

## e-mutualism? or the tragedy of the dot.commons?

In which the author considers the development and future prospects for the Internet, and how the co-operative ethos has infused it from its inception and may, if appropriate action is taken, continue to support its future development and growth

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## 2 PREFACE

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*'A spectre is haunting the Internet - the spectre of commercialism. All the powers of the old Internet have entered into a holy alliance to exorcize this spectre: USENET groups, academics, IETF members and civil libertarians.'*

*(after Karl Marx and Frederick Engels, The Communist Manifesto<sup>1</sup>)*

It may seem that linking the Internet and the World Wide Web with the political approach that has come to be called 'new mutualism'<sup>2</sup> is the worst sort of bandwagon jumping, an opportunistic attempt to give some spurious credibility to yet another variant of Third Way politics.

I trust that I can demonstrate that this is not the case. If anything the Internet is the biggest successful experiment in mutualism ever attempted, and it is laissez-faire free-market capitalism which has sought to gain unjustified credibility by association. After all, how many other co-operatives have almost three hundred million members, doubling in size every eight to nine months, or handle over five *trillion* pounds of trade each year?<sup>3</sup>

I will argue that the Internet is important to the debate about mutualism for two reasons. The first is that the Net itself is an excellent example of the power of mutualism, having been created and managed through the co-operative effort of tens of thousands of individuals and organisations. Second, the Net provides an infrastructure on which mutual organisations can thrive, opening up new potential for fast, effective communication and co-ordination of action, collaborative and consensus-driven decision making and global action. While the co-operative movement finds itself rather unfashionable with politicians and economists - 'perceived as old-fashioned and marginal', as Ian Hargreaves puts it<sup>4</sup> - the Internet is both fashionable and central to global economic development. Tying the co-ops and the Net together through their shared mutualist underpinnings is therefore a useful reminder of the value of co-operation.

In making this case it will be necessary to review the history of the Net and its underlying technology. This is generally considered an error in a political pamphlet, whose readers are assumed to be technophobes and scientific illiterates. However the

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<sup>1</sup> Marx K Engels F 1848, (1888 translation). P1

<sup>2</sup> Outlined in a series of pamphlets published by the Co-operative Party, of which this is the sixth.

<sup>3</sup> For the size of the Internet see <http://www.nua.ie/surveys/> Forrester Research projects that online retailing will grow from \$38.8 billion this year to \$184.5 billion in 2004, analysts estimate that business-to-business transactions will reach \$2.7 trillion to \$7.3 trillion by 2004 from about \$131 billion in 1999. See [www.forrester.com](http://www.forrester.com)

<sup>4</sup> Hargreaves 1999. P15.

Net has made us all geeks<sup>5</sup> under the skin, and I am sure that those who are interested in mutualism will find the technical aspects worth wading through.

We will begin with a general overview of the history and development of the Internet, making its mutualist underpinnings clear. We will then look at the current state of the Net and at the impact of commercialisation on the public space behind our computer screens. This will lead to a discussion of ways in which the 'old' Net can be preserved, and what action could be taken by Government and others.

Finally, we will explore ways in which the mutual Internet can provide a basis for other co-operative endeavours, concluding with a discussion of the wider lessons that can be drawn from the Internet for the mutualist project.

Bill Thompson, Cambridge, March 2000

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<sup>5</sup> While the term originally referred to a fairground entertainer noted for biting the heads off live chickens, it is now used more generally as a term of mild abuse for someone interested in technology.

## 3 THE HISTORY OF THE INTERNET - MUTUALISM IN ACTION

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### 3.1 THE MUTUAL REVOLUTION?

Mutual endeavour has shaped our world, and mutualism, the belief that 'individual and collective well-being is obtainable only by mutual dependence'<sup>6</sup>, underpins family life, relationships and society. Our ability to work together on joint enterprises is the basis of our survival as a species. While capitalism may provide an economic model which privileges the individual and private ownership of the means of production, co-operation is still as important as competition for our survival and development.

We are also in the middle of a revolution as profound as the Industrial Revolution of the 18<sup>th</sup> century. While philosophers debate the likely impact of the Internet and conclude that 'the truth... lies somewhere between the fears of the Neo-Luddites and the hopes of the Technophiles'<sup>7</sup>, we observe that the Internet is changing the way we shop, learn, find entertainment, work and do business. Everything seems to be changing, and we look to the Internet to underpin a new economy and to facilitate a new model of social organisation, to take us beyond post-industrial capitalism and into a new age.

In doing so we are relying on a co-operative enterprise to enable capitalism once more to reinvent itself. The history and current success of the Internet is a concrete demonstration of the power of co-operation and the effectiveness of mutualist thinking. Within the heart of the United States military-industrial complex a group of computer scientists, academics, bureaucrats and politicians managed to spend several billion dollars building a distributed network that had no control, no centre and no real function other than to satisfy their own desire to communicate and collaborate more effectively. Now that same network provides the infrastructure for an economic and social revolution.

Marx would be proud of the irony of the situation - but he would also observe that capital has never let philosophical abstraction or inherent contradictions stand in its way before, and shows no sign of doing so now. If capital needs the Net in order to survive, then it will take it and use it, whatever the history or underlying principles behind its growth and development. The mutualism that lay behind its development could easily be swept away in the rush to develop this new economic frontier.

### 3.2 MUTUALISM

In considering the relationship between mutualism and the Internet I have been largely guided by Peter Kellner's argument, put forward in the first pamphlet in the current series from the Co-operative Party<sup>8</sup>.

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<sup>6</sup> Definition taken from the Oxford English Dictionary

<sup>7</sup> Graham 1999. P168

<sup>8</sup> Kellner 1998.

Seeking an alternative term to the sadly discredited 'socialism'<sup>9</sup> he proposed *mutualism*, claiming that it is 'not an ideology in the Marxist or free market sense'<sup>10</sup> but is instead 'a doctrine that regards society as organic rather than mechanical.'<sup>11</sup>

Mutualism is grounded in the idea that we should have regard to other people and their needs, and that we can achieve more when working together than we can acting as selfish individuals. It is also, at least in Kellner's formulation, a pragmatic approach to politics, allowing for a degree of flexibility that doctrinaire adherents of other positions on Left or Right would find unacceptable. Some see it as the principle underlying the Third Way, but it is not necessary to make this claim to appreciate that mutualism and mutual responsibility provide a foundation for arguing for a fairer, more inclusive society.

### 3.2.1 WHAT THE INTERNET DOES

The Internet - or the 'Net' - is the name given to the world's largest co-operative system: a collection of interconnected computer networks that between them provide access to over sixty million computers used by over 250 million people<sup>12</sup>.

The core capability of the Internet can be simply put: it moves **bits** around. Bits, the ones and zeroes used to express all computerised information, are the material from which the digital world is constructed. A music CD is a collection of approximately 5.5 billion ones and zeroes<sup>13</sup>, all in the right order - it can be decoded by a CD player and appropriate equipment to produce a pattern of sound vibrations.

The Internet was developed to move bits and to do so reliably. It was not designed to do so rapidly, although current technology gives us the ability to ship tens of millions of bits per second over fibre-optic cable, and even a PC with a modem can send and receive tens of thousands of bits per second.

## 3.3 WHERE THE NET CAME FROM

The Internet is often presented as a triumph of the free market, as if the whole thing was designed, developed and run by private enterprise. In fact the Net has only become a predominantly commercial environment in the past five years. It was largely built with government money, mostly in the form of military contracts for research in computer science in the US and Europe<sup>14</sup>. The Net is a product of the military-industrial-academic complex, a large-scale attempt to build a computer

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<sup>9</sup> The present writer certainly feels that the loss of the word - and its underlying philosophy - is to be regretted.

<sup>10</sup> Kellner 1998. P7

<sup>11</sup> *ibid.*

<sup>12</sup> <http://www.isoc.org/internet/history/brief.html> has an excellent introduction to the Internet's development, written by the people who were there at the time.

<sup>13</sup> A CD holds approximately 650 megabytes. Each byte is 8 bits. A megabyte is 1048576 ( $2^{20}$ ) bytes.

<sup>14</sup> See also Naughton (1999).

network to which any sort of computer could be linked and which would support all forms of collaborative and distributed working. It succeeded precisely because the money was there to do what worked rather than what would generate a return on investment. Instead of trying to generate competitive advantage from the network, the engineers working on it cared only that it carried on working. This lack of commercial impetus meant that the early Internet developed in such a way that it was able to expand rapidly and to cope with several generations of technical evolution without needing to be substantially re-engineered.

The Internet as we currently know it was created on January 1<sup>st</sup> 1983 when several existing computer networks around the world linked themselves together for the first time. The most important of these **interconnected networks** (the source of the name 'Internet') was the ARPANET, an experimental network that had been established in the United States in 1969 and which had grown, by the time it joined the Internet, to connect 113 sites in the US and Europe<sup>15</sup>.

The creation of the original ARPANET was far from a co-operative venture, but it rapidly became one. The ARPANET was set up with funding from the Advanced Research Projects Agency of the US Department of Defense at a time when the US military was concerned about how they would continue to communicate following a nuclear attack.<sup>16</sup>

Work carried out at the Rutherford-Appleton Laboratory in the UK and by the Rand Institute in the United States had demonstrated that the computer-computer links at the time, which relied on using a fixed telephone line to establish a connection between the two systems, were vulnerable because if a link was broken there was no way to re-establish a connection without losing data that was in transit at the time. Research led to the development of 'packet switched circuits', where messages between any two computers were broken down into small sections or 'packets' and send over a grid or network of connections between the various computers in a system.

Packet switching offered many advantages. The physical network which connected the computers provided multiple paths between any two computers, so if one link was broken then others could be used. Furthermore, the packets were reassembled at the recipient end and because each packet was numbered in sequence missing ones could be identified and re-sent. The resulting network could cope with failures.

Although the ARPANET was a military-funded project work was carried out by university academics and commercial partners<sup>17</sup> who were more interested in figuring out how to build better, faster and more resilient networks than in solving command and control problems for the army. They were also interested in discovering how the newly established computer networks could be used to help people work together.

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<sup>15</sup> The network's thirtieth anniversary is commemorated at <http://www.internet30.org/>

<sup>16</sup> Although it is not true, as commonly claimed, that the ARPANET was specifically designed to survive such an eventuality.

<sup>17</sup> The best known is probably Bolt, Beranak and Newman, or BBN, who built the first ARPANET hardware.

### 3.3.1 COMMUNICATING ONLINE

One of the earliest programs written to use the ARPANET was 'talk'. This simple program allowed two people sitting at separate computers which were linked over the network to take part in a conversation. Using talk one's screen was split in half horizontally. What you typed appeared in the top half, and what your friend or colleague typed appeared in the bottom half **as they typed it**. As a result it was possible to have a 'remote conversation' over the network

## 3.4 BUILDING THE NETWORK

As the ARPANET developed more and more applications were developed, ranging from electronic mail to online bulletin boards to 'client-server' systems which let a user at one computer get access to programs or information on other network-linked computers. The field of CSCW - Computer Systems for Co-operative Working - was established, and continues to grow to this day.

The nearest equivalent to the Internet in terms of complexity and number of interconnected devices of different sizes and specifications is probably the telephone network. Anyone looking at the global phone system today would express satisfaction that such a large number of privately-owned networks can work together so seamlessly: but even here the initial networks were publicly owned monopolies, working together through the mutually-grounded International Telecommunications Union<sup>18</sup>.

## 3.5 WHERE IS THE INTERNET?

Despite the fact that it covers the world, the Internet does not exist in any external way. It is not an organisation that one can join, it does not have a president or a chief executive or even a management committee. It is a co-operative venture, but one that is not owned by anyone, not even its members. It is no more than 'a set of relationships between owners, workers and consumers.'<sup>19</sup>

In fact the Internet is best thought of as a joint technical undertaking: all the organisations and individuals who want to take advantage of the benefits which the Internet can offer must agree to conform to a set of technical requirements for connecting their computer networks to other computer networks.

The technical standards are agreed by a number of organisations, including national standards organisations like the British Standards Institute, and the International Standards Organisation. The World Trade Organisation has also expressed an interest.<sup>20</sup>

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<sup>18</sup> To learn more about how the phone system operates look at the ITU Website at <http://www.itu.int/>

<sup>19</sup> Leadbeater C and Christie 1 1999. P17

<sup>20</sup> In May 1998 the WTO General Council agreed to establish a work programme to examine all trade-related issues relating to global electronic commerce, including technical standards. The WTO is online at <http://www.wto.int/>

The Internet's governing body is the Internet Society, a voluntary organisation whose membership consists of companies, government representatives and individuals<sup>21</sup>. The ISOC, as it is known, is in overall control of the standards setting process through a number of other organisations, most notably the Internet Architecture Board (IAB) and the Internet Engineering Task Force (IETF). ISOC is the place where all the interests come together - and it is the body which outlines the requirements for getting connected to the Internet. It has no statutory power - only the ability to say what shall constitute an Internet standard - or RFC.

These requirements are not onerous: they are the basis for the interconnectedness that makes the Network both possible and valuable. And unlike externally imposed rules, the rules that make the Internet possible are generated from within, by open debate within a range of standards-setting organisations whose prescriptions are deemed to be mutually acceptable by the wider Internet community.

One of the most important aspects of the process is that Internet technical standards are not *owned* by anyone: they are intellectual property held in common, hence the description of them as 'open standards.' They can be changed only by mutual consent. They are published in a form which allows them to be used by anyone. And they are freely available online.

### 3.5.1 REQUEST FOR COMMENTS

The casual - some might say 'amateur' - approach to standards development on the Internet is best demonstrated by the 'Request for Comments'. Within the Net's technical community standards are developed under the aegis of the Internet Engineering Task Force, a loose coalition of interested and technically proficient individuals, many of whom represent major corporations or governments.

A standard is proposed as a written document (available in electronic form on the World Wide Web, of course) and after it has been through appropriate consultation and review, it is published by the IETF as a numbered 'RFC'.

This mechanism grew up in the early days of the ARPANET when the informal groups at the participating universities would meet for what were essentially technical seminars. Not wanting to appear dictatorial the person who took the minutes of the first meeting, Steve Cocker, a graduate student at UCLA, posted his notes as a 'request for comments' rather than an official record. The intention was that anyone with a legitimate view, one which they could defend, was invited to add their comment for general use.

The terminology stuck, as did the approach, based around the idea that the Net was and remains a mutual project and that all those who take part are therefore able to participate in its development and growth.<sup>22</sup>

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<sup>21</sup> The Internet Society is online at <http://www.isoc.org/>

<sup>22</sup> For more detail see Leiner et al., 1998. You can read the RFCs online at the IETF Website at <http://www.ietf.org>.

### 3.6 THE WEB: MUTUALISM IN ACTION

Not all Internet applications are co-operatively developed and owned: there are many proprietary tools used on the Net. But the most important Internet tool, the multimedia hypertext called the World Wide Web, is definitely a mutual undertaking.

The Web was invented in 1989 by a British physicist working at CERN, the European particle accelerator<sup>23</sup>. Tim Berners-Lee wanted a way to cross-reference papers on high energy physics which would allow researchers to discover connections between their work and enable all those analysing one particular set of experimental results quickly to find what else was known about the data they were working with.

His solution was to build a distributed hypertext system - the Web - where documents were stored on 'server' computers anywhere on the Internet and read by 'browser' programs on a user's computer. In order to design his system Berners-Lee did not have to worry about the underlying network or connectivity: he used the Internet and the technical standards it is based on. As such he was building 'in the commons'.

The Web is two linked standards. One, the Hypertext Markup Language, is a way of writing documents so that they incorporate instructions for Web browsers, telling the browser what to display where and how a document is linked to other documents. The other, the Hypertext Transport Protocol, is a way of moving HTML documents over the Internet from server to browser.

Both HTML and HTTP were designed by Tim Berners-Lee and then placed in the hands of the Internet community through the IETF<sup>24</sup>. Later, reflecting the growing size and importance of the Web, a new group - the World Wide Web Consortium or W3C<sup>25</sup> - was created to drive the technical development of the Web. The W3C is an open, independent body which does not even produce technical standards - it issues 'recommendations' which are then adopted or not by standards bodies and the Web community.

### 3.7 HOW MUTUALISM GETS RESULTS

The history of the Internet is a triumph of mutualism: all the many interests have worked together to create a system which is transforming the world. It shows that mutual endeavour is possible even between competing interests, that companies or individuals can work together under a mutualist structure in ways that are not otherwise possible.

One example of this occurred during the 'browser wars' in 1996 and 1997, when Netscape Corporation<sup>26</sup> and Microsoft Corporation were trying to gain the greatest

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<sup>23</sup> For the full story see Berners-Lee T, 1999

<sup>24</sup> Internet Engineering Task Force

<sup>25</sup> Online at <http://www.w3.org/>

<sup>26</sup> Netscape, now owned by AOL, built the first successful commercially available Web browser in 1994. Netscape Navigator was used by millions of people and prompted Microsoft to develop its browser, Internet Explorer.

possible market share for their Web browsers. Even while they were battling for market share, the two companies were separately represented on the Web Consortium working groups, where they worked together to define technical solutions to issues which faced the whole Web community. The framework of this mutual enterprise - the W3C - forced the two to collaborate in the interests of the wider net community.

### 3.7.1 MUTUALISM IN ACTION: SUN MICROSYSTEMS

Mutualism is also behind one of the most renowned marketing strategies of the 1990's: Sun Microsystems' 'Internet play'. Sun is a multi-billion dollar US company which designs and builds powerful workstation computers. It makes its money from the hardware it sells. In order to create new markets for its products, Sun developed the following strategy:

Step 1: Spend millions of dollars developing computer programs that people will find useful.

Step 2: Give them away for free.

Put like this it sounds ridiculous - but the point of the Internet play is effectively to build a commons, a space within which the technology is valuable, and then to compete within the new market established by the existence of that commons.

It is as if McDonalds built a park (with no branding or marketing) and then put a restaurant by the entrance in the hope that people would buy burgers while visiting. But - and this is the real difference - there were no restrictions on other people building burger bars in the area. Sun believe that they can do a better job at meeting people's needs than their competitors and they are willing to create a market from scratch just so they can compete in it. They don't want to 'own' the commons - they just want to be able to do business on it<sup>27</sup>.

## 3.8 THE DOT.COMMONS

The contradiction at the heart of the Internet is this: the Internet is a mutual enterprise that supports the harshest and most brutal free market ever created. The market was not, until recently, based on economic value but on intellectual ascendancy, where the reward for good programming was simply to see your peers acknowledge your skills and use your code. A cross between the academy and the stock exchange, the Net allowed good ideas - expressed in computer language - to circulate freely and to be traded.

While there are many applications of the network - both the ARPANET and the Internet which emerged from it in 1983 - which encourage and promote co-operation in the widest sense, this does not imply that all applications are underpinned by mutualist principles. Indeed, many of the uses of the computer network - for more effective surveillance and monitoring of users, for example - are antipathetic to the philosophy.

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<sup>27</sup> For an illuminating contrast with marketing strategies in the real world, see No Logo (Klein, 2000), especially page 91 on Coke vs Pepsi.

Yet we have seen that the very existence of the network, the nervous system of our modern society, depends absolutely on the mutualist doctrine that 'individual and collective well-being is obtainable only by mutual dependence.'<sup>28</sup>

The combination of an open network, open standards and intellectual property placed in the public domain characterises the best of the Internet and its tools. It is the source of the Net's rapid growth and continued success, because it creates a common space in which all can operate without restriction, where ideas - for new applications or new services - can be tried out easily. It also expresses what Ian Hargreaves calls the 'co-operative spirit': men and women taking charge of a situation, answerable to each other, working through democratic structures of accountability.<sup>29</sup> It has become the online equivalent of common land, a 'dot.commons'.

Now the dot.commons is under threat from those who seek to enclose it for their own benefit and who would deny access to others and limit competition. This is because the Net is providing the infrastructure for business - retail sales, business to business commerce, publishing and all other forms of economic activity are starting to move online. As a result the 'ownership' or control of the means of distribution - both the software required to use the Net and the underlying network itself - has become the electronic equivalent of land to the entrepreneurs of the 19<sup>th</sup> century. On the Net enclosure means getting other people to connect to the Internet through your service, look at your Websites and use your software, and it is happening more and more.

Can we preserve the mutual Internet and retain the special character of the dot.commons so that it is available to all, or are we obliged to accept the demutualisation of the Net for the sake of short-term gain by the current generation of network speculators? And does it matter? We will address these issues in the next chapter.

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<sup>28</sup> OED op. cit.

<sup>29</sup> Hargreaves I 1999. P9

## 4 NEW NET, NEW COMMERCIALISM

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The Internet has grown rapidly since 1994, when there were only four million computers and around fifteen million users.<sup>30</sup> As commercial interests have taken over what was until then largely an academic and government network, the Net's status as a public space has already been damaged. The differences are observable at three levels: the underlying network architecture, the software available, and the services offered to Net users.

Concrete examples of these changes are easily identified: competing Web browsers work in subtly different ways, so that not all Websites will operate properly with all browsers; patents have been granted for many apparently obvious Internet-based operations (such as the basic idea of reverse auctions, or single-click purchasing from a Website), and commercial and legal considerations dominate standards-setting in key areas such as domain naming<sup>31</sup>. Taken together these changes have made the Net far less open to innovation in key areas.

The common thread behind the changes as the Internet has become more commercially-oriented is a move from long-term to short-term thinking. The design goals of the early Internet developers were simple: to get something that worked and then refine it until it became useful. Standards and protocols were developed to work on a wide variety of computers, to be generally usable and to be extensible as the network grew. Now companies seek short-term commercial advantage in restricting the availability of network connections, locking users in to specific (and proprietary) standards and patenting even the most trivial innovation.<sup>32</sup>

In the real economy there has been, as Ian Hargreaves notes, 'growing concern about the short-termism of these unabated market forces.'<sup>33</sup> In the online world the reaction has been muted or non-existent, partly because of the general belief that the free market created the Internet and so the free market should be allowed to determine its future growth and development. As we have seen in the previous chapter, this is not so: the Internet was built using public sector money and according to mutualist principles.

It is possible that the commercial imperative will destroy the Net in its current form, leaving us with a collection of interlinked private networks delivering content and services to PCs, televisions and telephones. If, as I have argued, it is only the co-operative principle that keeps the Internet viable, and if non-standard programs and

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<sup>30</sup> Source: Internet Software Consortium (<http://www.isc.org/>). The Network Wizards Domain Survey is the authoritative source for the number of computers online. The number of users online is at best an educated guess

<sup>31</sup> A 'domain' is the name of an entity in cyberspace, such as an organisation, company, network, computer or service.

<sup>32</sup> See for example Wall Street Journal, March 10<sup>th</sup> 2000: 'Amazon.com Chief Executive Urges Shorter Duration for Software Patents'

<sup>33</sup> Hargreaves *l op.cit.* p 16

services (as provided by AOL, for example) proliferate then the Internet will fall victim to the tragedy of the commons, as the public space (the standards-based network) is consumed by commercial interests whose success will diminish the connectivity and interoperability which makes the Net valuable to us all. If the Net is broken up into separate private networks with limited interconnectivity, or if the World Wide Web fragments into collections of sites and services visible only to users of specific software, then I believe that the transforming potential of the Internet will be lost and the digital revolution may well fail.

#### 4.1 HOW MUTUAL IS THE INTERNET TODAY?

To the International Co-operative Alliance a co-operative is 'an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratic-controlled enterprise'<sup>34</sup>. A strict reading of this definition would indicate that the Internet is no longer a co-operative, if indeed it ever was.

The key issue is ownership. The Internet is a collection of computer networks, all of which are privately or publicly owned, but none of which is dedicated to the common good. Indeed, the tens of thousands of computer networks which make up the net have always been jealously guarded and protected, with access controlled in various ways.

It could be argued that when the Net was exclusively a Government/academic/military network, when all the computers and cables were in public ownership of some sort, it was 'jointly owned'. But this is certainly not the case today. Every piece of cable or fibre, every network card and computer, every hard disk and keyboard, is owned by someone - perhaps an individual, perhaps a university, perhaps a company.

When the Net was an academic enterprise commercial activity was forbidden and businesses could only get online if they were working with a university or government department on a joint project. Now firewalls and security systems protect internal networks from Internet attack and Governments are actively involved in fighting 'cybercrime'<sup>35</sup>.

Neither is the Internet democratically controlled - not on the one member, one vote model, anyway. In the early days it was managed by a beneficent oligarchy of technically-minded individuals who were either paid to research and develop computer networks or worked for companies that gave them time and space to be involved in the standards-setting process. Now it is dominated by the paid technical representatives of large corporations seeking to have their technologies and programs incorporated into the standards.

But the computers and the networks are not really 'the Internet': the Internet **emerges** when they are connected, in the space behind the screen. It is, as William

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<sup>34</sup> Cooperative Principles for the Twenty-first Century. International Co-operative Alliance, 1995, as reproduced in Rodgers 1999. P38.

<sup>35</sup> For example the White House is planning an Internet security centre called the Cyber National Information Center--or Cyber-NIC.

Gibson put it, 'a graphic representation of data abstracted from the banks of every computer in the human system.'<sup>36</sup>

This Internet, like a mind inside a brain, has a complex relationship to the hardware that supports it. And this Internet is a co-operative venture which fulfils even the strictest criteria. For we all share in the Net only as we contribute to it, adding our programs, computers and network links to the larger whole.<sup>37</sup>

Our computers are united voluntarily to create the Internet, and it meets our common economic, social and cultural needs and aspirations by providing a space in which we can communicate, trade, learn and be entertained. It is controlled through a standards process which, if not democratic in the sense of providing everyone with a vote, is closer to the Greek *demos* than most legislative assemblies in that anyone with an interest can participate in the process. The twice-annual meetings of the IETF remain open to all, and it requires only technical competence to participate at all levels<sup>38</sup>.

Let us allow, then, that at the moment the Internet is a mutual enterprise, grounded in co-operative principles. Two questions then emerge: can it continue in this manner? And are there wider lessons to be gleaned from the Internet's success for the new mutualist movement worldwide?

Let us begin by considering how the Internet is being governed today, and how this process could be improved.

## 4.2 NET.GOVERNANCE: FROM IANA TO ICANN

One of the more contentious and problematic aspects of the commercial Internet has to do with names and numbers. Broadly put, every computer on the Internet has to have a unique number to identify it. These numbers are called 'IP addresses'<sup>39</sup> and they are a limited resource which must be handed out fairly. Most computers on the Internet also have names - called 'domain names' - which identify them more readily for people.

The Domain Name System is a complex distributed database which allows Internet-connected enterprises to manage their internal networks and be found by others. Thus 'bbc.co.uk' is a domain name for the BBC, identifying it as a commercial (co) organisation in the United Kingdom (uk).

The '.com' domain - usually read 'dot com' identifies a company. Strictly speaking it is only for companies with activities in more than one country, but historically US-based

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<sup>36</sup> From Gibson 1984.

<sup>37</sup> Perhaps the most interesting current example of this is the SETI@Home screensaver, a way for any PC user to use their computer to analyse radio telescope data in the search for regular patterns which may reveal the existence of intelligent life elsewhere in the galaxy. See <http://setiathome.ssl.berkeley.edu/> for details and to how to participate.

<sup>38</sup> See <http://www.ietf.org/> for details of forthcoming meetings and how to join.

<sup>39</sup> For technical background to this discussion see Quarterman, Carl-Mitchell 1994 or the 3Com online tutorial at <http://www.3com.com/nsc/501302.html>

companies have registered as .com rather than .co.us and so it is now seen as generic for 'commercial'<sup>40</sup>.

The roots of the Internet in the ARPANET and US Government (or rather US military) spending meant that many of the core activities required to keep the Net running were originally paid for by the US. As a result the few activities which had to be centrally controlled were based there. These included the control of the top level domains - .com .net .org .mil and .gov - and the assignment of responsibility for country-level domains (.uk, .fr) to 'competent authorities' in that country - for example Nominet in the UK controls .uk and assigns .co.uk domains<sup>41</sup>.

The body that assigns IP addresses and other numbers used by Internet computers was until 1999 the Internet Assigned Numbers Authority, or IANA. IANA was effectively one person - Jon Postel - who held his position by mutual agreement. He was recognised by all as fair and scrupulous and performed his task efficiently. However the increasing commercialisation of the Net during the 1990's made IANA's semi-formal status increasingly hard to defend as companies spent millions on establishing Websites and even just buying domain names<sup>42</sup>.

As a result the US government agreed to pass over the responsibility it had held - and which it had vested in IANA through an agreement with the Internet Society - to a newly constituted body which would reflect the new Internet community. The Internet Commission for Assigned Numbers and Names (ICANN) was duly created, but its short history has demonstrated that it is now working in a contested and politically sensitive area without a map.

When it started ICANN created an interim board of directors who were all drawn from the US. It initially allocated representation to businesses and government agencies but did not allow individual members to influence policy. And it took two years to agree a policy for the creation of new top level domains, such as .biz or .store, because of pressure from trademark owners who do not wish to have to register their trademarks in these new domains. At a critical meeting July 2000 a final attempt was made to resolve some of these issues, but the future of the organisation and its credibility with the Internet technical community are still in doubt<sup>43</sup>.

ICANN is the first institution of Internet governance for the new century, and its troubles are an excellent demonstration of the near impossibility of achieving consensus or acceptable levels of 'conventional' democracy for the commercial Internet.

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<sup>40</sup> In January 2000 there were 80838943 computers on the Internet, and 29075185 were at .com addresses. Source: Internet Software Consortium (<http://www.isc.org/>).

<sup>41</sup> The competent authorities sometimes take their roles a bit too seriously. In 1995 the British Parliament decided to establish a Web presence for Hansard. They felt it was appropriate to have their own domain, .parliament.uk, and asked Nominet to establish it. Nominet refused until they were reminded exactly who they were dealing with.

<sup>42</sup> The domain 'money.com' was sold for \$7m late in 1999.

<sup>43</sup> The ICANN website at <http://www.icann.org/> contains full background on these issues.

Simply put, there is too little to be gained by Net entrepreneurs in the short term for them to support measures which will secure the long term future and growth of the Internet as a commonly-held space. Their short term interests are better served by challenging the technically-driven standards process and grabbing land in the existing cyberspace. And the commons of the Internet cannot survive the process.

#### 4.2.1 OPEN VERSUS PROPRIETARY

In computing a standard is just an agreement to do something a certain way. A computing standard will usually specify the things that are done (the **functionality**) and the way that other programs or computers can get access to this functionality (the **interface**). It is then up to those using the standard to build an **implementation** or working program.

With the World Wide Web, for example, the Hypertext Markup Language, HTML, is a standard way of indicating how a document should be displayed by a Web browser. It is up to the programmers who write browser software to implement the standard in their programming.

There are three sorts of IT standard. *De jure* standards are those which are agreed by a recognised standards body. They are published, not under the control of one company or affiliated organisation, and freely available. Anyone can implement the standard without paying a license fee.

*De facto* standards are those which are generally adopted even though they may not be formally approved or even genuinely open. And *proprietary* standards are those developed by one company or consortium which are under their control and may have to be licensed.

### 4.3 BREAKING STANDARDS, MAKING MONEY

A number of companies - AOL and Microsoft are the largest and best known - constantly seek to undermine the Internet from without by 'embracing' Net standards and then 'extending' them in ways which force people to use particular programs to access network services. Thus Microsoft's Internet Explorer browser will work 'better' if used to access Websites running Microsoft's Internet Information Server web software, and AOL users will have an 'enriched' online experience if they use AOL software to access AOL services<sup>44</sup>. Open standards are undermined in order to trap customers and exclude competition.

#### 4.3.1 MICROSOFT:

Microsoft did not see the Internet as a credible threat until 1995<sup>45</sup>. Before then they had invested heavily in a proprietary network, the Microsoft Network or MSN™. This was built as an alternative to CompuServe and AOL, at the time the dominant private

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<sup>44</sup> For coverage of this c|net has a special report at <http://news.cnet.com/news/0-1005-201-345506-0.html>

<sup>45</sup> The first edition of Bill Gates' book 'The Road Ahead' famously did not include any references to the Internet. See Gates 1996.

networks. In public Microsoft rubbished the Internet as slow, insecure and somehow too common for their users. They believed that they would attract people who felt safe and secure under their brand.

They were wrong, and in 1996 MSN moved to the Internet and the Web. Initially a closed Website for subscribers only, now MSN is a portal or gateway site for all Internet users, not just those who get Internet access through Microsoft. Indeed, Microsoft is no longer an ISP in its own right but simply resells other companies' access.

#### 4.3.2 THE INTERNET SERVICE PROVIDERS

The other players in the Internet arena are the ISPs themselves. Commercial Internet services were first offered in 1990 when The World, the first commercial provider of dialup access, came online, although UUNET had been started on an experimental basis in 1987<sup>46</sup>. However the rules governing Internet use at the time meant that customers could only communicate with other customers of the same ISP: any network traffic sent over the public Internet had to follow the acceptable use policy (AUP<sup>47</sup>) of the network providers.

Over the last decade this has changed. The public sector - notably the US Government - has got out of the Internet business, closing down what was the main US internet backbone, NSFNet, in 1996 and handing over control of domain names and assigned numbers to ICANN in 1999. While universities still run their own networks, such as the Joint Academic Network (JANET) in the UK, by and large the backbone of today's Internet is in private hands.

But these privately owned companies, competing in a free market, co-operate to a degree that would be almost unthinkable in any other market. Imagine Sainsbury's selling Tesco own brand beans. Or Marks and Spencer's home delivery service agreeing to pick up a box from Sainsbury's on its way to your house to save you two trips out. That, to a large extent, is what the Internet does.

The reason is that one of the things which defines the Internet - one of the conditions of membership laid down by the Internet Society - is that anyone who joins will provide access to all of the rest of the Internet, security restrictions allowing. There is a guarantee that there will exist a network path between any two connected computers. In order to get from my computer to your computer the digital information - the packets - that I send may have to go through several networks run by different companies. But in order to be an ISP a company signs up to a deal which requires it to interconnect with the networks of its rivals. This is what makes the Internet a mutual.

In the old days there were dozens of backbone providers and their networks were richly interlinked to provide the core connectivity that made the Internet a single network. Now the number of global ISPs is much reduced, and we have what Peter Dawe, the founder of one of the earliest UK Internet providers, PIPEX, calls 'the

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<sup>46</sup> Source: Hobbes' Internet Timeline, at <http://www.isoc.org/guest/zakon/Internet/History/HIT.html>

<sup>47</sup> For example see <http://www.ja.net/documents/use.html> for the 1995 JANET AUP.

planar Internet<sup>48</sup>. They still link their networks at key interchanges, and they allow other, smaller, networks to link to them. But they are not really doing so for any reason other than perceived commercial advantage: the Internet is useful because everything is connected to everything else. If any of the major players could think of a way to replace the Internet with their own private network - and get away with it - they would do so.

#### 4.4 STAYING MUTUAL IN A DIGITAL WORLD

Is it possible to retain the mutualism of the Internet, or should we accept that, like the telecommunications industry on which it sits, parasite-like, that we can only watch as it is privatised and hope that adequate regulation will keep it open? Can co-operative enterprises be built on top of a commercial network or should more be done to ensure that commercialisation does not take control?

Openness is anathema to monopolists because an open standard cannot be changed to suit commercial imperatives. Anyone can take the published standard and implement it - if they produce a program which is faster, better, cheaper or more widely distributed than the others in the market then it will be adopted. Competing implementations of open standards are like competing desktop lamps, all of which work on the same power supply, take standard light bulbs, have standard plugs attached and sit on flat surfaces. If I decide to change my desktop lamp I don't have to buy a new desk. Similarly, if I want to change from one Web browser to another then I **should** be able to do without losing access to any of the Websites I like to visit.

A privatised Internet will not work in the way the old Internet has. None of the companies now writing Internet software or developing Internet services has enough of an interest in the open Internet to give up perceived short term advantage for a long-term gain, and the public Internet relies on this sort of co-operation rather than intense competition. We need only look at the strategies of Microsoft and AOL Time Warner to see the direction in which the larger players would take us.

##### 4.4.1 WAP: A WAY TO AVOID MUTUALISM

A good example of how the 'public' and mutual Internet can be undermined by technological advances is the Wireless Application Protocol or WAP. WAP is a way to re-present Web content and email messages for display on the small screen of a mobile phone and to deliver the content over wireless networks (like the GSM network). It is being sold as 'the wireless Internet'. But WAP is a proprietary technology developed and owned by the WAP Forum<sup>49</sup> and anyone who wants to develop a WAP service must license the programs and ideas from them.

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<sup>48</sup> To Dawe the Internet, which used to be a complex connected graph of links between small networks, is now more like a skyscraper with companies owning whole floors. Only the elevators link the floors, and not every elevator stops at each floor. It is still possible to travel between any two floors, but the route may not be fast or simple.

<sup>49</sup> Online at <http://www.wapforum.org/>

WAP is not open, it is not in the public domain and it cannot be enhanced or developed by anyone other than the owners. The way WAP is being promoted - as if it were the Internet on a phone - misrepresents it in the way that the proponents of demutualisation of insurance companies and building societies misrepresent the operations of listed financial services companies, and to the same end. It also gives us an idea of what the Internet would be like if it were demutualised.

[www.emutualism.com](http://www.emutualism.com)

## 5 WHAT CAN BE DONE?

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The tragedy of the dot.commons is exactly that identified by Hardin in 1968, where he points out that there is no 'technical solution' (one that requires change only in the techniques of the natural sciences, demanding little or nothing in the way of change in human values or ideas of morality<sup>50</sup>)' to problems of overpopulation.

However where Hardin advocated the abandonment of the very idea of the commons, online we are not constrained by the size of the world or its natural resources. The space inside a computer, like a Tardis for Dr Who, is not determined by its physical dimensions: if we can preserve the principles underlying the commons then we can continue to enjoy it even as it extends.

The Internet is already big. Really big. Millions of individuals, hundreds of thousands of companies, thousands of ISPs have all come together in a mutual undertaking that requires a surprising degree of self-discipline and co-operative activity on the part of all. The Internet would not exist if we did not all accept restrictions on the sort of network programs we use, if we did not require the people who write programs and develop modems and build computers to work to standards which they do not themselves determine directly. What is TCP/IP, the set of 'protocols' which underpin the Net, but a rulebook which all must follow?

The Internet makes Celebration, the Disney Corporation's township in Florida, look libertarian<sup>51</sup>. Never mind having to keep your lawn mowed - if you want to send data using version 4 of the Internet Protocol then the first four bits of your first data packet had better be 0100<sup>52</sup> and your Web page has to start with the line

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">53
```

This is because the Internet Protocol Suite (or TCP/IP, as it usually called) is a set of technical standards which decide the data formats and communications mechanisms between the millions of computers is, for the moment, agreed by consensus through a process controlled by the Internet Society and implemented by the Internet Engineering Task Force.

This means that if I want to write an email program then I can read the appropriate RFCs<sup>54</sup>, consult the reference implementations and follow the standards. If I do that then my program will work and I may have a market for it. I may even be able to sell it

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<sup>50</sup> Hardin 1968

<sup>51</sup> Of course the rules of Celebration are externally imposed by the 'owners' who have written a social contract in line with their own philosophy, while the Internet is self-governing. It is interesting to note the lack of advertising and branding in Celebration, the one space that Disney will not attempt to occupy, perhaps because it has already won there. See Klein 2000.

<sup>52</sup> Binary for '4'. See Hunt 1994. P14.

<sup>53</sup> Strictly speaking this is for HTML 3.2 documents. See <http://www.htmlhelp.com/tools/validator/doctype.html> for details.

<sup>54</sup> Request for Comments, the documents which state the IETF standards.

when others offer theirs for free - as with Qualcomm's Eudora, which competes effectively with Microsoft's Outlook Express despite the fact that Microsoft give their program away and Eudora costs \$50.

The government no longer controls the Internet: even the Joint Academic Network (JANET) in the UK is run by a separate organisation under contract to the UK universities<sup>55</sup>. The issue is not therefore whether to have a market-driven Internet, but what sort of control over the growth and development of that Internet can be reasonably exerted by Government. The intention is not to impose a form of state socialism on the network: it would not work even if it were attempted. Nor does it make sense for government to commission and run its own part of the Internet for the social good: unless the Net as a whole continues to be based on mutualist principles then it will not be worth connecting to.

We need to encourage the companies building the Internet and developing the programs that allow us to use it to think of more than their own short-term selfish interests. This is just another aspect of the attempt to make large corporations into good public citizens, an attempt which has occasionally succeeded<sup>56</sup> but which seems too often to fail.<sup>57</sup> Peter Kellner claims that 'our business culture is changing... the mutualist message - that enterprises, like individuals, flourish best when they acknowledge their duties as well as claiming their rights - is beginning to get through.'<sup>58</sup>

While applauding his optimism, I fear that the builders of the net.economy may need a little encouragement, and offer these guidelines for their consideration.

## 5.1 CONTRACT COMPLIANCE

Perhaps the first thing that government can do is to refuse to do business with standards-breakers. At the moment there is no insistence within Government that the software and technologies it uses conform to accepted standards. In fact, the opposite is the case with Bill Gates, Microsoft CEO at the time, offering advice to Tony Blair on which technology to use in schools despite the fact that Microsoft itself is under investigation by the EU for delivering programs which will only work effectively with other Microsoft programs<sup>59</sup>.

There are many precedents for insisting on standards in IT contracts - during the 1980's an internationally agreed networking standard called OSI was mandatory for government projects. However OSI was a complex, inflexible and limiting set of standards which was eventually fatally undermined by the Internet and the TCP/IP standard which it uses. This demonstrates that public standards - as in OSI - are not

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<sup>55</sup> UKERNA, at <http://www.ukerna.ac.uk/>

<sup>56</sup> Klein 2000, particularly chapter 16.

<sup>57</sup> Such as the way BMW has broken up Rover cars in the UK.

<sup>58</sup> Kellner 1999. P18

<sup>59</sup> 'Monti shows his tough streak: Europe's antitrust commissioner is signalling a strict approach to illegal state aid, says Deborah Hargreaves', in Financial Times, March 6<sup>th</sup> 2000.

the same as mutual standards. But it does show that government can, if it wishes, enforce purchasing restrictions on the basis of standards compliance.

## 5.2 SUPPORT THE STANDARDS-SETTING PROCESS

The benefits of breaking the standard are great: standards-setting takes time, standards-based programs do not have of the more exciting, leading edge functionalist of proprietary systems. But the Internet relies on the standards, and the process by which they are developed and accepted by the net community as a whole.

If government does not support the standards-setting process and make it clear that it will only specify and endorse service providers and network products which are based on open standards then there will be even less of an incentive for developers, telecommunications companies and others to work to the standards.

## 5.3 AVOID MONOPOLISTS

The close relationship between Microsoft Corporation and the British Government - seen in the meetings between Bill Gates and Tony Blair and the enthusiasm with which the DfEE accepts Microsoft help and support in specifying educational systems for use in schools - is disturbing on many levels.

There are areas - applications software, word processing, etc - where there are no standards other than the *de facto* ones established by market dominance. Microsoft Word™ is dominant and the commercial reality is that children must learn to work with Microsoft products.

But in other areas - Web services, browser technology and networking - this is not the case. Microsoft's Web server includes so many non-standard extensions that users rapidly find themselves 'locked in' to the Microsoft world. It would therefore be sensible for schools to insist on using software which fully supports open standards.

## 5.4 INVEST IN NEXT GENERATION TECHNOLOGIES

The Internet was never meant to be this big or this important, and it is obvious that the existing systems need to be revised. ICANN has been established to modernise the allocation of numbers and addresses; in the United States the Internet II project is attempting to build a faster, more reliable, Internet. And the core network protocols are constantly being revised.

The UK Government, through the EU Esprit programme, already spends billions of euros every year on 'blue skies' research. This research funding is valuable in developing open protocols for novel applications such as streaming audio and video, e-commerce and e-business systems and interactive services. It should not be assumed that innovation can only come from the free market, or that publicly funded research is not significant.

### 5.4.1 JAVA: HOW THE PRIVATE SECTOR BLEW IT

The clearest example of how a good idea can fail because its inventors were unwilling to put it in the public domain is Java™ - and the little 'tm' tells the story.

Java is a general-purpose programming language which can be used to develop a wide variety of programs. It was written to offer high security and to work on a wide range of processors and operating systems. The inventors of Java, a big computer company called Sun Microsystems, saw it as the programming language for the Web, and developed lots of aspects of Java including a version that runs on mobile phones and TV set top boxes. Java was hailed as the alternative to Microsoft Windows for the Internet world.

Unfortunately Sun attempted to retain control of Java while claiming that it was an open standard. They put it forward for approval by the International Standards Organisation but refused to give either ownership or real control of the language. Eventually they withdrew from the process, and Java remains a minority language online, failing to achieve the potential it would have had if it were an open standard.

## 5.5 ACCEPT THE LIMITS OF THE COMMONS

Not every part of the Internet needs to be regulated in this way. While some parts of the Internet, most notably naming schemes, the protocols that move data around between computers, and the core file formats, must remain in the digital commons, it is important that innovation is not constrained.

Throughout its history the Internet has managed to grow and develop because it is easy for a new idea to be turned into a prototype application which can then run over the public network. Electronic mail, file transfer, the World Wide Web and instant messaging are all examples of this.

However the first three were developed inside the net community and the core protocols were made freely available to be enhanced, developed and implemented by others. Instant messaging, the ability to have a real-time online typed conversation with other Internet users, was developed by one company, AOL, who have since spent a great deal of time and energy stopping other companies (most notably Microsoft) from taking advantage of their messaging tools. AOL argue that they have a commercial service which they wish to exploit. The Internet community sees a valuable Internet application which is not in the public domain and which therefore cannot achieve its full potential.

Some would argue that AOL has a moral obligation to place its messaging standard - the file formats and interfaces - in the public domain so that all can benefit. AOL, claiming a duty to their shareholders, argues otherwise. It is precisely this sort of case which demonstrates how much will be lost if the mutualist Internet falls victim to the advocates of enclosure. It also demonstrates the difficulty of regulation, since what Government will oblige a multinational corporation to give up its intellectual property in this way?

## 6 E-MUTUALISM

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We have seen how the Internet is a truly mutual endeavour, one which relies absolutely on co-operation and joint agreement in order to exist. All users of the Internet, and even those who would seek to profit from it, must accept the technical standards and work to them in order to achieve connectivity in the first place.

But do these principles percolate up to the ways in which the network is used? The answer, sadly, is 'not inevitably'. The Net can be used to support all sorts of activity, and those activities are not automatically imbued with mutualism just because they use an infrastructure built on mutualist principles.

Thus commercial organisations can use Internet software to command and control a strictly hierarchical system; the military (on whose behalf much of the core technologies were developed) has built its control systems on top of the Net; and the current proliferation of dot.com companies includes many who see the Net simply as a way to deliver advertising to potential purchasers and have neither interest in nor awareness of the mutual model.

Yet the Internet, a perfect example of the effectiveness of mutualism, is underpinning the move to a digital economy even if the companies using it are not themselves co-ops or even concerned corporate citizens. The success of net.mutualism is a demonstration that mutualism is capable of supporting large, distributed enterprises. Just as other successful co-operatives, like the John Lewis Partnership or the Co-operative Bank, can act as beacons for those struggling to create businesses or associations founded on mutualism, so the Internet can inspire us all.

### 6.1 HOW THE NET SUPPORTS MUTUALISM

Mutuals should make good businesses. If businesses of all types are under pressure to become 'customer-focused' then one which is created, owned and managed by its customers should be ideally placed to succeed. And the Internet can be more than just an inspiration: it can be a source of practical assistance to support co-operatives and other mutual organisations. After all, the Internet is a communications technology which allows enterprises of all types to change the way they work. It can surely be used to counter some of the problems which mutuals have historically encountered, in particular the special difficulties which a democratically constituted organisation has as it grows, or the contradictions which emerge when trying to provide local service when organised on a national or trans-national basis.

The biggest impact of the Internet is the new forms of business communication which it offers, from email to internal Websites (intranets), co-ordinated diaries, online collaboration and even 'telepresence'.<sup>60</sup> A major challenge for any co-operative or mutual, whether it is a food store or a building society, is that once it reaches a certain size then the need for discussion and perhaps even consensus effectively sabotages the enterprise. The amount of time spent coming to mutually acceptable decisions starts to affect the operation of the whole organisation, and a downward

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<sup>60</sup> Being able to hold 'virtual' meetings.

spiral begins, with more time spent making poor decisions which fail to address the problems, requiring more time in meetings.

The basic Internet software of a transactional Website, electronic mail, document sharing and some sort of discussion forum can be used to create mutual ventures which transcend physical constraints and where decision making can be distributed while remaining accountable. Those who argue that this sort of organisation can never be as effective as a shareholder-owned company should consider the history of Linux, one of the few organisations to worry Microsoft<sup>61</sup>.

## 6.2 THE LINUX STORY

Second only to the Internet in terms of the scale and success of a mutualist venture, the Open Source software movement that has created the Linux operating system and its applications is a prime example both of the success of mutualism in the new technology field and the new tragedy of the commons.

Linux is an operating system, a collection of programs that control the basic functions of a computer, things like reading the keyboard, displaying output on screen, communicating with a network and running other programs (called 'user programs'). It was developed in 1991 by a Finnish computer science student, Linus Torvalds, and modelled on the still successful Unix operating system used by many larger computers. Torvalds was unhappy with existing operating systems, and decided that he would make the source code of Linux freely available for peer review. He posted his first version onto the Internet in 1992.

Making the source available was a radical step: few commercial programs are available in this form. Instead the developers release only the actual runnable program (the executable) and safeguard the source as a trade secret. Torvalds not only let people see his source code - he effectively gave it away by releasing it under a legal license that allowed anyone to use it for any purpose as long as the program they wrote based on his original was also made 'open source' in the same way.

As a result the Linux source became effectively common land: all could use it and none could own it or take away from the commons. In the nine years since its first release Linux has been worked on by tens of thousands of programmers, all of whom have contributed to the common goal. The work has been co-ordinated almost entirely over the Internet, with groups agreeing which sections of Linux they would work on and releases of the whole collection co-ordinated by an informal network of the most active participants in the program.

The result is an operating system that runs on millions of computers yet is free; a system now supported by major computing companies such as Dell, Compaq and IBM where the full source code is available to anyone who wants it; and a serious challenge to Microsoft Windows 2000 on the server if not the desktop.

Yet all is not well with Linux. Although the source is free, corporate users want to be able to buy technical support for the software, and number of companies offering

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<sup>61</sup> For an illuminating profile see Dan Gillmor's article at <http://www.mercurycenter.com/svtech/news/indepth/docs/torvalds0227.htm>

Linux services, such as Red Hat, have become public companies whose share valuations benefit from the general high price of Internet stocks. As a result the thousands of programmers who have contributed to Linux over the years are starting to ask where their share of the money is. The move to demutualise Linux, just as the building societies were demutualised, is just around the corner. And, as with the building societies and the banks, it will be the current owners - the few who own Linux-focused companies or whose programming made it into the latest distribution - who will benefit. The thousands who contributed in the early days, who worked to build the commons in the first place, will be forgotten as it is carved up and virtual fences erected.

This should make it clear that being a mutual - even a successful mutual - is not enough to guarantee continued mutual existence. The Internet and Linux are both under threat. Should we accept that massive government investment and mutualism are a good basis for the 'pre-competitive' stage of any technological innovation, but that eventually they must be handed over to the market in order to achieve their true potential? As I argued earlier, I do not think this is either inevitable or desirable, but the future of Linux is unlikely to remain in the hands of the development co-operative that brought it into existence, if only because too many commercial interests are now involved.

### 6.3 PROBLEMS FOR CO-OPS: AND SOME SOLUTIONS

Linux is a special example: a co-operative venture that has been colonised by capital. Normally it is the markets into which co-ops sell that are taken over, and co-ops lose market share and decline. Co-operatives are not perfect, and they do not automatically work. In their review of the mutual sector, 'To our mutual advantage', Charles Leadbeater and Ian Christie<sup>62</sup> identify a number of areas where mutuals have particular problems. These are:

1. Decision making
2. Geographical reach: think globally, sell locally
3. Customer focus
4. Attracting investment and financial backing
5. Market responsiveness
6. Adaptability to changing circumstances

We can see how the Internet can help address these particular problems for mutual organisations just as it opens up new possibilities for investor-owned companies.

#### 6.3.1 DECISION MAKING

The Internet was designed to facilitate communication between geographically dispersed teams - the initial users were academics and the military, both of whom rely on effective communication for their work. The decision making styles of the two

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<sup>62</sup> Leadbeater and Christie 1999

groups may be starkly different, but the Internet can support them both. This demonstrates that a network communications can be used for organisations of all types.

For co-operative enterprises, where it is important both to share information and to come to mutually acceptable decisions (this may or may not involve achieving consensus), the Net is an ideal tool.

### *6.3.2 GEOGRAPHICAL REACH: THINK GLOBALLY, SELL LOCALLY*

Governments around the world are grappling with the problem of Internet taxes. Not how to tax Internet use, although that may come, but how to apply existing taxes such as import duty, VAT and income tax when so much business is transacted over the Internet.

The reason for this is that the Internet allows a company or enterprise to sell globally, no matter how small or locally based its product or services. Computer programmers in India, university-level teaching in the US, and Simnel cake from Botham's the bakers in Whitby, North Yorkshire, can all be traded online.

This ability to participate in a global market without losing one's local roots is a particular asset for co-operatives, who often have strong links to their local community and are therefore unwilling to adopt the free-market approach of relocating to where labour is cheapest or markets largest.

### *6.3.3 CUSTOMER FOCUS & MARKET RESPONSIVENESS*

Co-operatives can find it hard to keep the needs of their customers at the forefront of their attention, partly because they are membership organisations and must deal with the administrative burden that that imposes, partly because membership organisations can easily ossify and make the mutual inflexible.

Apart from reducing the burden of managing the membership by making communications easier, the Internet also opens up new possibilities for finding and keeping customers. First, the global nature of the Net means that a co-op can reach more of the niche market of people who prefer to trade with mutuals. Second, the same mechanisms that enable the membership to have a greater say in the management and activities of the mutual can be used to facilitate interactions with customers. It should be easier - although it may not be in specific cases - for a mutual to be responsive to its customers because it is already responsive to its members and therefore has a corporate culture in which this sort of feedback is welcomed and acted upon.

### *6.3.4 ATTRACTING INVESTMENT AND FINANCIAL BACKING*

The belief that mutuals and co-operatives find it harder to raise capital may be partly misplaced, but there are few examples in the recent growth of Internet industries to counter the view that venture capital flows to the joint stock companies and not the mutuals.

While significant change in this area may require a change in the legal framework, it is worth noting that the e-economy (as it is often called) is characterised by the rapid movement of capital. Co-ops can be expected to benefit from the general increase in

liquidity of the capital markets, as well as the enthusiasm for innovative business models which has accompanied the move from the 'old' to the 'new' economy.

#### *6.3.5 ADAPTABILITY TO CHANGING CIRCUMSTANCES*

Finally, the key problem for many mutuals is that they are too large, with too dispersed a membership, to react as the environment changes. This is as true for housing co-ops seeking to keep up with legislative changes as it is for a retailer.

The major impact of the Internet and e-business is again in improved information flow: as the environment shifts a mutual which has set up effective communications systems between members, managers and customers is more able to develop and implement strategies to enable it to cope and even thrive. And again the advantage of being mutual is that this flexibility is built into the organisation at all levels as a defining characteristic. For shareholder owned companies the distribution of power and information to all stakeholders remains practically and philosophically challenging: this is not so for mutuals

### 6.4 THE E-MUTUAL

It seems that mutuals may have an advantage in the new economy because they are better placed to use the capabilities of the new information and communications technologies than the dominant players. This may not just be a happy coincidence. If, as I have argued, the Internet and its associated tools and services were largely developed according to a mutualist philosophy then it is hardly surprising that they serve mutual enterprises best. A traditional hierarchical management structure is challenged by the introduction of corporate email which undermines lines of authority, but a mutual is strengthened by a system which makes sharing of information and debate easier. Information posted onto a corporate intranet about takeover plans is a threat to authoritarian management but a simple way of ensuring all owners are properly informed in a co-operative. Over time we may see significant growth in the number and type of mutual enterprises, whether co-operatively owned or not, as the new economy develops.

## 7 TOWARDS A MUTUALIST ECONOMY

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Having considered how the Internet can help existing and new co-operatives and other mutually-organised enterprises operate more effectively, we can now turn our attention to the wider economy. As the dot.com revolution sweeps over us, it may be that mutualist principles can provide some guidance for understanding the new economy.

### 7.1 MUTUAL DISTINCTION

Mutuals, unlike shareholder-owned institutions, can rely on the trust and know-how of their members, and are able to develop a relationship of trust with their customers. A mutual is perceived to be less likely to act in a way which damages the interests of its customers in search of profit.

However mutuals do not have to act in the wider public interest: indeed there is no reason at all why a mutual should not be a cartel, with suppliers coming together to act against the public interest. The beneficial aspects of mutualism tend to be treated as if they were a necessary consequence of this form of organisation, but of course they are not.

If we consider again the definition of a cooperative as 'an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratic-controlled enterprise'<sup>63</sup>, and allow that 'person' can be extended to include 'business' or 'enterprise' then we can see that there is nothing about the social good in there at all.

Historically mutuals have been formed to address deficiencies in the market, providing wholesome food at non-exploitative prices (as with the original Rochdale co-op) or access to a fair market for produce (as in the farmers' co-ops). As a political movement mutualism has stressed the strength that comes from working together, of giving people responsibility for their own lives and actions, and of encouraging all to contribute in order that all may benefit.

It is the 'all' that is problematic. 'All' rarely means 'the entire world' or even 'all living people'. There is always a community of interest for a mutual enterprise, and the needs of this community of interest are if not paramount then certainly privileged.

Given this, it is not surprising that mutuals are not always good: unless a mutual is explicitly formed with the intention of benefiting a community wider than its owners or members, then it may not feel constrained or even able to act in ways which do so.

Obviously for consumer-owned co-operatives such as the CWS/CRS in the UK, there is a wider social agenda to be served by their operations, and the fact that the Co-op is not shareholder owned and therefore legally obliged to seek maximum value for those shareholders gives it the ability to be socially responsible in many ways. From food labelling to purchasing policies and staff benefits, the Co-op can do things which would actually damage shareholder value, if they existed. This gives it strength.

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<sup>63</sup> Co-operative Principles, in Rodgers 1999.

## 7.2 MUTUALISM IN THE NEW ECONOMY

As the nature of the economy changes, becoming underpinned by digital networks and computer-based transactions, so the nature of our society will change. Marx's model of economic determinism may not apply to all epochs or all economies, but it is valid for early twenty-first century post-industrial capitalism. The way we live our lives here in the developed (or over-developed) countries of the world is already changing. The way that business is organised is also changing.

For a fast-growing Internet entrepreneur the co-operative model is not deemed appropriate because the existing systems for allocating capital, assigning a share value, going for flotation and handing out share options simply do not work for anything other than the limited liability joint stock company.

Even the best-known and most successful Internet mutual, Soft Solution Ltd, who trade as Poptel and provide Internet access and Web services to a wide range of local government, voluntary sector and charitable organisations, has found itself forced to create a separate non-cooperative limited company, Poptel Worldwide, to act as a conduit for venture capital. And Poptel is urgently exploring ways to bring additional capital into the company without losing its co-operative status.

Are there any reasons why a company should be a co-op in the e-economy? As things stand probably not: the disadvantages of not being able to attract venture capital, get an inflated share price and bribe staff with share options are sufficient to exclude it from consideration.

But the internal benefits of having a fast-growing and inevitably high-pressure company which is jointly owned by those working to make it a success rather than by the investors who happened to have accumulated capital elsewhere could be immense. Instead of coming in to work one morning to find that the founding directors had been replaced by high-cost CEOs and financial directors 'parachuted' in by the venture capitalists, all staff would be able to participate in decisions about the need for external expertise.

Making a mutual work is never easy: it might seem that it would be impossible for a high-tech firm. But the main problems facing these companies as they grow are the difficulty of finding, motivating and maintaining staff and the impossibility of maintaining good communications and decision-making within the company as it grows from five to fifty employees.

The former can be solved by giving employees a real stake in the company - ownership now, not share options on a vesting day in two years time. The second is as much of a problem for co-ops as for shareholder-owned companies. But co-ops have an incentive to solve it which is too often lacking for shareholder-owned enterprises. Too often the board and senior management of a limited company are concerned only with providing an illusion of consultation and debate within the company; they really want to manipulate the flow of information so they can carry out the policies agreed with the owners (the shareholders and venture capitalists) and other external decision makers. The employees are not genuinely consulted or considered except as a resource to be managed. In a co-operative this cannot happen because the employees **are** the owners.

A co-op, if it is to survive and succeed, must solve the communications problem - and this can give it a serious advantage in the marketplace, where it is competing against shareholder-owned businesses whose employees often lack the basic knowledge of their own company and its operations.

If we consider the Internet from the user perspective then its ownership structure and the way open standards are set is less important than its sheer usefulness. Although I have argued that the mutualist nature of the Net is the key to its growth and continued success, it is such a large and sprawling mutual that, like account holders in building societies or those insured with mutuals or member of the National Trust there is little real sense of ownership or influence. But even as users, organisations benefit from access to the public Internet and co-operatives could benefit more than most.

If, as Hargreaves has argued<sup>64</sup>, a position reinforced by Leadbeater and Christie<sup>65</sup>, the main problem facing mutuals is the difficulty of maintaining a sense of membership and of managing the democratic aspects of the enterprise, then the Net is the solution.

### 7.2.1 THE VIRTUAL CO-OPERATIVE

The Internet is too new for any clear picture of its long term impact to be drawn. All the many reports from the Henley Centre, Analysys, Forrester Research and others are based on more or less well-informed speculation - having written some of them myself I can assert this with confidence.

One effect of this uncertainty is to drive many companies into alliances with their erstwhile competitors. It is a way of hedging bets. By investing in several alliances a company like News Corporation or AOL or even Microsoft can ensure that it has an interest in a wide variety of new technologies and services. When one starts to grow then the others can be abandoned and the partners can split up their alliance and move to competitive stance. It is the commercial equivalent of the pre-competitive research funded by the European Commission's ESPRIT programme.

Rather than view these alliances as commercial undertakings it makes more sense to see them as virtual co-operatives, mutually beneficial enterprises undertaken by autonomous operators who perceive an advantage in working together and sharing the proceeds - usually intellectual property rather than money - of their joint endeavours.

Certainly these joint enterprises are as co-operative as the farmers' co-ops in France or other countries. And they could be the forerunners of a new generation of mutuals, where transnational corporations act jointly together to pursue their goals. Whether we will be as positive about a co-operative venture between Microsoft, AOL Time Warner and News International to bring us a new generation of news services as we are about the local organic produce delivery service remains to be seen. I suspect that we will be more likely to call such an alliance a 'cartel' and to call on the European Commission to investigate it. Not all co-operatives are to our advantage as consumers. Then again, a mutual which was powerful enough to attract the attention of the

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<sup>64</sup> Hargreaves 1999.

<sup>65</sup> Leadbeater and Christie 1999.

e-mutualism? Or the tragedy of the dot.com commons?

Competition Commissioner could be considered a success for the co-operative movement.

[www.emutualism.com](http://www.emutualism.com)

## 8 CONCLUSION: THE TRAGEDY OF THE E-COMMONS

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From our initial identification of the Internet as a co-operative venture organised along mutualist lines we have pursued three avenues of enquiry. First we have considered whether the mutualist underpinnings of the Internet are necessary to its continued survival and growth - I have argued strongly that they are - and asked what can be done by Governments and others to ensure that the Net remains a common space.

Second, we have considered whether there are lessons for other areas to be drawn from the mutualist Internet, and have described how political and economic activities could be influenced by *net.mutualism* - as I have termed form of mutualism expressed in the way the Internet is currently organised.

Finally, we have looked at the way in which the Internet, considered simply as an available technology, a space within which to operate, a 'cybercommons' as opposed to William Gibson's profoundly private 'cyberspace'<sup>66</sup>, can be used to promote mutualism in our day to day life.

The importance of the Internet cannot be overstated but is easy to exaggerate. This apparent contradiction arises because it is easy to claim that the Internet will change 'everything' without bothering to clarify exactly which aspects of 'everything' will be changed, and in what ways. We will continue to exist in the physical world, whatever the Internet may achieve. We will continue to require food, water, air and direct human contact for our survival as healthy organisms. We will continue to grow food and to wear clothes and to have sex and to enjoy sunsets on the beach.

But we may not go to offices or supermarkets. We may no longer mark crushed wood with pigment or use metal disks as a medium of exchange or even use QWERTY keyboards on our computers. A lot of assumptions are no longer valid - including some core ones about how we organise the economy, the optimal political system, the exercise of power, and the way we live from day to day.

It is here that the debate about new mutualism really matters, because it presents a coherent alternative to the world in which transnational corporations with internal economies larger than those of many nation states determine the shape of our lives in their own interests.

In 'No Logo'<sup>67</sup>, Naomi Klein argues that free-floating brands, attaching themselves to any manufactured object or lifestyle, define the new economy. Mutualism gives us an alternative. Understanding the way the Internet developed and grew in mutualist terms gives us the best possible case study and exemplar. If it worked for the Internet, the core technology of the new economy, then it can work elsewhere. The lessons from the Internet provide a firm basis for the argument that mutualism is a sensible choice. And the Internet provides a technological underpinning for mutualist organisations and activities.

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<sup>66</sup> Gibson 1984.

<sup>67</sup> Klein 2000.

In a world where information wants to be free<sup>68</sup> and the network is there to enable it to move freely, mutualism is the obvious choice for any enterprise, from a start-up company to a neighbourhood association. The barriers to successful co-operation are being torn down as a necessary part of the building of the digital village: in the world we are creating the potential for mutual endeavours is enhanced.

If we accept that 'individual and collective well-being is obtainable only by mutual dependence' then the Internet presents us with an opportunity to reshape the world and build on mutualist principles in our new economy. But this is a choice we must make, not a predetermined outcome of the digital revolution. We have the tools - can we use them?

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<sup>68</sup> Richard Stallman, founder of the Free Software Movement. A good introduction to his thinking is at Stallman 1986.

## 9 APPENDIX: THE FIVE PILLARS OF E-MUTUALISM<sup>69</sup>

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1. For a free Internet to flourish, all those who wish to connect to the network must work to open, mutually agreed technical standards.
2. The cybercommons will only continue to thrive when it is rooted in open standards rather than proprietary technologies. Free exchange of technical information should be encouraged as far as possible and enforced only when necessary.
3. There are many legitimate uses of the network and not all serve all needs. What matters is that the use of the network by one should not have an adverse impact on its present or future use by others.
4. The network is a social institution that both offers rights to and demands obligations from those who seek to use it.
5. Government has a responsibility to promote equal access to the network and its services, to act as an effective regulator and to avoid restricting the future development of the network.

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<sup>69</sup> After Peter Kellner's 'Seven Pillars of Mutualism', outlined in Kellner 1998.

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