develop Low, Medium, High cases that represent percentage change differences rather than considering potentially huge swings depending on technological, regulatory and competitive uncertainties. No consideration of disruptive technologies, disruptive offers, disruptive regulatory events.
—No consideration of how Wall Street will react to the different option choices.
—Opex and SG&A are trendlined based on percent of sales, with minimal consideration of whether this makes sense (even though these items represent a high percent of total value added).

- Result: Company decides to do nothing; look to rent UNEs□

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first competitive access provider, and Peter Kiewit, who actually built these rings, decided to go into the same business via Metropolitan Fiber Systems (MFS). AT&T could have done it instead, rather than paying $10 billion to acquire TCG in the '90s.

Thirdly, given AT&T's perceived need to compete in local telephony, it never should have given the cellular licenses to the RBOCs. However, having already made that mistake, AT&T could have bought the non-RBOC cellular licenses for far less than it paid for McCaw in the '90s. Remember, the Chicago B Band AMPS license was not even bid on until June 1984, six months after it was available to anyone wishing to file for it. AT&T wanted to keep business customers, and it was business customers that were buying cellular telephony services early on; why not offer a greater bundle of services to business customers?

The net result: AT&T would have three different local plays, each with minimal regulation. This would have given it local platforms with which to compete when the day of reckoning came.

Along with strengthening its local footprint, AT&T could have done more to embrace the then-new idea of packet switching, and sought to take a leading role in the commercialization of DARPANET, the precursor to the Internet. For a discussion of how AT&T developed its data communication plans around the time of the MFJ, see "AT&T And Data Communications: Circa '70s–'80s."

So What Went Wrong?

Basically, two things went wrong. First, AT&T's top management rose to the top by learning how to run a large monopoly operation. They were not equipped professionally to think about disruptive technologies and changes in business structure.

Contrast this with GE under Jack Welch, who became CEO in late 1980, as an illustration of what can happen with forceful top management. Also contrast it to Ted Vail's performance as head of AT&T at the start of the 20th century; after operating as a robber baron for many years, Vail made peace with the government and transformed AT&T into a regulated monopoly. Being big doesn't necessarily mean that you are doomed to extinction, if you have sufficient direction and flexibility from the top.

Secondly, even when AT&T tried to think strategically in the '80s and '90s (with the help of hundreds of millions of dollars' worth of outside consulting), it suffered from a dysfunctional organizational dynamic. Financial, marketing, plant engineering and new technology knowledge was compartmentalized into vertical smokestacks which never communicated with each other effectively, and which resulted in generic business plans that extrapolated off historical trends rather than creating anything truly new. (For a generalized illustration, see "Synopsis of a 1990s Network Task Force.")

The fundamental problem with AT&T was that, from the top down, it organizationally didn't know how to operate in a free market competitive environment. AT&T was really good at delivering five-nines reliability on a voice telephone network. It wasn't very good at dealing with change.

Conclusion

Ultimately, the problem and the solution at AT&T (and we suspect in many other places) was not in the technology itself. Instead, the issue more typically is a combination of organizational vision (or lack thereof) from the top and dysfunctional organizational dynamics from below. Traditionally, MBAs in business schools spend their time focusing on marketing, finance and production. Maybe they need to pay more attention to their organizational design classes□