

Bandwagon Economics, the Necessary Ingredient for Success on the Identity Internet

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What will contribute to continued growth in the uses for and benefits of electronic media? Answering this question is a challenge of identifying and weighing factors, calling for moments of reinterpretation. Reinterpretation is the goal of this presentation, with respect to use of identity in electronic media.

The style of reinterpretation offered here is one of recognition and extension: recognizing certain essential elements in emerging perspectives in identity, and drawing out conclusions that can help us move ahead.

My program is not unlike one in another media, where two major interpretations shaped its future: Impressionism and Pointillism. Each demonstrated the viability of an alternative to the assumed essential elements, from structure to appreciation. The Pointillists confirmed that the light palette and visible brushwork are instrumental, but not uniquely in the way Impressionism proposed. They showed, in effect, that there was another interpretation that achieved similar goals, perhaps even more in line with the observer's requirements. That's a statement no one in this printed-page-and-computer-display modern age can ignore.

Bandwagon economics, a refinement of the mechanics and results of network effects, describes and explains a set of phenomena which I believe must concern every proposal for identity in electronic media. Within that context a further phenomenon of economic behavior gains significance: the nature and role of disruptive technologies.

With the customer as the central player, this paper discusses these concerns from the perspective of what we are trying to create—the Identity Internet—and shows how these concerns might refine our newly minted Laws of Identity.

Return on Investment

In the ecosystem of choosing investments for their returns, it is no surprise that investments in operational efficiencies and productivity are the first to come, and are by far the most favored. So it is unsurprising that enterprises would make that calculation concerning identity: operational efficiencies in provisioning, productivities in service consolidation, help desk offsets, compliance management, interoperation of platforms, export of risk burdens, even reduction in identifiers.

The question is, will this be sufficient in the next period? Many think not, and speak of the importance to the growth and health of revenues in offering, and offering earlier, new identity-enabled services. This immediately gives rise to a further question: Do we understand the surrounding economics?

Identity in electronic media is a type of tacitly-constructed agreement: where the requirements and criteria of one or the other party are neither explicit nor integral. It is characteristic of tacit

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agreements that the party benefiting most should make the significant investments. Trouble arises in tacit agreements, however, when one party has the power to escalate or change requirements, and alter the agreement. I think we face this problem with identity, as consumers come to expect more from their investments in identity and, from at first a few firms, then more, they gain the ability to change this balance.

A simple perspective to take is that concerning the changing face of personalization, a kind of identity service. Once considered a matter of information—collecting enough and using it intelligently—leading companies have discovered another factor: a personal greeting and targeted presentation isn't enough, they must continually alter their offerings. More than transforming personalization into mass customization, this is so disruptive that only companies who allow customers (including intermediaries) to arbitrarily create products for other customers can scale to the demand: from auctions and recommenders and folksonomies, to game worlds or shopping bots.

This transformation is so significant that McKinsey, Accenture, Gartner, and others now identify personalization not simply as an operational improvement or marketing service, but as a direct component of product innovation, impacting and transforming all of a business' domains, including sharing all the concomitant significant demands of investment and exposure to risks.

Sure enough, many companies find that implementing personalization and customization systems calls for a major overhaul to their entire technology platform and product marketing, enterprise resource planning, and management systems. Further, this overhaul included the transformation of what has always been a criterion of branding work into, now, a key player that such businesses must explicitly sell to customers of all stripes: trust.

This foreshadows several considerations for identity in electronic media. First, it is likely users will wield *significantly* more control than we've considered. Second, rather than what we've quietly been hoping for—preservation of the status quo—we're likely to face a *substantial* systemic upheaval.

The Identity Internet

The tremors felt by businesses adopting personalization are the signals of an important phenomenon: anything having to do with identity is a stack issue. Everything, top to bottom, must be rejiggered.

We're all familiar with some of the stacks I'm referring to: the stacks of legal documents you get when you suggest cooperation on identity; the growing stacks of statutes, regulations, rulings, case law, and contracts involved.

A more technological view applies too. M-commerce will almost certainly involve significant levels of those customer-generated services mentioned above, with the addition of real-time direct interaction between heretofore unaffiliated parties, probably involving significant components of extrinsic and contextual characteristics (for example, relationships or location). In grappling with this the technologies have touched every level of the TCP/IP infrastructure. While it involves a slight, pardonable, illusion to say that FTP is 'merely' an application composable over TCP/IP, it is misguided and self-deceptive to consider identity in electronic media in a similar way.

I think, also, it is not helpful to think of solving the identity problem as a system of systems, as a metasystem. This is too familiar; it lacks the needed potency to drive the needed scale of change.

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The Identity Internet is a new, parallel, network, which must operate in synchrony with the other networks. Within itself, yes, the elements and services must be composable. With respect to the current, the ‘other’ Internet(s), this is not the problem of device drivers, of backplanes, but rather the building of a new infrastructure. This infrastructure re-uses the existing Internet, but it intimately intertwines the design of user interfaces and their applications to the models that define and manage sessions, and to the specifics of a particular transport and network service.

In large part this is just philosophical, a point of view. I hope the interpretation will be borne out by the discussion. If it were to have some basis, however, we would have to have seen some of these effects even in the lowest levels of TCP/IP, which (conveniently) we have.

Let’s consider the evolution of IPv6. The discussion of integrated services in RFC1633 (Braden et al), published in 1994, provides an interesting backdrop. In calling for integrating real-time services into the Internet protocol, setting the stage for RSVP, it defined a parallel, multi-media Internet—dividing the Internet according to services requirements. Doing this required a pervasive stack change. For one, we had to abandon the idea that applications could simply adapt to the layers below, or that lower and the lowest layers could simply infer the requirements. Instead we had to move into the lower layers the semantics parallel to and extensive of the applications. A crazy idea. Some of this is possible in IPv4, but it takes an interesting turn in IPv6. There we see, as part of reshaping the IP header, the introduction of 20bits for the experimental Flow field, representing an explicit reorientation of upper-layer semantics carried in IP. Further, adjusting for services that have been exported to extension headers or obviated, this is a 250% increase in bits dedicated to these semantics.

Just as interesting is how identity itself has a berth in the IPv6 transport mode header. In defining the Authentication Extension header we see the ground-work for the use of application-domain identity, for example in the IKEv2 Security Associations (and the policy database) that are central to IPv6 IPsec. It is not pretty, but SAML DNA has a role here as easily as does a raw email address or an X.509v3 certificate, among others. Similar work is proceeding in EAP and PANA, SIP, and Mobile IPv6 Bootstrap.

Sure, we could say things are still stacked, just differently, although that’s a bit circular—like saying we belong on the Moon because we were on the Moon. Instead I think this was just one part of extending the march from when the introduction of ECN declared the network was no longer a black box. To grasp the meaning behind phrases such as “interoperable trust networks” we can use the concept of the Identity Internet to express the semantics that applications will treat the identity space as a vast, pervasive, and cohesive network.

Further, I think the power that comes from that view will be necessary for dealing with the two factors we’re about to discuss, both from the very top layer of this new stack.

Bandwagon Economics: Broad interlinking and Third-Party Complementary Bandwagon Services

Two of the central questions in this section will be i) Do markets, having been made electronic media identity-aware, exhibit these effects? and ii) Do users have this kind of influence? If the answer is yes, we’ll see the power of thinking of the Identity Internet, and see the importance of the creation of a certain kind of identity technology.

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The popular concept of the bandwagon effect is just about correct: the more others enjoy something I've enjoyed, the more I'll enjoy it myself. Most narrowly these are called demand-side returns—the acceleration of returns due to actions, external to that actor, which increase demand. (Compare with the familiar supply-side returns: the more an actor consumes something, the faster the returns accrue.)

Businesses are interested in bandwagon effects for the obvious reasons, but they are very afraid of getting stuck—of developing a service, rolling it out with a certain price-performance contour, then having the user set stall at some level below that at which there's enough momentum to adjust or maintain prices to achieve necessary profits. This is a sticky business because by definition the latecomers value the service less (or, as we'll discuss below, set a lower value on the initial service offering), and to keep the bandwagon going you can never reduce the rate of returns to any users. The basest bandwagon effects are those in the social sphere: to get psychological returns from seeing others join in, and perhaps some credit for creating that result. An interesting bandwagon effect based in technology yet having no electronics or interlinking, can be seen with 19th Century player pianos, growing into the 20th Century as the musical reproduction improved, and with growing licensing and production of music rolls.

A few refinements to these basics will be useful. The most important are: interlinking and third-party complementary bandwagon services.

At its simplest, interlinking is the significant cross-communications among users on a service or, more powerfully, across multiple services. This raises the value for the customers, and amplifies the bandwagon effect. Sometimes we think of these as network effects, a kind of natural effect for, well, networks. This is a simplification, and is usually a harmless confusion. It is a more serious error in this case: where identity is concerned the returns are not evenly spread and not available to all (rather than scaling like Metcalf's Law, at n^2 , it's more like $2n$), and the returns are heavily dependent on the appearance of complementary bandwagon services, to be discussed in a minute. The classic bandwagon service with interlinking is the facsimile. Note that interlinking is overwhelmingly limited to related parties, not linking or benefiting from linking to unacquainted parties. The more modern example is Mobile SMS, interlinking across all vendors.

Complementary bandwagon services are those introduced by independent third parties that have the effect of increasing direct value for users, and interlinking between users. These are, essentially, separate services that users can control and share which the initial vendors do not control (not their introduction, not their conduct), and possibly even feel are not value-adding or are inconsistent with their business model. These services also tend to increase interlinking among previously-unacquainted parties. I'll get to a more relevant example of this in a minute, but you can be thinking of the PC business.

To explore the relevance to the Identity Internet, and to help us answer the questions from the beginning of the section, let's consider the TV-Anytime specifications and the services it enables.

This series of specifications, if you're not aware, created by a membership spanning Europe, Asia, and North America, targets the personal video recorder and related capabilities. It is in test-bed and adoption processes in Japan and Europe (with a launch this summer of a BBC TV and Radio service, with an open source JavaAPI supporting descriptors such as `crid://bbc.co.uk/BbcNews`).

To establish our actors let's imagine a content company DVB-Tv (Digital Video Broadcasting) partnering with NDRS (Network Digital Recorder Services) running a content recording service. Integral to this service is PDR Co. (Personal Digital Recorder/DVR), providing the marketplace

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with personal data recorders and other TV-Anytime-enabled equipment, which the Telefan family has licensed. This is a sufficient t-commerce marketplace, albeit with one dominant partnership. The more families that license the equipment and use the recording services, the more the market experiences bandwagon returns.

DVB-Tv and NDRS desire to get some complementary bandwagon effects rolling, with basic internal (walled-garden) interlinking. One bright idea is to enable personalization and recommender services, and to allow their users to publish and subscribe to this information across their network. This can be done with focused attention to identity, nothing grand, and will produce further bandwagon results. It is interesting to compare this to the recent and current models in social networking: Friendster, where the audience makes their own services within its scope; LinkedIn, which has less of that but other drivers; and Facebook, which satisfies other needs with a strategy revolving around advertising. Each of these, and others, are isolated. Not only do they not connect to each other, they don't enable third parties to create complementary products.

Now such companies have a good excuse, sort of. The business model is more difficult. Further, the identity technology is more challenging. Looking into the future, however, they don't have much choice.

Our intrepid pioneers DVB-Tv, NDRS, and PDR Co. are determined to meet this future, and to nurture the precursors of stronger bandwagon effects. They want to set the stage for competing services and even minor third parties, to introduce other services. Perhaps a party will introduce enhanced preferences-based schedule searching the globe over, integrating other Internet content—and to enable all parties to publish and integrated these among themselves and across all other networks. This has the potential for much stronger bandwagon effects, and therefore to prevent stalling in developing their market.

As we are aware, however, this kind of interlinking cannot get far or last long in the modern world unless it can be accomplished within an identity-enabled environment. As it turns out, TV-Anytime thought of this. They've built in the ability for implementers to provide services which allow users to do this. That is, they've built in the capability for full interlinking, even among third-party complementary bandwagon services. They haven't done this by merely adding the ability to exchange assertions or trust tokens. They needed to integrate it all the way up the stack, culminating in an end-user service, with implications for actions that users can actually carry out (if not the actual GUI).

How did they do this? The more typical way would be to collect a bunch of standards and, in an act of invention, compose and intertwine them, then, afterwards, create an application layer that can be interoperable in the way bandwagon effects demand. This would be a big job. In fact TV-Anytime did do this in various parts of their specifications—and inspection of limitations in these areas is informative for learning just how hard it is to create this sort of technology so that it will enable bandwagon effects.

The other way? Implement an identity architecture already prepared to deal with end-user services, and offering the interlinking, built in, that would support complementary bandwagon services: they implemented Liberty Alliance's Web Services Framework (WSF) for their personal profile (PP) service. Moreover, they utilized a component that's central to this ability: the services are an instance of the WSF Data Services Template (DST). What does the DST accomplish for them? Well, any other *end-user* service that understands DST, and the identity services it operates

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within, can interlink for identity-enabled services of any kind. This is not merely the technologically-bound kind, SOA and all that, but real end-user services.

Put another way, the members of the Telefan family can interlink information from a geolocation services provider with information from a presence services provider (neither of which necessarily have anything to do with any TV-Anytime infrastructure players), looking for content related to PP-managed preferences (titles and previews for the genre and actors or characters followed) and responding to identity-conditioned inducements, and then publishing the results to others in the family or even specified and unspecified strangers for them to discover, use, and extend, whether they are in or outside the Telefan's service provider's environment. All this while embodying the dynamics captured in the Laws of Identity.

Some of the above will be possible because other organizations will reach the same conclusion. The Open Mobile Alliance (OMA) for example, has incorporated the WSF DST (and more) within its OMA Web Services Enabler Releases and Network Identity Technical Specifications. Mobile vendors have demonstrated this capability for over a year now. By the way, OMA got the importance of the entire stack perspective. One of the OMA's critical objectives was "End-to-End Interoperability:" defined as "the customer-to-customer end-user experience."

There are aspects of that scenario that TV-Anytime personal profile service doesn't yet enable, and some of their security infrastructure isn't based on identity. On the whole, however, the example has revealed several considerations:

- 1) Having convinced themselves that broad interlinking of services across even external third parties was crucial to success of the marketplace ...
- 2) TV-Anytime Forum, and their implementers, took on implementation of an entire stack of identity-enabled services in an effort to provide these personal profile services.
- 3) This was made possible by adopting an identity standard that integrates identity operations fully throughout, including to end-user services, within which ...
- 4) The WSF DST is, essentially, a template for specifying services that, when deployed, will provide interlinking across systems and with third-party complementary bandwagon services.

If this seems just natural and obvious to you, then it's instructive to consider the U.S.'s Advanced Television Systems Committee (ATSC) performance on the matter. For example the recent Advanced Common Application Platform (ACAP), or developed in the same timeframe as TV-Anytime, the Interaction Channel Protocols. On almost every level the ATSC has executed a classic layer-and-compose strategy: in doing so they have reinvented systems we already know are not extensible with respect to identity, and are not conducive to bandwagon effects. When compared to the services that the DVB Project defined (broadly integrating TV-Anytime as above), one might ask if this was intentional, in an attempt to build a system that made difficult interlinking across systems and with third-party complementary bandwagon services.

Identity as a Disruptive Technology

While exploring bandwagon effects we saw not only the implication for identity standards but also how important were certain user behaviors in creating a vibrant bandwagon market.

When it comes to identity, customers are even more powerful: as users participate in this bandwagon market they create identities and gain leverage over their attributes, including through

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agency and response to inducement. In this respect digital identity is a new currency, and companies have to compete for it, offering marketplace-negotiated value and using it strategically.

A disruptive technology is one that, once it finds an application, has the power to separate you from your customers ... and when you belatedly adopt it, most of its potential customers are lost to rival firms. Initially it is a supply that you don't want in your business model, principally because although somewhat similar, it doesn't act like other inputs (and is likely from a different supplier) and its primary attributes aren't matched to your business model in that area. Then, interestingly, a few firms make its attributes central to their offering when suddenly you find these attributes are the basis of competition.

The thing about disruptive technology is, that looking back it looks like the only thing that could have happened, obviously.

I have begun to view identity in electronic media in this way. The identity information most firms are aligned on is basic, intrinsic, personally identifying attributes: biometrics, life events. These are enhanced with a few global, local, or contextual attributes: issued credentials, relevant affiliations, our mutual transactions. These are pretty stable. In the commercial sphere we believe them to be useful to 'hold,' in some cases contributing to a firm's valuation. Holding these identities, we manage them to produce returns in efficiencies and productivity, and through further processing ('mining') we generate attributes useful in personalization and customization. The customer gets indirect returns through engaging in further transactions with the firm.

All in all, this is a pretty expensive activity, and risky in its dependence on further transactions. For customers it's relatively low cost, but with a nearly infinitesimal return: once they've provided the information with one firm, and created a history of engagements and transactions, there's no way to leverage, consolidate, export, generalize, or bring agency to bear on that constructed identity.

Now consider the how the Identity Internet works, as discussed above. Firms suddenly have high levels of external interlinking, with large numbers of third-party complementary bandwagon services. What else do we see? Customers have significant resources for leveraging their identity. Now identity includes: current location and destinations past and future, proximate friends and associates, transaction history across a broad range of vendors, psychographics (from drivers and desires to doubts) in explicit and implied forms in varying conflicting and detailed forms, rights (seemingly arbitrary) granted an entire list of associates, and so on.

Rather than available to hold, a firm has a short time to leverage this information, in part because many attributed have high contextual components and others are short lived. Rather than something the firm creates, these are attributes available only from or through third parties, not only because those third parties represent new commercial partners of the customer but also because these are heretofore 'irrelevant' or unavailable attributes to which the customer now has gained the ability to apply agency.

In short, the firm has a new supplier of an essentially new input. The most important of these inputs are the most recent, much of this input can appear arbitrarily contradictory, and the most valuable attributes of the input are its 'velocity.' Further, a firm can mostly only 'lease' this input; and in addition to leverage in transactions, receiving competitive returns requires that the firm secure a license to aggressively, and in real time, lease 'their' information to others.

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This is identity on the Identity Internet, transformed from yesterday's identity, and from a new supplier: the customer, the consumer.

It's interesting to put this in the framework proposed by Christensen. One perspective is the evolution of valued attributes in disruptive technologies: from performance, to reliability, then convenience, and finally price. The current view of identity is mostly on convenience and price/cost: single sign-on to the customer, efficiencies to the firm. The disruptive view of identity on the Identity Internet is mostly on performance: for the customer, the ability to generate and harvest a multitude of identity-related attributes and transactions; for the firm, the mechanics and connectivities to participate in this vortex.

Another framework Christensen proposes for studying and identifying disruptive technologies is the value network: looking at inputs, the principal machine for generating value, and the vehicle for harvesting that value. The current view of identity sees as inputs users as associated with the basic demographics and attributes, applies the identity and account management machine for efficiencies and customer relationship management et al for personalization, and then harvests value through the marketing system in direct transactions. The disruptive view sees as inputs users in their effort to interlink their relationship with the firm and all other providers and users, applies the machinery of enabling those transports and amplified agency to effect this connectivity, and then harvests value based on delivering those attributes to local or foreign identity-conditioned services.

Whether identity on the Identity Internet is disruptive to a firm is a matter of effort and unfolding. Being early in enabling and benefiting from this type of customer behavior is certainly important. The key to that, it appears, is the creation (and subsequent adoption) of identity standards that integrally and cohesively, top to bottom, enable and facilitate this customer activity.

Adjusting the Laws of Identity

Having traversed this landscape, can we use our new perspective to test, verify, perhaps adjust our Laws of Identity?

To begin our attention is drawn to the problem statement and its conclusions. The above discussion suggests we'd benefit by shifting our basis from that of something above and interchangeable, as in device drivers and backplanes, of systems of systems, with their attendant metaphors of failure. This problem is less like the shift from ISA to Microchannel Architecture to EISA, to that of the top-to-bottom transformation of PCI. Further, the above discussion suggests that our problem statement should set aside any 'reasonable' expectation that enterprises can sustain the same relationship in respect to identity, and adopt the more forward-looking (disruptive) stance of, for example, the members of the TV-Anytime Forum. This suggests the benefits of metaphorical alignment with the other Internets we know, the Mobile Internet, the Multi-media Internet: the Identity Internet.

Further motivation comes, I think, from enlarging the stated purpose of our proposed framework, beyond just the **Laws of Identity Security**, as they mostly are now. As significant as the needs noted by the laws as absent, namely the lack of a framework for controlling and remembering, users lack a framework for clarifying, conditioning, creating and deleting, and leveraging and projecting, and so on. These latter needs are much more pervasive in their consequences on the laws than the former, more security-oriented, needs.

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Moving to the Laws themselves, Law 1, *User Control and Consent* offers the first opportunity for adjustment. Consistent with the bandwagon dynamics, and the disruptive effects we must move beyond the narrowed Mother's Milk semantics of "user consent," to the larger domain of user-controllable, and susceptibility to user leverage, of which examples have been given above.

Law 2, *Minimal Disclosure for a Constrained Use* derives its relevance on a much more limited view of identity than that for the Identity Internet. Further, it suffers from a shifting foundation: as we already well know enterprises can adhere to this law simply by aggregation of uses (e.g., service acquisition). In the larger picture, which is the domain of fundamental laws, this starts to look like over-reaction. It doesn't really capture the characteristics of largest import. That is, consistent with (the revised) Law 1, the responsibility for assisting disclosure and expressing use.

Although not addressed directly in this discussion we can infer another result: this law perpetuates an unsubstantiated claim that owes its source mostly to factors of epistemology: We don't know, to any respectable degree, that aggregating identity aggregates risk. We just haven't invented the appropriate mechanisms to differentiate such risks and protect such aggregations. For example, we really have no idea how much 'aggregation,' under what conditions, is too risky. We have some extreme cases, but that doesn't really serve us in terms of forming laws.

The *Law of Justifiable Parties*, Law 3, is directly impacted by the changes mentioned above, and a few to come. More locally, though, it suffers from a deep-rooted relativism that's never good in laws. Let's consider, for a moment, what people actually do rather than their explanations. People can justify many odd practices with identity: membership cards at grocers and exchanging information for trifles are two popular examples. These are not aberrations or subject to discounting. This is (indicative of) what those who supply and control this new identity actually want to do with these assets—and these suppliers will always discount risk and inflate value.

We might even see if we could learn more by making, from the perspective above, a different account of Passport's failures. For one, the bandwagon economics suggest a future that will see many companies involved in a firm's customer relationships—driven by firm's needs, and the behaviors of their customers. More broadly we could say that Passport was itself a disruptive technology, but lacked two characteristics. 1) the bandwagon got stuck, for various reasons including that it didn't allow (early-enough, and widely-enough) that interlinking among complementary services, and 2) it didn't offer users the power they desire to be suppliers of their own disruptive technology.

Law 4, *Directed Identity*, is an important consideration in the Identity Internet. One could say that the Identity Internet, and the associated effects and disruptions, depend on this law. It is interesting (if a bit more theoretical) to consider, however, that just as in branding overall, it is the nature (and power) of *local* invariance that's most valued. That is, variance in global characteristics is an important signal, to be created and applied in order to gain some degree of local invariance. Providing four different branded sites for a consumer service creates a kind of global variance, but one that's intended to establish a local invariance in the consumers. The fact that their brand perception might change if they venture off one URL and onto another is considered a lesser concern. The implication for identity is, I suggest, that the Identity Internet must enable the ability (subject to other laws) to correlate or even to elevate to a (possibly temporary) global 'beacon,' any aspect of identity.

In considering Law 5, *Pluralism of Operators and Technologies*, from our new perspective the most significant feature is the non sequitur in concluding that we need "a simple encapsulating protocol," whether interpreted abstractly or otherwise. This seems to be a consequence of

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thinking of this as a metasystem rather than the full-fledged Identity Internet discussed above. Of course we need ways for many, multiple, potentially very different, identity technologies to interoperate. The path of innovation depends on that—to enable invention of ‘incompatible’ systems and services.

Perhaps a revision to this law, while keeping the same name and the same polytheistic quality, would have broader application if it required, instead, that every ‘identity technology’ incorporate in it (perhaps by reference) the means for deployers (that is, without substantial acts of invention) to develop these complementary bandwagon services with full external interlinking.

Law 6, *Human Integration*, with its dominate tone of the answered question, suits the new perspective just fine. Awareness of the unknown is crucial, as is an understanding that we’re likely to be wrong in whatever we do. It will help that we know the importance of bandwagon economics, of the broad interlinking by users across many independent third parties, and that identity is something that users create and distribute. Reduced to fundamentals these underscore the communications metaphor in the law: the need for predictable ceremony, but over a *very limited* aspect of the domain. Further, facing the dynamics of the human psyche, we must recognize that what is most enduring and effective is consistency in principles, not manifestation.

Consistent Experience Across Contexts, Law 7, is of great interest to me. Our discussion above reinforces the central necessity of serving the user, a necessity that impinges on many of the other laws. For example, the dominance of the rule of consistent principle, not manifestation.

There are two narrower characteristics that come into relief in the wake of the discussion. One is that having explored how customer control the creation and application of the most powerful forms of identity (somewhat captured in this law as self-asserted), the remaining identities, the “issued” identities are no more contextually anchored. That is, neither the professional identity, the credit card identity, or even the citizen identities require that the “identifier” be issued by other parties. It requires only that the parties can agree on how the relying party will verify the applicability of the identifier for the purpose. Undoing our conflation of these aspects is important for enabling users to direct the broadest interlinking they find useful among third parties. We have to avoid the “any color as long as it is black” problem. If users have to re-create the identities generated with under the current casting of this law for controlled identities then we’ll have offered them no viable alternative for monetizing their own creations. We will be stuck where we are.

The other characteristic is the order for “thingifying.” Order matters, and first we should tend to the Identity Internet itself. Making manifest and manageable the identities that users create will be beneficial, but these will likely take as many forms as do user documents and actions today (probably more, as their creation is no longer solely in the hands of the vendors). This will be dependent on how we’ve manifest the Identity Internet.

Conclusion

We’ve explored how identity in electronic media is fundamentally a new, disruptive technology, controlled by new providers with new economics. This change is made possible, and necessitated, but the need to develop bandwagon economics around identity—without these effects, deployment of identity would be limited to just operational and risk domains. The pursuit of bandwagon economics requires achieving broad interlinking across many, all, communities using an unlimited range of third-party complementary bandwagon services.

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To achieve this we will need a particular kind of identity technology, an integral approach to identity throughout the entire stack of interdependent services, from the lowest layers through the highest application layers.

These phenomena, this technology, and the forced changes in the economic landscape, is called the Identity Internet.

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