

FINDING A PLACE IN THE EPUBLISHING ECOLOGY

OR HOW I LEARNED TO STOP WORRYING AND LOVE THE BOMB

Peter Burrows, Michael Coburn and Daria Loi

INTRODUCTION

In this chapter we contrast understandings of the market predicated on supply chain thinking with an emerging understanding of an *ePublishing ecology*. In addition we suggest that the metaphor of an ecology is far more appropriate when trying to understand the real-time dynamics of technologically enabled markets.

We show that the technology driving the growth of the existing ePublishing ecology lends itself to a network view of the market rather than a hierarchical or linear one. Where relevant we underscore the key infrastructure and technology components that will play a part in this growth. All of these newer technologies can be understood in terms of the dynamic and loose connectivity exhibited on the Internet.

We also examine the importance of the behaviour of people who use the many networks enabled by the Internet in order to understand how the ecology might grow. In doing so we suggest that the opportunities that emerge for people in the print and publishing industries will be in line with the growth of these networks, and can only be understood within their parameters.

VALUE CHAINS

One of the more common concepts used to describe how goods find their way to consumers is the supply or value chain. This concept describes a vertical, linear chain, one that has a specific beginning, middle and end. The consumer is portrayed as the final entity in the chain—the recipient of a flow. Implicit in this model is

the flow of money, collected from sales, back up the value chain via intermediaries to the originator. It is worth noting that even in this top-down, linear flow the consumer may not be the person or entity that ends up using the product or service.

A simple value chain, which would apply to the current publishing industry, might start with the author as originator, with the work travelling via the publisher, printer, wholesaler, distributor and retailer before ending up in the hands of the consumer. It is not clear however, that this mapping applies in the domain of electronic publishing. Over time some of the entities in this chain that deal with the book in its physical form might be dis-intermediated.¹ How then should we depict the value chain and its relationship to the consumer?

EPUBLISHING ECOLOGIES

Recently the idea of using an ecology as a descriptive metaphor for the dynamics of the market has emerged. This idea rejects the notion that there is a single, linear value chain, and attempts instead to map out the relationships and inter-dependencies that exist between a range of people and entities in an industry. This idea is particularly useful when considered in the context of the environment in which electronic publishing is evolving, namely the Internet.

Recently the Open eBook Forum (OEBF) released a draft document for public comment entitled, *A Framework for the ePublishing Ecology* (2000). While the framework in this document was developed in order to articulate the digital rights management strategy of the OEBF, it was then generalised in an attempt to describe the entire e-publishing ecology. It was intended as a tool for technologists trying to understand how electronic publishing might work, in order to build a supporting infrastructure.

The ePublishing ecology as it is described in this document is built around the distribution of *digital objects*. In this framework a digital object is a recursive definition, and includes any object that might be exchanged between actors. This can include parts of a

¹ According to Berghel (2000) the term dis-intermediation 'applies to any and all contexts where one eliminates the middleman.'

document (chapters, paragraphs, tables, etc.) or any of these components as individual objects.

While the framework was devised specifically to describe publishing in the electronic domain, the authors suggest it is general enough to describe other types of publishing, such as music, film and images.

Additionally this paper introduces an ontology, or shared language, which can be used to discuss and analyse aspects and characteristics of the ePublishing ecology. For the purpose of this chapter, terms that are capitalised are intended to have the meaning outlined in the framework.

Central to the framework is a reference model, which maps out the OEBCF's vision of the ePublishing world. This model divides the ePublishing world into several Domains, which include commercial, government, academic and others. Each of these Domains has four constituent Elements, namely Objects, Roles, Interactions and Authorities.

In this framework, Roles are played by Actors, which can be a person, organisation or system. There are three types of Roles described in the framework, Originators, Intermediaries and End-Users. Originators are those who create content, usually Authors. End-Users are described as those who purchase and 'consume' the works of Originators. The category of Intermediaries is reserved for everybody in-between. This includes editors, publishers, agents, of which there may be zero or more. Intermediaries may also interact with each other.

Interactions happen between Actors, or players of Roles. A number of interactions that are related to performing a particular task, are collectively called a Function. In the framework an example of the editorial Function is said to possibly consist of, 'numerous interactions between and sometimes among agent, author, desk editor, copyeditor, designer, desktop publishing operative, proof reader, indexer, cover designer, and packager.'

An Interaction can result in Objects being passed between Actors. Objects can describe payments, agreements, information, and most importantly, Digital Objects—the work of an Originator.

The governmental or regulatory context within which Interactions occur is called an Authority.

The last part of the model is a set of Perspectives, which indicates that each Domain and the Elements it contains can be viewed from three different Perspectives, specifically Social, Legal and Technical. Again, an example is given in the framework of buying a book for a friend— ‘From a social perspective, the “thing” you buy is a Gift. From a business perspective, it’s a Purchase. From a legal perspective, it’s a License. And from a technical perspective, it might be an XML file that encodes the rights associated with the book you bought.’

Of particular interest though are the ideas of Roles and Interactions. Interestingly in the framework, Roles are separated from the entity performing them. This is to accommodate growth in the ecology and the idea that roles may be effectively passed between actors as well. The framework defines a self-publishing author as one who initially plays the Role of originator, editor and retailer. Over time this Actor can delegate any of those Roles to other actors, for example, engage a publishing service company to take over the role of editor.

This idea, which we choose to call *role flexibility*, is an important one. Role flexibility is exhibited by any Actor who delegates or assumes a Role.

The framework also articulates a number of stakeholders who must be accommodated when an electronic publication is produced or when a new system or standard is proposed. These are listed as being; Originator, Rights Holder, Publisher, Service Provider, Technology Provider, Seller, Distributor and End-User.

Once the discussion mentions ‘stakeholders’ the structure described starts to look suspiciously like a traditional value chain. Some of the stakeholders who dealt with the physical book in the past have been replaced with their *virtualised* counterparts. Here the Distributor becomes Technology Provider, Wholesaler becomes the Service Provider and the Retailer the Seller. Is this really what the value chain will resemble in the world of electronic publishing, or is this model designed to placate incumbent placeholders in the publishing value chain?

Within this structure there is a raft of important relationships that are omitted—principally the relationships between users and that which is used. These are relationships associated with practice.

For example, a literary work becomes a *digital object*.² A book of poems, a poem within that book and a stanza within that poem become nested digital objects. It is a language that evokes a technologist's world. The value of such a view is in the specificity of structure that is describable; the downside is that it cannot be translated into human terms and leaves aside crucial matters of user practice.

The focus of the OEBF authors on *authorities*³ and *governance structures*⁴ implies that an ecology can be designed and controlled through the development and implementation of standards and rules. However, if the standards developed are skewed toward commerce and control rather than user practices, and are agreed in the absence of the user, they may miss the mark.

In the past it has been possible for those with control of capital, business proprietors and government agencies to design and agree on standards and enact rules and laws to govern others. The practices of people were considered insofar as those practices were deemed to be in accordance with the standards and laws designed to control those practices. In order to operate in these highly structured and rule-dominated domains users were expected to abide by the rules. Principally the rules were concerned with matters of commerce—the ownership, trafficking and control of objects.

Whilst there are many entities working to develop and promote governance structures for electronic publishing, there are other entities acting to subvert such initiatives, operating outside formal authorities. In the electronic publishing domain, user practices are slippery and more difficult to tie down than in traditional publishing domains. Some users are not interested in issues of intellectual property, copyright or control of content, preferring an open sharing of ideas. Furthermore the OEBF authors persist with

² Defined in the OEBF glossary as 'A sequence of bits that incorporates unique naming, metadata, and content. It may be recursive, enabling management of objects at multiple levels of granularity.'

³ The term *authority* as defined in the OEBF glossary (p.5) refers to 'An entity having the moral or legal right and ability to control other entities in a particular domain, e.g., providing policy and enforcement in the trafficking and trade of Digital Objects.'

⁴ The term *governance* as defined in the OEBF glossary (p.6) refers to 'The act, process, manner or power of exercising authority and control: government.'

the notion of a flow of objects between Originators and End-Users.⁵ This notion is consistent with the dominant supply chain paradigm but is only one of many ways of framing up the domain of electronic publishing.

We suggest that an ePublishing ecology cannot be designed and controlled through standards or rules. An ecology evolves and is shaped in large part by the practices of users. Although an ecology cannot be designed, strategic and well founded relationships and partnerships with others can be forged if the nature and topology of the ecology is understood.

O'REILLY'S ECOLOGY

There are however, others who have talked about markets in terms of ecologies. One of these people is Tim O'Reilly, the founder and president of O'Reilly and Associates—one of the most respected computer book publishers in the world. He was also largely responsible for creating the Global Network Navigator (GNN), the first web portal and the first truly commercial site on the web (the first to utilise banner advertising).

His company has a long history of publishing books in digital form for use by people in the computing industry. The company's first book was published in electronic format in 1986. Their early efforts resulted in the development in 1991 of DocBook,⁶ a Document Type Definition⁷ (DTD) specifically suited to books and papers about computers.

O'Reilly has a view of business ecologies that characterises them as being dynamic, organic and evolutionary (O'Reilly, 2000a). Rather than focussing on reframing supply chains in a network environment, he underscores the growth and dynamism that is inherent in ecologies.

⁵ The term *end-user* as defined in the OEBF glossary (p.6) refers to 'The category of person for whom an epublication is produced. Usually someone who buys or borrows and reads an epublication'. This definition is illustrated in the text through a number of examples. 'End-users (e.g., consumers, readers, library patrons) purchase and consume electronic publications' (p.11).

⁶ <http://www.docbook.org/oasis/intro.html>

⁷ DocBook supports the eXtensible Markup Language (XML) and the Standard Generalised Markup Language (SGML).

He gave an illustrative example in one of his talks,⁸ contrasting his experiences as a traditional publisher with his more recent experience as a web publisher. He pointed out that while making his first steps in the world of publishing his path was illuminated by the practices of other players, accepted standards and governance that apply to the traditional publishing ecology. One of the functions of an existing ecology is that they 'teach' those who operate within them.

He further reflects that when trying to establish a viable business model for the Internet it was really a matter of experimentation—there was no system in place to teach people—the ecology at the time was not well developed enough. The first commercial web site was created on the web in 1993—and even today the web is not a fully developed ecology.

From this perspective the ePublishing ecology can be seen to be at an early developmental stage. This stage demands the same kind of experimental approach that O'Reilly described as being necessary for early Internet business ventures. O'Reilly's ecology metaphor may help us to recognise the kind of characteristics required in order for ePublishing markets to flourish. In particular O'Reilly emphasises cooperation, evolution and surprise as the key elements for a healthy ecology.

COOPERATION

O'Reilly believes that publishers should not try to 'do it all yourself.' In his opinion, the way forward in the electronic publishing domain is through partnering. The ability to enable partners is an important characteristic in entities that inhabit an ecology, and one that ensures growth. Mutual support engendered by partnering leads to mutual benefits. In the words of O'Reilly, 'If you want a big market, you have to enable lots of players.'

Ideas of cooperation also extend to electronic publishing system interoperability. When publishing systems are interoperable they adhere to standards for content and interchange, allowing all players in the ecology, including users, to utilise each other's content. This is a classic example of the 'network effect'—where the value of the network increases with the number of people using it. With software

⁸ Digital Rights Management and Digital Distribution for Publishing Conference held August 15th and 16th, 2000, at the Hotel Niko in San Francisco, California.

interoperability, everyone is using the ‘same network’, and all participants in the ecology are enabled as partners, making the offerings of all publishers more valuable.

EVOLUTION

Cooperation through partnering has an effect on the form and extent of a business ecology. An ecology evolves and increases in size and complexity as new relationships are formed. As O’Reilly puts it, ‘while things start simple, they grow complex. This is good. This is not bad. When the ebook marketplace is mature, we will see lots of intermediaries.’

Readers will be subjected to this increased complexity, and will need help in locating and navigating the multitude of independent author and publishing sites. This presents an opportunity to intermediaries who can step in to provide aggregation as a service to readers.

This highlights another aspect of evolution as it occurs in ecologies—the evolution of the roles of entities in the ecology. As the nature and composition of the ecology changes, many entities will have to act and respond differently to ensure they still have a role. To some degree, the evolution of the electronic publishing ecology will be governed by the infrastructure on which it is built.

SURPRISE

The last feature of an ecology, as described by O’Reilly, is surprise—the ability of individual entities to prosper due to unforeseen circumstances. In the case of an ePublishing ecology this could refer to unexpected and serendipitous discoveries and opportunities that are uncovered through partnering.

Conversely, surprise can be understood as being manifest in the unexpected actions and repeated behaviours of readers in the ePublishing ecology.

While O’Reilly’s idea of an ecology is descriptive of the actual dynamics that occur in ePublishing, he still adheres to the notion that the ePublishing ecology must evolve to ‘look like’ the print publishing ecology if it is to be successful.

At this point the authors disagree with O’Reilly. An ecology will emerge, but its form will be dependant on all the entities within the ecology and the environment in which that ecology is embedded.

There are a number of factors that suggest that the ePublishing ecology will evolve very differently to the one that has evolved around the very physical world of print publishing. Those factors particularly of interest are the practices of readers and the environment within which the ePublishing ecology exists—the Internet.

WEINBERGER'S WEB

An ePublishing ecology is part of a much larger ecology—the Internet. As such ePublishing shares some of the dynamics at work on the web. The web was created

...[W]ithout any managers...[and] only succeeded because its designers made the conscious decision to build a network that would require no central control...The Web is profoundly unmanaged and that is crucial to its success. It takes traditional command and control structures and busts them up into many small pieces that then loosely join themselves (Weinberger, 2002).

This description of the web comes from a yet to be published book, *Small Pieces Loosely Joined*, written by David Weinberger. Weinberger's 'book' was authored online, in public, as it was written and the passages we quote here are from the first chapter.

'Suppose I were to put up a web site where people could read each day's writing and talk with me and with one another about it?' Weinberger rhetorically asked himself in his first web log entry which operated alongside the authoring of the book. Or perhaps the web log *was* the book because later in the same entry he says that his approach, 'will turn readers into collaborators'.

When Weinberger says the web's existence 'is a slap in the face of the managed world', he identifies a characteristic of the web that we believe can be equally applied to ePublishing. An ecology cannot be managed. Entities that thrive in an ecology become part of that ecology because they have a capacity to contribute to the well-being and livelihood of other entities and vice versa. The concept that the web is 'many small pieces that then loosely join themselves' is consistent with this view.

THE CATHEDRAL AND THE BAZAAR

Eric S. Raymond, one of the early proponents of Open Source Software development, chooses to contrast new Internet based models with the old world models by using the metaphors of the cathedral and the bazaar (Raymond, 2001). There is a parallel to be drawn between the creation of software using the model of the bazaar and the process of content creation (including writing) in this mode.

He identifies most commercial approaches to software development as based on a 'cathedral model... carefully coordinated by a relatively small, tightly-knit group of people.' He juxtaposes this approach with a model based on 'a great babbling bazaar of differing agendas and approaches' that characterises the open-source Linux world. Linux is a computer operating system that has been developed and improved by the community of people that use it. The source code is free and publicly available, meaning anyone can suggest or even make changes to it and submit those changes to be included in the main distribution. In this sense, every user is potentially a creator, and the software that results has been jointly created by all who use it.

Raymond believes that the most important feature of Linux 'was not technical but sociological'. Until Linus Torvalds' approach of 'release early and often, delegate everything you can, be open to the point of promiscuity', people 'believed that the most important software needed to be built like cathedrals, carefully crafted by individual wizards or small bands of mages working in splendid isolation, with no beta to be released before its time'.

Logic would suggest that such a loose approach to development should fall apart but instead it 'seemed to go from strength to strength at a speed barely imaginable to cathedral builders.'

ARE YOU ON THE INTERNET...

The Internet enables many new models of content creation and distribution. However, many of these models map systems and processes from the physical world onto the web. For example, the current model for commerce on the web relies largely on creating a 'presence', usually in the form of a web site that serves as a virtual

shop front. By creating a 'place' on the web, providers of content expect customers to traverse the web in order to visit that place.

This is however, a somewhat artificial view of the web, and is not indicative of the architecture of the Internet. It's worth mentioning here that the web is quite different from the Internet. The *Internet* is simply a huge number of computers that are interconnected, providing the backbone of the network. The first of these connections was made in 1968 and the Internet has grown steadily ever since. The *web*, which emerged in the early nineties, is made up of web sites that are connected in ways that have nothing to do with the physical connections between machines. To paraphrase Weinberger (2002), the Internet is hardware, the web is software.

What then might be the next type of software?

There is a new type of software that mirrors the workings of the Internet operating under the banner of Peer to Peer (P2P). The most famous piece of software that works in this mode is called Napster. It has been joined more recently by the likes of FreeNet, Gnutella, HotLine, Morpheus, KaZaA and others. P2P services seem to be thriving, a *surprise* in the publishing ecology, but one that is not to be ignored.

P2P is different from the current paradigm of the web in an important way—everybody's computer becomes a server. Everybody can publish content, and to do so is effortless. Many of these P2P networks are generic file sharing frameworks, meaning that *any* file that can be stored on a computer can be shared. This includes, but isn't limited to, music, pictures, video, software and text. A number of the systems named above are also completely decentralised. That is, unlike Napster, there is no central directory service that can be shut down.

There is a danger that as the practices of users becomes partially scrutable the desire of IP aggregators to restrict the exchange and flow of content and ideas increases. Such a desire demonstrates a failure to appreciate the value of these significant practices that were acceptable (or at least tolerated) in the world of traditional publishing. In the past, users did many things that are currently not permitted under the banner of Digital Rights Management (DRM).

O'Reilly (2000a), not surprisingly, also has something to say about this.

One of the things that also bothers me about some of the digital rights software that's out there is that it makes it hard for you as a user to share

information that you have. Now, there's a lot of fear about piracy, but there are some real dangers in the other direction as well. When I have a printed book, when I'm done with it, I can resell it, I can give it away to a friend. I very often will loan books to people who will then go buy their own copy... If we cut off things like the first sale right, used books, the ability to loan a book to a friend, in our approach to digital publishing, that pass-along ability, we cripple the ecosystem in a small way.

This could result in a network for content distribution that as a value proposition offers *less* to the customer. In this environment, the ecology will not grow and new markets will be constricted.

Rather than thinking about DRM mechanisms as a way of stopping the exchange of content, we believe they provide an opportunity that constitutes a viable new market. Content might be defined as existing on the nodes of a P2P network, or moving between them. Here information only becomes valuable when it flows, accumulations or aggregations of content are not valuable in their own right. The business model that is now being mapped onto the Napster system works on a subscription basis, allowing for the fact that users will pay for access to a stream of content, rather than per item. Rival systems with similar business models have been launched by two other music publishing company consortiums.⁹

The xSP¹⁰ architectures that have been promoted recently are about reframing software as a service or flow rather than a product. Microsoft's .NET¹¹ strategy, which is an Application Service Provider (ASP) architecture, is a specific example of this. Here users pay for the use of software services on a subscription basis.

Something that is less well known is that Microsoft is also exploring the domain of P2P. It is rumoured¹² that they are adding native peer-to-peer-capability into the next version of WindowsXP. This is mainly to facilitate collaboration services, but this level of connectivity at operating system level will open the way for the provision of numerous P2P style services.

These P2P models become particularly interesting when viewed as an abstract model of a physical network, where the peers are

⁹ <http://www.pressplay.com> (Sony, EMI and Universal artists) and <http://www.MusicNet.com> (EMI, Warner and BMG).

¹⁰ The designation xSP describes a range of service provision models, including Application Service Provision (ASP) and Management Service Provision (MSP).

¹¹ <http://www.microsoft.com/myservices/>.

¹² <http://www.theregister.co.uk/content/4/23852.html>.

hand-held devices. If content moves this freely between devices that are tethered to desks in the home or office, what might be the implications if these devices are moving with people while constantly connected to a wireless network?

... OR OF THE INTERNET?

The way P2P works seems to have a lot in common with Raymond's Bazaar and Weinberger's Web—unmanaged, momentary, self-motivated interactions involving many 'small pieces loosely connected'. When closely examined, P2P systems reveal a number of potential 'services' that map to, and take advantage of, the network architecture of the Internet.

Napster can be seen as an aggregator of content and of users, but users come together around things slightly more ephemeral than a store, let alone a virtual one. Aggregators like Napster can be seen as occupying a 'space' around confluences in reader preferences or requirements. These spaces dissolve as quickly as they are created, and this fluidity is facilitated by the P2P system.

Intermediaries can act as aggregators at several levels, aggregating offerings, sellers and buyers. The role of an intermediary is to establish a two-way relationship. For example, retailers don't just aggregate content for customers, they also aggregate customers for publishers.

At present in the music publishing ecology, the Napster model is only one of these possible new aggregators. In the ePublishing ecology there is not yet sufficient complexity to support a new kind of as yet unknown aggregator, but some thought can be given to what they might look like.

For example, there have been some patterns emerging around the use of the Napster system. O'Reilly (2000b) states that:

...[A]nother important lesson from Napster is that free riders,¹³ 'super peers' providing more or better resources, and other variations in peer participation will ultimately decrease the decentralization of the system. Experience is already showing that a hierarchy is starting to emerge. Some users turn off file sharing. Even among those who don't, some have more files, and some have better bandwidth. As in Orwell's *Animal Farm*, all animals are equal, but some are more equal than others. While this idea is anathema to those wedded to the theory of radical

¹³ Users on Napster who don't offer any songs to others, retrieving solely from others.

decentralization, in practice, it is this feature that gives rise to many of the business opportunities in the peer-to-peer space. It should give great relief to those who fear that peer-to-peer will lead to the leveling of all hierarchy and the end of industries that depend on it. The most effective way for the music industry to fight what they fear from Napster is to join it, and provide sites that become the best source for high quality music downloads.

These models of how people connect with and relate to each other change the way we think about how they access information. Much more than a virtual community, these are dynamic communities, constantly in flux. Place matters less in this world—connections made momentarily mean that the space that users operate in is constantly reshaped. It must be remembered that ecologies are intrinsically evolutionary, and it is not feasible to think in terms of *building* them. However it is possible to facilitate a diverse range of user practices in order to watch for and eventually capitalise on patterns and trends. An understanding of this represents an opportunity for publishers to be *of* the Internet as opposed to *on* the Internet.

ROLES AND RELATIONSHIPS

In traditional, well-established markets, competition is a primary imperative. In new and emerging markets collaboration and cooperation are needed in order to expand what the market has to offer. Partnerships between stakeholders make possible innovative product service offerings that are beyond the scope of single entities operating alone.

The opportunities that surface through partnering may be unexpected and serendipitous, building on the network, skills and expertise of each entity. In emerging markets collaboration may be necessary in order to survive.

In an interview with John Carrucan, the Vice President of XSIQ, a Victorian based educational software development company, Mr Carrucan spoke of a shift in his understanding of what was required to succeed in the emerging ePublishing ecology. He observed that the ecology represented by the market in Australia was not big enough to sustain competition. Whereas a year earlier he had treated others in the market as competitors, he was now collaborating with them to pool content and offer services.

In this early evolutionary phase of the ePublishing ecology it may be difficult to identify suitable roles. Some roles may overlap or be confused with other roles. Roles may be performed by different entities in different contexts. An emerging ecology demands role flexibility to support changing user practices that are currently only partially understood.

From the OEBF perspective, role flexibility focuses on the role being performed rather than on the entity performing the role. The evolutionary character of the ePublishing ecology suggests that the correspondence of roles to people and organisations will be unstable; roles and role players will change as the ecology develops.

A particular person or company may play more than one role or may delegate a role to another player. In the OEBF example an author begins by playing the roles of editor, publisher, promoter and retailer but as the author's work becomes more popular some of these roles are delegated to an intermediary. The concept of role flexibility refers to both the delegation of roles, as a role becomes too complex, and the concentration of roles in one player, where that makes sense. Mediating opportunities exist for both kinds of roles. Once roles have been clarified and articulated, there is an opportunity for new relationships between publishers, potential partners, and their users.

The concept of role flexibility may be perceived to conflict with long standing notions of what constitutes the core business activities of an entity. Some roles will be perceived to be inappropriate or not viable, but an analysis of potential roles may reveal as yet unseen opportunities. What was not viable last year or last month may soon be feasible. As the ecology grows in size and complexity, aggregating and facilitating roles for mediators are likely to emerge. These roles are likely to follow the trajectories inscribed by barely visible paths of user practices.

Publishers need to modify their territorial thinking and to open up collaborative opportunities with other stakeholders. It is not a matter of losing markets or controlling content, but a matter of gaining new markets, exploring different layers of control, and finding alternative ways of interpreting and delivering content.

A PLACE IN THE EPUBLISHING ECOLOGY

So far in this chapter we have opposed the dominant concept of a vertical, linear value chain with the concept of an ePublishing ecology. We have adopted the term ecology as a descriptive metaphor for ePublishing markets that we perceive to be dynamic, organic and evolutionary. Whereas new entrants to traditional publishing could follow in well-worn paths inscribed by others, those paths are faint or confused for prospective publishers.

At present the ePublishing ecology is at an early evolutionary stage. Developments in ePublishing are taking place in an unmanaged and uncoordinated manner, more consistent with the ad hoc style of Eric S. Raymond's bazaar than the carefully constructed cathedral.

This should not be surprising, given that the home of these developments is the Internet. From a strategic perspective these developments may seem to be incoherent—a babble of loosely connected activities that somehow bring users together or that conversely coalesce around users. But we believe that ePublishing opportunities will emerge in response to the unexpected actions and repeated behaviours of active *readers as users*. Prospective publishers will need to follow these emerging paths of practice.

If the current crop of digital rights software makes it more difficult for users to share information, how will that effect the growth of an ePublishing ecology?

Ideas of supply chain disintermediation can be contrasted with thinking that recognises that patterns of use are orthogonal to patterns of commercial activity. Supply chain disintermediation relates to cutting out the middleman, but this commercially motivated intervention may be of little interest or practical benefit to users.

Patterns of use operate alongside commercial activities and are informed by user experiences. Peer-to-peer models of use persist despite efforts to close, control, or contain them. The concept of Super Peers who add value to the peer-to-peer experience may be the basis of new models of commerce that acknowledge user practices.

Further examination of the practices of users can indicate the types of aggregation or access that are necessary to support commercial activities. Recognition of these emerging opportunities comes from listening to and observing diverse practices.

In this context new intermediary roles will become viable as the ecology grows in size and complexity. New ecologies of production and consumption will develop, networks will form between role players, and products and services that map to users' practices will prosper.

CONCLUSION

Partnerships are not new, but the difficult question is how to determine who to partner with and on what basis. We encourage printers and publishers to reflect on their current roles and relationships in the light of the changing user practices we have described.

If it comes to a choice between the confusion and babble of a bazaar and the reassurance and stability of a cathedral many publishers may prefer the ordered environs of the cathedral. But the capacity of traditional publishing markets to sustain the current complement of intermediaries is unclear. Publishers looking to create new markets will have to come to terms with the babble of the bazaar. This means adapting or creating offerings for a networked environment of interconnected users. Being where users are may be more important than attracting users to your offerings.

One thing is clear—the concept of *surprise* in an ecology is simple yet compelling. The ePublishing ecology is currently growing at a slow rate, yet the experience of Napster indicates that changes in user behaviour and technology can precipitate dramatic changes in an ecology.

Players in the print and publishing industries need to have a deep understanding of users' practices and technology in order to recognise opportunities in the dynamic market represented by the ePublishing ecology.

NOTE

PROJECT-MU conduct all of their work in a collaborative mode. All authors contributed equally to this chapter and are listed alphabetically for convenience.

ACKNOWLEDGEMENTS

John Carrucan of XSIQ

REFERENCES

- The Open eBook Forum (2000) *A Framework for the ePublishing Ecology* [Online]. Open eBook Forum. Available from: www.openeBook.org [accessed January 2002].
- O'Reilly, T. (2000a) *The Ecology of EBook Publishing* [Online]. The O'Reilly Network. Available from: <http://tim.oreilly.com/publishing/drmtalk.html> [accessed January 2002].
- O'Reilly, T. (2000b) *Remaking the Peer-to-Peer Meme* [Online]. The O'Reilly Network. Available from: http://www.openp2p.com/lpt/a//p2p/2000/12/05/book_ch01_meme.html [accessed January 2002].
- Raymond, E. S. (2001) *The Cathedral and the Bazaar*, O'Reilly and Associates, Cambridge.
- Weinberger, D. (2002) *Small Pieces Loosely Joined* [Online]. Perseus Books. Available from: <http://www.smallpieces.com/content/chapter1.html> [accessed January 2002].