

# Telecommunications Policy Between Innovation and Standardization

## The Evolving Network

David Allen\*

International Telecommunications Society  
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### ABSTRACT

For some years we have celebrated the importance of technical innovation to improve telecommunications; now the impact of technical standards is also emerging. In this paper we investigate the evolution of networks across repeated cycles of innovation and standardization, and in the midst of forces that separate public from private. What policies, between governments and businesses, will accommodate this evolution of the network? That policy must recognize the requirements of the innovation/standardization cycle. Elements of such a policy include: the ability to suspend an earlier standard and allow experimentation with new ideas; some consensus mechanism that, subsequently, can find a new standard and regain the benefits of connectivity; so for each cycle, a mixed regime that is neither just *laissez faire* nor just hierarchical, but responds instead to the needs both for innovation and for standardization. Analysis is supported with appropriate cases.

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To enjoy a long weekend away from the usual pace, Barbara and I drove north from Boston, to a bed-and-breakfast in Vermont. We could relax briefly in the wonderfully preserved countryside; we explored the pristine nineteenth century villages. But even there, I needed to keep faith, through the voice mailbox in the office, with those who would call. Without a tone dialing phone in the bed-and-breakfast (I had not brought a separate tone generator) I waited until we found the occasional pay booth at the side of the road, one equipped with tone dialing. Maybe I appreciated, actually, the greater separation from the world of work that this "break" in my electronic connection temporarily enforced.

The transition to tone dialing in the US network has been underway for on the order of [CHECK] two decades. The last time I checked the statistics, tone equipped sets amounted to less than half the total, and the US is one of the leaders around the world. Of course, the introduction of tone dialing has been designed so that rotary dial phones are still compatible; the new technology does not disrupt connectivity for basic voice telephony. But new applications, such as voice mail, increasingly depend on computerization in the network. The twelve-key pad on the tone dial phone, with its associated central office switch, is one important candidate for the equipment necessary to make these new applications work. Connectivity, person-to-person, through new applications such as voice mail, *does* depend upon completing the transition to the new infrastructure.

Compared with shifts in infrastructure to integrated services digital network/ISDN, or to a broadband ISDN, the change to tone dialing seems less significant. And tone dialing is not the only way to make the interface with computerized applications - Frances's Minitel, as one case, is a move toward full terminal capability at the handset. All the same, however large or small each of these changes may be, each new technology brings, we hope, the prospect for improved communications. At the same time, the connectivity we have enjoyed from the older technology that is being displaced - in some cases, a virtually universal connectivity - is perhaps the most fundamental benefit the system produces. And the intrusion of the innovation into the network means a disjunction in that connectivity, at some level, for some period.

How can we enjoy access for new ideas into our network and, at the same time, the strength that arises from connectivity and affiliation, which I will describe as the purpose of

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communications?<sup>1</sup> This paper seeks to understand this question, in its broad scope. The picture suggested here will turn, in a basic way, on the community (or more accurately, the communities) of interest, in the total pool of potential communicators. The implications that emerge for policy, between governments and these industries, point to basic choices for how fast, or how slow, a society transitions through new network technologies, and their hoped-for attendant gains. The implications will extend beyond the communications industries.

#### A CYCLE BETWEEN INNOVATION AND STANDARDIZATION

The transition to tone dialing illustrates the essential dilemma facing us, as we encourage innovation in a network technology. Perhaps the case of e-mail in the US brings the point particularly into focus. To develop an effective e-mail system, we needed to experiment with different, necessarily incompatible, ideas - technical and otherwise - about the best approach. In e-mail that meant (until recently, when attempts at standardization began to emerge) separate e-mail networks would be incompatible with each other. Interconnection across each other would be difficult, or impossible.

New ideas - technical innovations - will, by their nature, not interconnect with the prior technology, nor with other technical innovations being tried at the same time. (Translators to interface between an old and a new idea, such as between rotary and tone dialing, may be developed. But that is part of the later process, when differences among the new ideas begin to be resolved.) Communications nets, on the other hand, depend precisely upon interconnection, to discharge their fundamental function.

To enjoy the fruits of technical advance, we must first put "on hold" the prevailing consensus about interconnection, so that we can experiment with some new ideas. Early users of e-mail made an implicit choice to forego connection with the full universe of prospective correspondents, even though those early users may have found they came to depend on e-mail for their communications. Later after suitable experimentation, we must move to re-assemble consensus about the network technology of choice, so that we can regain connectivity, and the fundamental functioning of the network, hopefully now improved. As an example that is yet to be realized, tone dialing that is universal could help bring improved applications, and connection, to the *entire* network.

To incorporate a *continuing* stream of innovations into our network technology, we find ourselves reiterating a cycle between innovation and standardization. A period of experimentation allows us the prospect for new ideas and the innovations they may bring; at a later point, a new consensus and a new standard makes it possible to reap the fruits of a hopefully improved interconnectivity. To continue the flow of new ideas into the net, we repeat the cycle, and then repeat the cycle again, and then repeat . . . first a suspension of consensus to provide a time of experimentation, then later a new consensus for a new standard.

It almost goes without saying that there are numerous network technologies – in fact they are almost too numerous to imagine a taxonomy – evolving in this fashion at a given moment. Not only is each likely to be at a stage different from others (not to mention that its evolution is almost certainly tied with others), the development of any one new idea by no means slavishly maps onto a fixed period of experimentation. An idea may have got started years, decades before. But the period of experimentation is the precursor, the first half of a cycle of adoption that here I have described as first the suspension, then the re-formation, of consensus.

An example from computing, rather than telecommunications, is particularly informative, because interconnection is not strictly essential in computing. A computer standing alone - or a

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<sup>1</sup>Of course there will be debate about what is the purpose or function of communications.

small network of computers, or a group of computers all using a similar operating system and so able to share the cost of software development - can be functional, without interconnecting or conforming to some wider standard. An example from computing allows us to look at a slice of events that are intermediate, standing prior in time to "complete interconnection" and universality. Such an example may suggest some of the dynamics in the process; it may also suggest where the specific communications case relates to other, broader cases that do not in general require interconnection.

#### AN INTERMEDIATE EXAMPLE: THE HUMAN/COMPUTER INTERFACE

The technology whereby human beings and computers interface with each other is an area that has been, and seems promised to continue for some time, in tumult and ferment. Some ideas are still in the realm of the exotic (though occasionally instantiated just to show the possible, or to meet a specialized need) such as laser beams that follow the movement of the human's eye or body suits that interpret the human's kinetic motion to the computer. A bit closer on the horizon is voice recognition; and pen-and-tablet computers are already in use, though the character recognition is still rudimentary. But the history of the evolution in these ideas is the contest between *menu-and-keyboard* interfaces versus *graphical-pointing* interfaces - IBM DOS vs. Apple Mac is the way we have tended to think about it. The contest has expanded to be worldwide and has reached even societies with ideogram-based languages, such as Japan.

For our example, let's take the history from the point at which IBM, with Microsoft, is midstream in the process of establishing DOS, with its menu-and-keyboard interface, as a *de facto* standard.

[Figure 1 here.]

Though the group at Xerox PARC developed graphical-pointing before DOS, it took Apple to turn the idea into the Mac, later. These two ideas - menu-and-keyboard and graphical-pointing - emerged as the two main candidates for the human/computer interface.

The innovation/standardization cycle might be stylized graphically:

[Figure 2 here.]

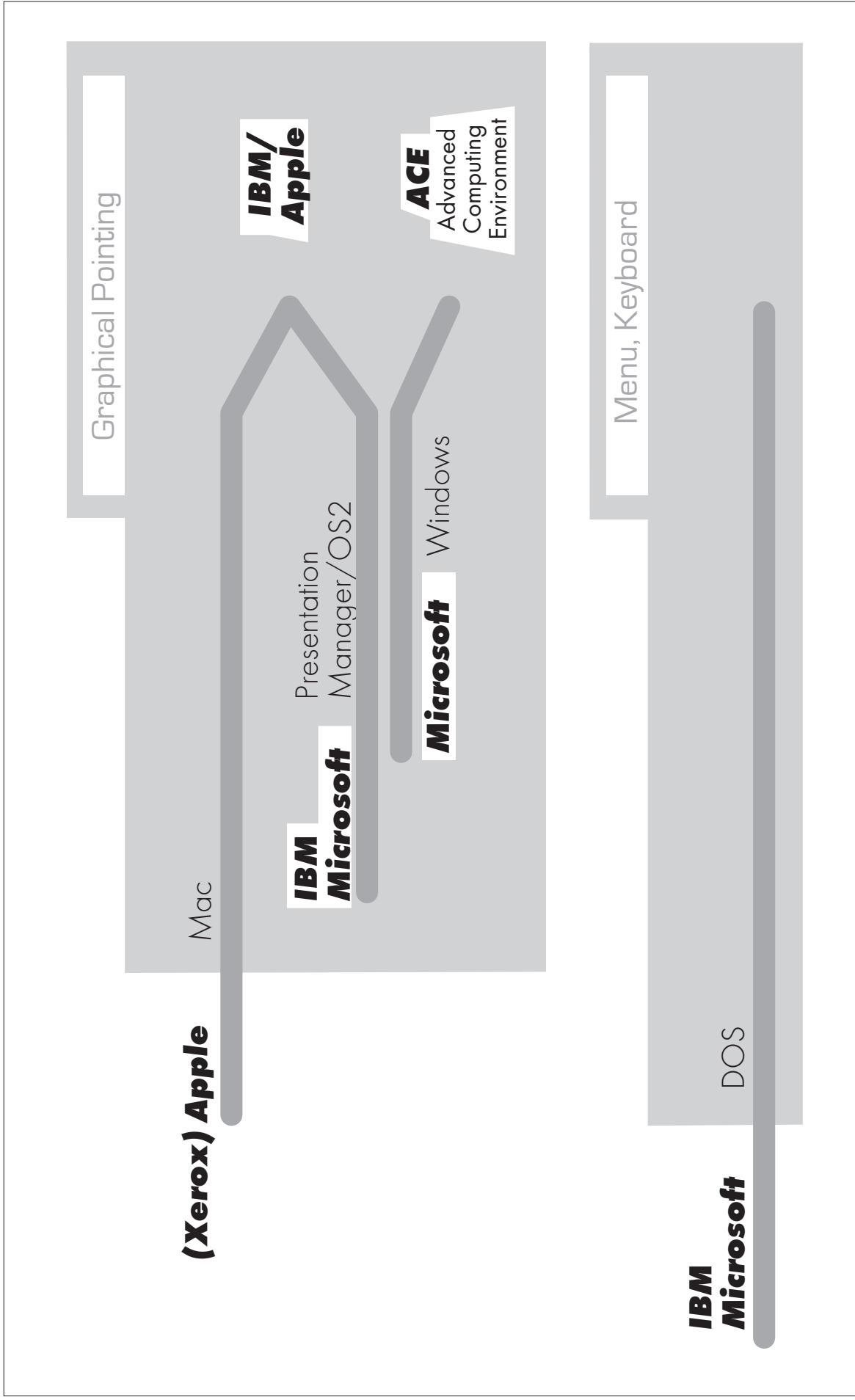
In any one cycle, first some prior standard yields to experimentation with new, different ideas; then a developing consensus brings a new standard forth. The point in the cycle at which the mode shifts from experimentation to the acceptance of a standard - the point of consensus - appears to have the characteristics of a critical mass.<sup>2</sup>

#### CRITICAL MASS AND COMMUNITIES OF INTEREST

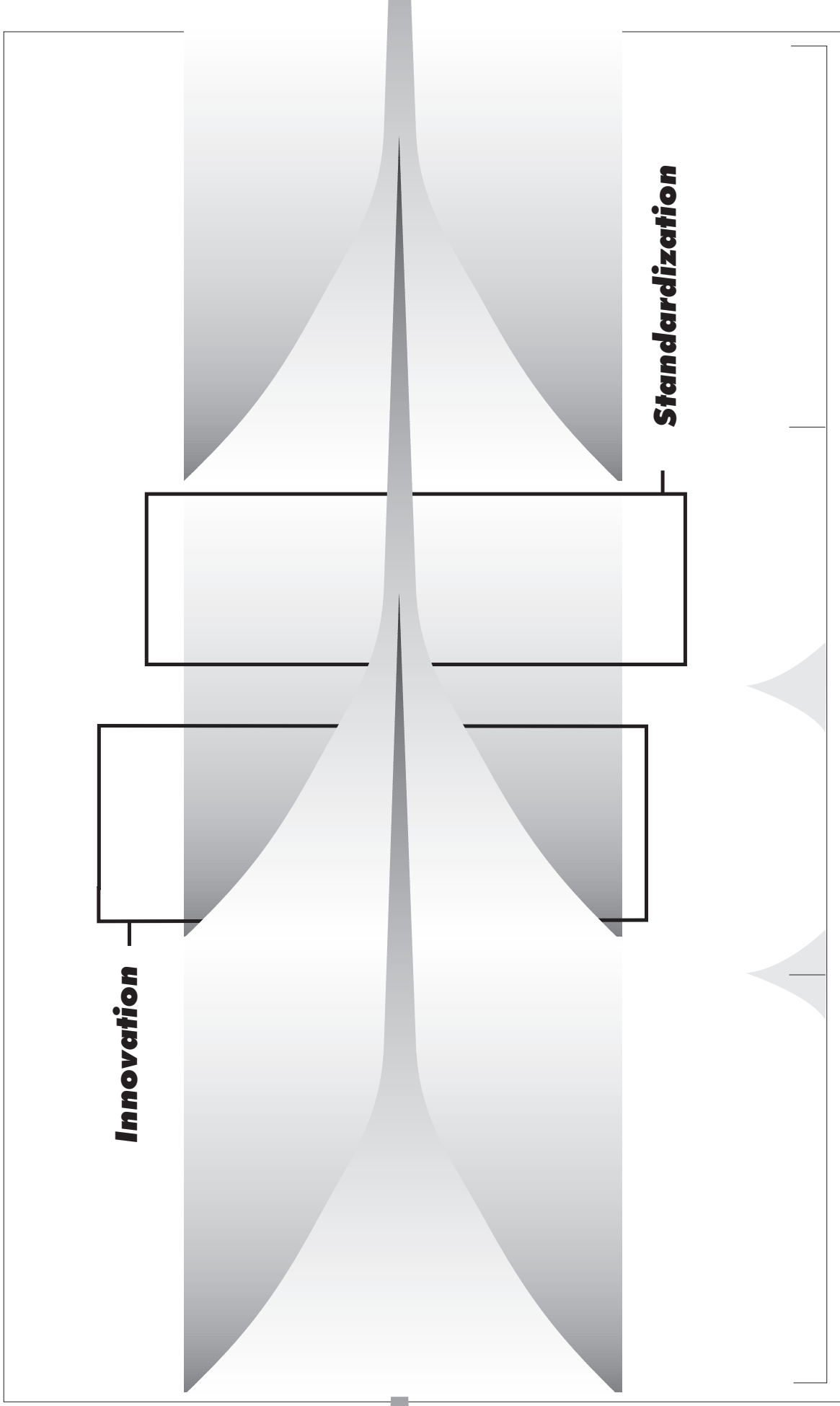
If we were talking about an example from communications, the fact of critical mass would be straightforward. One telephone will not make a network, and critical mass represents that number which satisfies subscribers' expectations for minimum membership. In this intermediate case from computing, where connectivity is not strictly required, critical mass grows out of the subtler externalities at play - such as the advantages from a widely shared operating system and so, quite well developed software (like the WordPerfect 5.1 on which I first wrote this), such as making the same choice that others in one's "reference group" make (the psychology of a bandwagon that insists "this family will always buy Ford's, not Chevy's"), such as taking comfort in the protection

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<sup>2</sup>David Allen, "New Telecommunications Services: Network Externalities and Critical Mass," Telecommunications Policy, vol. 12, no. 3, September, 1988.



**Fig.1** The Human/Computer Interface: Menu, keyboard versus graphical pointing



**Fig.2** Successive cycles of innovation and standardization

that (in earlier times) IBM's "umbrella" was thought to offer against the uncertainties of new-fangled gadgets like computers.

If the consensus is a critical mass, then the new standard is self-sustaining - at least until the next innovation/standardization cycle comes along. But in our human/computer interface example, on the other hand, critical mass did not lead a bandwagon to universality for some new graphical-pointing standard. After the Mac introduced an era of experimentation with new styles of computer interface, the DOS standard and the Mac still split the field. Critical mass represents economies of scale in demand, but in this case that did not lead to the emergence of just one interface.

Critical mass refers to, and the consensus develops within, a particular "reference group" - the community of interest. These are the work groups, the groups of friends, the professional communities, even the families, of everyday life. The emergence of a standard is the result of combining *across* these groups - the achievement of critical mass, of consensus, across *groups*, and across groups of groups. These "coalitions" are the essential grist for much of the work in political science. Some economists also have an interest, such as Mancur Olson or the several economists who are concerned with a theory of "clubs." This phenomenon on the demand side - the joining of groups in the world of users - did receive at least symbolic recognition on the supply side. IBM and Apple, the erstwhile symbols of two hitherto very separate groups, announced an historic alliance. (And I suppose I should add that this version of the paper is on Word 5.1, because I too have shifted to a Mac!)

We may reach universality of consensus in a given community of interest; but just how wide the consensus spreads from there depends upon the connections that can be made with other groups - it depends on the total community of interest that is *potential*. In our intermediate case from computing, the largest potential community still seems to be significantly less than the whole universe of computing users. Our original community of interest may be prepared to resolve its differences with a quite broad swath of the citizenry; but it may draw the line at some point and consider anything else simply beyond the pale, always outside what could possibly be considered *our* community. Scale economies do work in demand, but they work group-by-group; so we also have to ask just how large can the notion of community grow, for any original community of interest.

Understanding this "architecture" - the combining of groups; and the limits, or the expansion, to the broadest conception of community - is one of the main contributions from the critical mass ideas. One of the principal sources for the critical mass literature is Everett Rogers, whose work is an outgrowth of his earlier seminal work on the diffusion of innovations. Critical mass is also important because it gives us an opportunity to inspect with some additional understanding how the actions of individuals combine and result in group outcomes. Thomas Schelling's work, particularly *Micromotives and Macrobehavior*,<sup>3</sup> is perhaps most notable here. Critical mass also illustrates how small evolutionary changes can cumulate into an apparent single cataclysm of abrupt reversal. The recent shifts in ex-Soviet political regimes have once again made this phenomenon prominent. And critical mass helps to remind us that, even though we enjoy the shorthand phrase "technical innovation" to refer to change, in fact every technical novelty that impinges on a customer is mirrored by some social novelty. The ideas in critical mass try to lay bare the demand side evolution of human usage that must accompany the emergence of new technical tools. (Critical mass may also offer new perspectives on supply side scale economies; and the outcomes in supply and demand are closely linked in a mutual evolution between tools and their users).

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<sup>3</sup>My article cited above argues for microeconomics that parallel Schelling's conception . . . idiosyncratic economics perhaps, but nonetheless.

What has been the path of innovation/standardization in our intermediate example from computing? IBM and Microsoft began to try to come to grips with the success of the Mac's graphical interface (this despite that Mac's share is still only about ten percent of DOS' 50 million or so users around the world). Their first effort was Presentation Manager, with a graphical interface not unlike the Mac. But then Microsoft divided from IBM with Windows, which was also graphical, but more evolutionary than Presentation Manager relative to DOS. The denouement was the Apple/IBM alliance, along with an alliance, called ACE, among Microsoft and a large number of other computer firms. For the purposes of our example, the history to that time, of a year or two back, suffices nicely.

#### TWO JANUS-FACED FORCES: SUSPENDING CONSENSUS, RE-FORMING CONSENSUS

On the one hand, what in some literature is called the inertia of the prior standard, DOS, has had two related effects. It has slowed experimentation with the new graphical interface. One example is the hiatus between Presentation Manager, which was not particularly successful, and Windows, which has finally begun to make the graphical interface usable to millions of DOS machines. Also, the preoccupation with DOS has contributed to continued fragmentation among operating systems and so to awkwardness in interconnecting machines. Because of DOS' staying power to some important extent, IBM and Microsoft, rather than being able to form a new consensus for graphical interfaces, went in separate directions. *The extent to which a prior standard can be suspended, to allow experimentation with some new approach, directly affects the speed with which new standards for interconnectivity will be reached.*

On the other hand, the IBM/Apple alliance held the prospect (though still being tested) for yet further experiments with the interface, with results that might appeal to *both* of, what until now had been, two thoroughly divided camps of IBM users and Mac users. (The ACE alliance was organized around prospects for reduced instruction set computing/RISC technology.) *The ability to form consensus, after appropriate experimentation, also directly affects the speed with which benefits will be realized.*

#### THE EXAMPLE: SUMMARY

There are two Janus-faced forces at play, one dominant during the pivot into a new period of experimentation, the other dominant at the pivot into a new standard. Suspension of the prior standard is essential to enable experimentation; equally, formation of a new consensus is essential to regain connectivity. But intriguingly for me, each of these twins seems necessarily to contain the seeds of the other. Even while experimentation is underway, there must be the stirrings of new consensus; even while consensus is formed, there must be the flexibility necessary to admit suspension, for a next period of experimentation.

The extent to which these Janus twins can operate intertwined with each other determines the speed at which cycles may iterate, the speed at which new technology/new social arrangements can be incorporated into a society. That speed can be a conscious (or not so conscious) choice – either faster, with more new gadgets and more new ways of using them per unit time; or slower, with a more stately pace for change. However, the more basic choice may be how much interconnection seems desirable – just how large is the community that we will call our own?

How do we do it? How do we negotiate a path through two contradictory but intertwined forces, to step at some chosen (or implicit) speed, for some size of community, through successive new network technologies and the sought-after continuing increase in standards of living?



## PRESCRIPTION: COMPETITION AND CONNECTION

What answer does our ideology give us? It tells us that free markets and competition are the surest road to access, such as access for new ideas into the network. Adam Smith, from his early perch, told us how access is pivotal. The anathema, on the other hand, is protected markets. This faith has become almost as one voice, now articulated across the US and Japan and most of Europe, even (maybe especially) in the ex-Soviet economies now. Today we feel the more emboldened in this faith by the collapse of the main competing ideology. Centrally planned economies have simply failed, and the correctness of free market competition seems all the clearer.

What can we see from the cycle of innovation and standardization, the cycle that we surely must navigate to upgrade our communications networks (and, we have seen, to advance our capabilities even in intermediate cases, where the externalities are not so obvious)? The period of experimentation surely thrives on the best of what we think of as free competition - but the period of consensus seems most parallel to that anathema, protected markets. Is this a paradox? When the two Janus faces take form in policy, are we left with a quandary - protected markets *with* free markets? In place of protected markets, we might refer instead to a phenomenon that is receiving increased attention, that of the network firm (or we could say: network industry - or an alternative formulation that I have used: virtual hierarchy).

At its essence the network firm refers to some community of firms that are "loosely coupled," to use Charles Perrow's term. Such a grouping seems directly to parallel the gathering of groups that we have used just above to define consensus. Both Italy and Japan are well known for their network firms (in Japan, these are the *keiretsu* and there are, at the least, both vertical and horizontal varieties). And Italy and Japan both have had these groupings in advance of any technology such as electronic data interchange/EDI. Now EDI has raised the prospect that societies *without* such naturally occurring networks might develop them, though it seems clear that subtle network forms do occur naturally in other, if not most, economies. Besides Perrow's perspective from sociology, there are a number of researchers concerned with the phenomenon. Among the economists Paul David would include himself, I believe, also Dick Nelson. In Europe two examples are Lars-Gunnar Mattsson at the Stockholm School of Economics and Cristiano Antonelli at Università di Torino. And though he would not describe his work in terms of the network firm, Hajime Oniki, at Osaka University, has for some years been concerned with the question of where firm boundaries are drawn.

Does the seeming paradox - between competition for the experimentation phase and connection for the consensus phase - dissolve, when we introduce network firms as the counterweight to free markets? The network firm, such as we see in Italy or in Japan, is a real world instance of the consensus process at work. But to make adequate sense of how we may imagine the two Janus faces in policy form, competition and connection, *together* - I believe we can only broach that question when we can adequately grasp the dynamics. How can we move back and forth, between the two seeming opposites (between the ends, experimentation and consensus *or*, between their means, competition and connection), while at the same time each seems present with the other? When we can understand the dynamics, I think the mystery begins to become penetrable.

## DYNAMICS: SHIFTING COMMUNITIES OF INTEREST

A consensus, the standard for tone dialing for instance, has all the appearance of an equilibrium. But carried along in parallel are the tugs to the past, for instance back to the rotary dialers as yet unconverted, or to the future, perhaps to some yet unclear (or at least untried) dialer,

perhaps voice recognition. At least I believe that is the way the human psyche works.<sup>4</sup> Perhaps one of the most important contributions from the critical mass ideas is to situate our approach on the dynamics, rather than on the equilibria. The work of Brian Arthur, a colleague of Paul David, has particularly focused on the dynamics across thresholds.

The intermediate example from computing makes clear, I believe, the bare bones of the dynamics we need to understand. The repeated cycle, between innovation and standardization, amounts first to collapsing, then later to re-expanding the communities of interest. To burlesque the process: first some DOS devotees (or at least devotees originally) desert, to try out Mac; later IBM and Mac users do the reverse and get back together. To suspend the prior standard, the prior consensus needs to fragment into constituent, smaller communities of interest; that is the basis for a "competitive" atmosphere useful for experimentation. To re-assemble a new standard, the reverse steps are in order: groups rejoin with groups to establish the renewed consensus. As usual, the question is how large is the largest grouping.

I do not intend here to broach the full process, interesting but complicated, of making and breaking coalitions among groups. But I believe we can get a window on that process by looking at the experience from an individual's point of view. Particularly, I believe we may dispel some of the mystery around the seeming paradox, if we make sense of the dynamics for an individual.

Collapsing and expanding the community of interest is a daily experience for the individual. A person working in an office is, one moment, plotting how to win the sales contest against other divisions in the firm; the next moment, rooting for all those divisions working together to win a major contract, against the longtime rival in the industry; then, concerned about how the industry together, including the rival, needs to put a better foot forward to the federal government; or even, how the whole US economy needs to pull together against that stiff global competition which has risen like the tide; then the *next* moment, focusing back in the office and trying to negotiate a lower part of the shared copying budget, against that group who are just down the hall. The sense of what is inside versus what is outside the person's own "community" shifts at will, and in either direction, depending on the question of the moment.

We can think of the expanded/contracted communities of interest as concentric circles:

[Figure 3 here.]

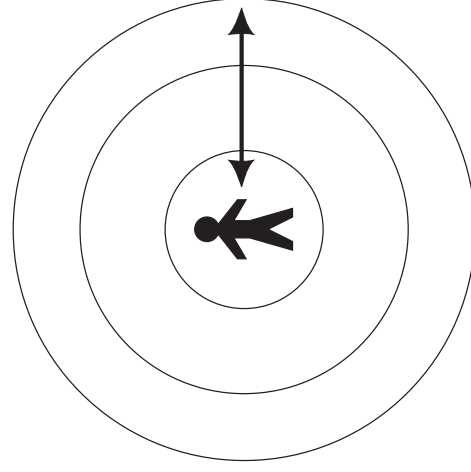
As the border between inside and outside shifts back and forth along the radius, so the person's sense of what is to be kept private, and what can be public, shifts. (Of course there are several dimensions by which any person defines community - besides work, there is geography, family,...) The complicated aggregation, among what each of us feels as public/private, leads to the shared sense - but shared with noticeable dissonance, because of the welter of different and regularly shifting definitions - of the public and of the private.

In a similar way, the commonplace, everyday dynamic an individual experiences - the person's constant shifting of the line between inside and outside, back and forth - when aggregated *among* individuals, from *group* to *group*, is the dynamic that contracts and expands communities of interest, with seeming contradictory mixes of competition and connection, in repeated cycles of innovation and standardization. The aggregation across people and groups is not trivial, and understanding such coalitions may be (virtually) endlessly interesting. But the dynamic involved - one that permits un-raveling and re-weaving, in iterated cycles - has comprehensible dimensions. The critical mass ideas have even contributed an analytic grasp on forming consensus, the pivot into

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<sup>4</sup>A defense of psychology may seem out of place. Nonetheless, perhaps it is worth saying that the technology of the psyche, particularly as it is in concert and in conflict with others, seems unavoidably a linchpin for serious attempts to understand these human affairs.

As the relevant  
community expands or  
contracts



Public and private  
shift

**Fig.3** Shifting communities of interest: Dynamics for the individual

the second half of the cycle, though the Schumpeterian "creative destruction" that introduces the first half still awaits some analytic proposals.<sup>5</sup>

Are these policy implications real? Will these kinds of arrangements – policy between the communications industries and governments, which strives to mix competition and connection in this fashion – address real situations, and offer real proposals? High definition television/HDTV is another intermediate case, one where interconnection is not strictly required. The thinking in Europe, propelled from a sense of being behind Japan and the US in both memory chips and microprocessors, has been bent on keeping European HDTV, in the form of HD MAC, as a market where the current leader, the Japanese, are not allowed to make yet another coup. Is this the antithetical protected market - or, is this a kind of network firm/industry at work, building consensus for Europe, a consensus that will one day make the next step to an HDTV standard which is finally universal around the world?

## POLICY

With the demise of the centrally-planned economy as a live opponent to capitalism, there is some question whether we will soon see another bi-polar ideological contest in geopolitics. Despite the lull, I believe the tensions among Europe, Japan and the US, over key industries such as electronics and autos, foreshadow the prospect for a bi-polar conflict of global proportions. The conflict is already taking shape, it seems to me, around precisely the question of whether behavior, such as European HDTV policy, is protectionist or instead is part of some appropriately fluid network. The difference in view is over styles of economic organization, within capitalism, and obtrudes especially in dramatic differences over how businesses and governments relate. Though not yet unfurled, the flags that would mark out the ideological turf seem ready by the side of the field. And there are indications as to which countries might be candidates for the "network" side of the encounter, and which might take another side.

I do not propose to try here to sort out the question of European practice (or for that matter, Japanese practice) in HDTV. (And if I have been successful in the goal I have set myself, I have not even betrayed my biases in the matter!) But HDTV, as an intermediate case, is an example for the communications industries, as well as for broader applications of these ideas.

The cycle time in television innovation/standardization has so far been on the order of 35 years. Before digital HDTV proposals became dominant, we might have well asked: If we adopt, again, three incompatible standards around the world, this time for HDTV, will we wait another 35 years for the possibility of a single interconnectable standard? How long do we *want* to wait?

Speed of movement through the cycle is one of the basic parameters in the policy equation. Explicit attention to the competition and connection mix may speed up the cycle. Whether we want a quicker cycle is tied to the other basic parameter: just how much interconnection *do* we in fact want.

In some quarters there is positive desire *not* to interconnect the world's television signals. There is concern about what might be called "cultural pollution." Television transmits culture, so the proposition goes. If too much foreign culture intrudes, that may threaten the process of transmitting the local culture.

How much interconnection do we want? That is perhaps the fundamental parameter. In the opening example, from the bed-and-breakfast in Vermont, it seemed I might have been happy after all, with less interconnection and more distance from the world of work.

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<sup>5</sup>Unless I have missed such proposals in recent literature. I hope to learn about them, if so.

Of course, the "we" in these propositions is precisely each of the individuals who may, or may not, join with the others standing alongside, and agree on any of the answers.

This paper's purpose has been to ask, first, how we can enjoy access for new ideas into the network - that access which from Adam Smith's time we have known is fundamental. It has turned out that market competition is only half the story. To inject continuing, repeated innovations into the system, competition was absolutely vital; but it needed to be combined with its Janus-faced twin, connection (at least that is the term I have used here). Communities of interest, contracting and expanding across a cycle of innovation and standardization - ideas particularly suggested by work on critical mass - are one first step to making sense out of how competition and its seeming opposite might actually be combined. Seeing the question in dynamic (rather than equilibrated) terms turns out to be key. Concrete policy proposals will focus, I believe, on the dissensus/consensus process of un-making and re-making coalitions, along some time continuum. The network firm phenomenon stands as one prominent case for this process (and if we inspect it carefully, I expect we may also find a new perspective on the business/government interface). With that, the circle has come full and we are at the second purpose of the paper, how to enjoy the strength that arises from connectivity and affiliation.

Flexibility of access and strength of affiliation - these two become the twin pillars, seeming opposites but actually complementary, necessarily conjoined across time. Speed of movement through the cycles, but especially just how large is the group that we may call our own, emerge as two basic characteristics of the process.

Some of the likely consternation about this discussion of competition may clear, I believe, when we recognize that the word "competition" is used to mean quite different things in different societies. Here is not the place to do other than suggest the question:

Illustrative for me was a news story, from the US, about two software companies that had recently merged. In a sort of ritual at the passing of their old rivalry, the head of one of the companies gave to the head of the other company a mask that mimics his face. Now, at the burying of the hatchet, the head of the second company was receiving a mask of his own face. In the rivalry prior to merger, that mask had been used in meetings at the *first* company where the employees there, when shown the mask, chanted, "Kill, kill, kill!" It is not difficult to conclude that competition in this milieu includes, as a strong element, the desirability of eliminating opponents.

I am wary of suggesting stark contrasts between cultures, when the truth seems likely to lie in the shades of gray. Nonetheless, I think it useful to consider for instance Japan. By all accounts, the competition in the Japanese domestic market, among Japanese companies, is fiercer, by a good measure, than the conflict that US companies encounter among themselves in the US market. Despite this, Japanese companies will "extend a hand" to a competitor when warranted, particularly against ameliorable difficulties facing the opponent. One case recently cited to me is that of Japanese banks in a helpful role to the Bank of America, all the more remarkable if true because the "hand" reached across national and cultural borders. The sense of *potential* community that is active in this style of competition is available to enable consensus, when the cycle moves back to that direction - and this, all the while that Japan benefits from what is apparently the keenest sort of rivalry among its companies. If we look carefully, I believe we will see that there are some quite importantly different motivators at work in this kind of competition.

When we argue for competition, and what this paper describes as its necessary concomitants, we must be careful to specify what we *mean* by competition.