

The internet, our relationship with it, and our culture is about to undergo a change as profound and unsettling as the development of Web 2.0 in the last decade, which saw Google and YouTube, Facebook and Twitter become mass, world-wide phenomena. Over the next ten years, the rise of cloud computing will not only accelerate the global battle for control of the digital landscape, but will almost certainly recast the very ways in which we exercise our creativity and forge relationships across the world's cultures. Yet even in its infancy, the extraordinary potential of cloud culture is threatened on all sides – by vested interests, new monopolists and governments, all intent on reasserting their authority over the web.

In this ground-breaking report, Charles Leadbeater argues that we are faced with the greatest challenge of our time: the clash of cloud culture and cloud capitalism. Who will own the cloud? How can we keep it open and reap its vast benefits? And how can it empower the world's poorest people?

Charles Leadbeater is a leading authority on innovation and creativity. He is the author of *We-Think: the power of mass creativity*.

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Cloud Culture  Charles Leadbeater

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Cloud Culture
the future of global
cultural relations

**Charles
Leadbeater**

Counterpoint is the think tank of the British Council. We carry out research and promote debate around the most pressing issue of our time: how to live together well in an interdependent world.

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Charles Leadbeater

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Preface

Commenting on the scope and the pace of change in our societies has become a cliché – be it to emphasise the opportunities it presents or the anxieties and pressures it creates. But whether or not the world feels bigger or smaller, global village or Devil’s island, what matters is that the experience of this change is characterised by contrast and paradox: the contrast between the permanence of daily life, made up of small and meaningful moments against the (increasingly encroaching) backdrop of a tumultuous planet; and the paradox of – for some – unprecedented individual reach in a global context where human beings can also feel meaningless and powerless. This contrast inevitably throws up two questions: How do we make sense of our place in such a world? And how do we create meaningful relationships in the context of such change?

The British Council’s work has always been about making sense of our place (both collective and individual) in the world. Building relationships across the globe, creating a sense of security through a shared knowledge of one another, providing the opportunities for exchanges – often in difficult circumstances shaped by conflict, tension or authoritarianism – have all been means to that end. These relationships have always been based on a recognition of the importance of local networks and collaborative working, and are designed to support, in the words of the human rights lawyer and former British Council Chair Helena Kennedy, ‘the great conversation of mankind’. Today we are in a position to play this role in unprecedented ways – to conduct and support more and

richer relationships, in more creative and imaginative ways than ever before. This is the continuation of our work, but animated by a recognition of the profound cultural transformations that technology creates.

This Counterpoint pamphlet is about what happens when technology (mobile, open-source, 2.0) and cloud computing conspire to offer more access to more of everyone's culture, heritage and ideas than ever before. Charles Leadbeater outlines the promise and the step-change that is *cloud computing* – the results of linking all sorts of devices to one another, the unprecedented level of access to vast stores of cultural artefacts and the enormous potential for new forms of collaboration, grassroots mobilisation and multinational communities. But the argument is not dewy-eyed idealism – the potential is there but we know it is already under threat. To make the most of cloud culture all of us need to sign up to maintaining an 'open cloud'. This means mobilising to preserve diversity of provision and of access, exploring collaborative approaches to copyright, supporting online activism across the world, finding ways of sustaining public initiatives that are global and diverse and, perhaps most importantly, countering technological exclusion by supporting the development of locally developed tools and software. Creating the space for such mobilisation is what the British Council has been doing in myriad ways for over 75 years. We're ready for the next chapter of that conversation. Welcome to *cloud culture*.

Catherine Fieschi
Director Counterpoint, British Council

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Charles Leadbeater

Foreword

I am delighted to contribute a short foreword to this assessment of how the web is re-shaping global cultural relations.

Charles Leadbeater offers a stimulating overview of the debate between optimists and pessimists about the cultural implications of ubiquitously available, if not ubiquitously affordable, web access. As a realistic optimist he concludes that an open source approach to cultural relations will help us to build communities of collaboration around shared interests and ideas on a scale previously unimaginable. He takes examples from science and public diplomacy to illustrate the potential but warns that we must also work against the risks posed to this vision by economic inequality and the wrong kind of corporate and political ambition. He calls for a new approach to leadership, based on partnership, in what he calls 'the world of *with*'.

It is strikingly appropriate that this essay should have been commissioned by Counterpoint, the British Council's think tank. The British Council is an organisation which has been building partnerships in cultural relations for half a century longer than people have been using the term public diplomacy and for six decades before the internet era. The UK Foreign Office's financial support for the Council, like its support for the editorially independent BBC World Service, recognises that governments have an important role in facilitating cultural dialogue and disseminating news and knowledge, but that they must beware of the instinct to coerce and control.

In a world of *cloud culture*, politicians need not only to show restraint, they also need to be creative and to take more risks. In diplomacy, some of our work continues

to involve high-stakes bargaining between states; but there is scarcely an issue which is not also subject to shaping by movements of citizens acting collaboratively, organised through digital channels. Today there is very little that happens wholly in private. Look at the Copenhagen climate negotiation or the G20's work on economic recovery. We inhabit, in Eric Raymond's phrase, the political architecture of the bazaar, not that of the cathedral.

But if this digital information space is to develop as an open and trusted place where liberal values flourish, prosperity grows and interests can be negotiated, minority voices must continue to be heard and corporate interests transparently held to account.

The politics of *cloud culture* is more demanding than the politics of systems held in the grip of elites, but also more exciting. In practice, politicians subject to democratic mandate have no choice whether to accept and embrace these new digital realities. The politics of *cloud culture* is politics of the people, by the people; the implications for government are far reaching.

The Right Honourable David Miliband MP
Foreign and Commonwealth Secretary

In Judge Chin's Court

An obscure courtroom in the Southern District of New York presided over by Judge Denny Chin has been the unlikely setting for a battle of epic proportions to shape our emerging, global, digital culture. This battle, over who will control the future of books, is just one of several tussles that will determine who will control vast tracts of the digital landscape that only now are coming into view over the horizon as the next stage of the internet revolution unfolds.¹

The issue before Judge Chin's court is Google's ambitious book search project, which aims to digitise millions of books held in research libraries around the world. Google estimates it has already digitised about ten million books. The question is: On what terms will it make these available to readers and recompense their authors and publishers? Many of these books are still under copyright and commercially available. Access to them in digital form will have to be paid for. Many others – perhaps seven million – are so-called orphaned works: they are under copyright but no longer commercially available. Working out who should be paid for access to these orphaned works is a lot trickier. The arguments played out in Judge Chin's court will likely shape not just the future of books but much of the rest of our culture in the decades to come.

Google is offering to create a digital library that could grow to be larger even than the Library of Congress, which has 21 million books. Books that are trapped in deep and dusty stacks in obscure libraries will

become available to anyone with an internet connection. That should spread knowledge and ideas. Other libraries that have experimented with making rarely read documents available online have found they attract a much larger, global audience. More people than ever should be able to make more of the stock of our culture held in books. That should be good for all of us.

However, this shared cultural resource will come at a price which is difficult to calculate. Google is offering to rescue millions of neglected, orphaned works in exchange for acquiring considerable power over the future of publishing and books. Under the deal proposed by Google, the company would have exclusive rights to commercialise orphaned works. If one turned into an overnight hit Google would make most of the money. Once it was established, Google would be able to head off potential competition from other, different, databases of digital books. We would find ourselves locked into Google's service. As we visited Google's database to search for books it would acquire yet more information about our habits and interests, which it would aggregate and disaggregate in its vast servers, to sell advertising to us in yet more insidious ways. Google would retain the right to determine what books were made available. A profit-hungry corporation run by self-confessed software nerds with tunnel vision would not be most people's first choice to act as the custodian of our culture.

Google's plans and its attempts to strike a deal with the Authors Guild and the Association of American Publishers have provoked a mass of protests, many from outside the US. The French and German governments invoked Molière and Descartes, Goethe and Schiller and their winners of the Nobel prize for literature – 28 between them – to warn that Google's plans would create an 'uncontrolled, autocratic concentration of power in a single corporate entity',²

which would threaten a fundamental human right: the free flow of ideas through literature. Google's plans have already provoked accusations of cultural betrayal and protectionist countermeasures. In December French president Nicolas Sarkozy earmarked €750 million to digitise French books, films and museum artefacts as an alternative to Google's plan. Sarkozy implied French national identity would be in question if its culture were 'allowed to leave', as if Google were about to take it away from France by making it available to many more people.³ Earlier in 2009, the National Library of France provoked a storm of controversy by suggesting it would work with Google because the state-funded alternative, Gallica, was not up to scratch.⁴

The US Government Department of Justice was more concerned that Google would lock up the market and make it all but impossible for new competitors to enter. As well as opposition from old media publishers, Google's peers are also opposed. The Open Book Alliance, made up of Microsoft, Amazon and Yahoo!, which wants to create its own cloud of digitised books, accused Google of cooking up a scheme which would usurp Congress and give the company de facto control over copyright policy.

Sadly Judge Chin's court will not be the place to come up with ingenious new solutions to the issues raised by Google's plans. One option would be to create a genuinely public library of digital works. Yet that would require primary legislation in Congress, and a national US solution dreamed up in Washington would not impress much of the rest of the world whose culture was about to be digitised. A state-run digital archive might have as many downsides as one provided by Google. An alternative would be to create a global not-for-profit organisation to look after orphaned works and books already in the public domain. This organisation would

then apportion its income among authors and publishers. At the very least, governments will have to regulate access to the digital cultural stores Google is helping to create, to make sure the public interest is not abused.

We have the potential to make available more culture and ideas in more forms to more people than ever: a digitally enabled, cultural cornucopia. More people than ever will be able to connect through culture, sharing experiences and ideas. More people than ever will be able to contribute to this unfolding shared culture, through easy-to-use digital tools. Yet this possibility, a vastly enhanced global space for cultural expression, is threatened by intransigent vested interests, hungry new monopolists and governments intent on reasserting control over the unruly web. Judge Chin's court is a microcosm for the arguments that will rage over the control of culture globally in the decades to come. This essay is about that battle. Let us start with how we got here.

When the Bedouin have Mobiles

We sit beneath the palms of a crude Bedouin shelter, in the Sinai desert, at the entrance to the deep, narrow White Gorge that leads to the oasis of Ain Kundra, a watering hole for travellers for thousands of years, while a Bedouin woman makes us tea the traditional way on an open fire of twigs protected by a few stones. To get here has taken a seven-hour drive from Cairo, a jeep ride into the desert and a trek from the camp where we slept the night under the stars. Not a soul is to be seen on the sandstone plateau blasted by the morning sun.

Then from the palms above our heads a familiar tone rings out. It is her mobile phone.

What is remarkable is that it should cause so little surprise that a Bedouin should be connected to the same web of communications as people in Cairo, New York and London. In the space of a decade, mobile phones, Wi-Fi, broadband internet, satellite and digital television have become commonplace, if not ubiquitous. That has brought in its wake a culture of mass self-expression on a scale never seen before, which has the potential to touch and connect us all and to change how we relate to one another through culture. We are just at the first stages of the unfolding of this new global culture, and already it is producing remarkable things at breakneck speed and on a vast scale.

A self-made video by a Korean boy playing Pachelbel's *Canon in D* on the electric guitar in his bedroom has garnered more than 65 million hits on YouTube, providing the starting point for a global

community of guitar-playing boys. Without asking anyone's permission they created a global television channel devoted to a single piece of music. A largely volunteer-created encyclopaedia – Wikipedia – edited by about 75,000 volunteers has more than 13 million articles. Habbo, the world's fastest-growing virtual world, has more than 135 million members, 90 per cent of them aged 13–18. Avaaz, a global campaigning website which has 3.2 million members, raised more than €4 million in donations and undertook more than 11 million actions, such as email campaigns and petitions, in its first two years of operation. Skype, which allows people to use the internet to make free telephone calls, is in effect the second-largest telephone carrier in the world, with almost 405 million users, just ahead of Vodafone with 380 million subscribers and behind China Mobile with 450 million. It took Skype just five and a half years to acquire this user base. It took YouTube four years to attract 363 million regular users. Facebook acquired almost 236 million members in just five years.⁵ More video is uploaded to YouTube in two months than if the US television networks ABC, NBC and CBS had been broadcasting non-stop since 1948. The websites of these established television channels – which have been around for 60 years – get about 10 million unique visitors per month. MySpace, YouTube and Facebook get 250 million visitors per month. None were more than six years old in 2009.⁶ The Technorati service tracks 93.9 million blogs, an activity unheard of ten years ago. Most of the biggest websites in the world are platforms for mass participation and collaboration, self-expression and social connection: YouTube attracts almost a fifth of internet users; Blogger is the seventh most popular site in the world; Twitter got 67 million unique visitors a month in 2009; Flickr, the photosharing site, serves 68

million views a month; Facebook, the social networking site, attracts 370 million unique visitors a month.⁷

Ideas and images were already being shared between people and countries as never before through terrestrial, cable and satellite television and radio stations; feature films and DVDs; video games and music. But in the past decade the World Wide Web, born in 1989 and brought to life only in 1994 with modern browsers, has wrought a creative and disruptive impact on culture and communications. What might the next decade hold for how we create, share and communicate culture and what might that mean for how we relate to one another, across cultures?

The combination of mass self-expression, ubiquitous participation and constant connection is creating *cloud culture*, formed by our seemingly never-ending capacity to make and share culture in images, music, text and film. The rise and spread of the internet and the world wide web are first and foremost a cultural phenomenon. Their impact will be felt first in culture and only later in politics and commerce. The web allows more people than ever to create and make content; distribute and share it; to form groups and conversations around the ideas and issues that matter to them, which shape and express their identity and values. The current expression of that process – Web 2.0 – began to emerge in the late 1990s, created by social media sites like Facebook and Twitter, blogging and wikis. The next phase of that process will turn on a distinctively different kind of internet, the rise of cloud computing, which will allow much greater personalisation and mobility, constant real-time connection and easier collaboration. We could all be connected, more continuously and seamlessly, through a dense cloud of information. In the last ten years the web gave rise to social media and social networking.

In the next ten years cloud computing will give rise to something new again, cloud culture and even cloud capitalism. Features of cloud computing and cloud culture may seem far-fetched and unlikely. Yet real-time, social media of the kind that is now commonplace was unthinkable just ten years ago. Just as much change is likely in the ten years to come as in the ten that have just passed. Where might it lead us?

The future of the web is still uncertain: how far and fast it will spread; how significant it will be for politics and democracy; who will control it and make money from it. We are perhaps 15 years into a process of mass, social and cultural innovation, involving hundreds of millions of people around the world experimenting with a technology platform that is still evolving, the ownership of which is far from settled. Yet this much seems clear. Cheap and powerful digital technologies are allowing us to create vast new stores of digital cultural artefacts of which Google's book plan is just one example. These stores are in huge public archives like the World Digital Library, which is being created by a group of the world's leading cultural institutions; in new collaborative stores like Wikipedia; semi-public stores like Flickr and in the libraries each of us now keeps on our own computers and on our iPods. Each of us, in our way, has become a part-time digital librarian, storing, sorting, retrieving digital content we have created or own and sometimes sharing that with others.

These new stores of digital cultural artefacts will become more accessible in more ways to more people than ever, through Wi-Fi and broadband, multiple mobile devices as well as familiar computers. More people will be able to explore these digital stores to find things of value to them. That could set in train something akin to the process of collaborative

creativity that drives open source software. The open source software movement's rallying cry is: 'many eyes make bugs shallow'. The more people that test out a program, in different settings, the quicker the bugs will be found and fixed. The cultural equivalent is that the more eyes that see a collection of content, from more vantage points, the more likely they are to find value in it, probably value that a small team of professional curators may have missed. As more people explore these digital stores they will make connections and see significance where it has not been spotted, provide more context to add meaning. Thanks to better search tools, collaborative filtering and recommendations by word of mouth through social networks, we should be more able than ever to search for and find content that is particularly interesting to us.

We will also be equipped with more tools to allow us to make our own contribution, to post our photograph or composition. We will be able to mashup, remix, amend and adapt existing content, even if only in small ways. As we collaborate with others who are also interested in the same issues so this will throw up clouds of cultural activity as people debate, compare and refine what they share. These clouds will often have at their core high-quality professionally produced content. But that will also attract to it skilled and dedicated amateurs as well as general users.

We will have more access than ever to more cultural heritage – stored digitally – *and* more tools to allow us to do more, together, to add to this content creatively. That equation will produce in the decade to come a vast cultural eruption – a mushroom cloud of culture.

The Cloud Culture Equation

**More cultural heritage
stored in digital form**

+

More accessible to more people

+

**People better equipped with more tools
to add creatively to the collection**

=

**Exponential growth in mass
cultural expression**

=

Cloud Culture

The next most likely stage of the web's technical development – cloud computing – will act as a giant accelerator for cultural cloud formation. It will be like a giant machine for making clouds of culture. So before going any further let us explore in a little more detail some of the technological developments that will give rise to the cloud.

From the Web to the Cloud

When the *New York Times* wanted to make available on the web 11 million articles dating from the newspaper's founding in 1851 through to 1989, the paper scanned in the stories, converted them to TIFF files, and uploaded them to Amazon's cloud service S3, taking up four terabytes of space on Amazon's remote servers. The *New York Times* did not co-ordinate the job beforehand with Amazon: someone in the IT department signed up for the service on the web using a credit card. Then, using Amazon's EC2 computing platform, the *New York Times* ran a PDF conversion application that turned the TIFF files in PDF files. The conversion process took about 24 hours. At the end the *New York Times* had an archive of 11 million articles to be made available to the world. It had created the archive and made it available by using cloud computing.⁸

The net is still evolving and so too are the metaphors we deploy to make sense of it. One thing is clear: as the net develops it will connect more people, devices, data and programs more densely and intensively. The scale and diversity of these connections will drive us towards a qualitatively different kind of internet.

The net we have grown up with was based around data and software stored quite close to where it is used on personal and mainframe computers. That gave people a sense of ownership and control, exploiting cheap local storage because the bandwidth to download data from remote sources was too expensive and unreliable. The net was a way for us easily to link

these disparate and disconnected machines, with their separate data and software.

In the world of cloud computing our data – emails, documents, pictures, songs – would be stored remotely in a digital cloud hanging above us, always there for us to access from any device we like: computer, television, games console, handheld or mobile, embedded in our kitchen table, bathroom mirror or car dashboard. We should be able to access our data from anywhere, thanks to always-on broadband and draw down as much or as little as and when we need. Instead of installing software on our computer we would pay for it only when we needed it.

The most familiar early version of a cloud-based service is webmail – Gmail and Hotmail – in which email messages are stored on remote servers which can be accessed from anywhere. Google also provides ways for people to store and then share documents and spreadsheets, so that many people can access the same document. Facebook and Twitter are like droplets of personal information held in a vast cloud. Wikipedia is a cloud of self-managed, user-generated information. Open source software platforms like Drupal are software clouds, which coders can draw down from and add to.

Sharing our programs, storage and even data makes a lot of sense, at least in theory. Pooling storage and software with others should lower the cost. Cloud computing would turn computing power into just another utility that we would access much as we turn on a tap for water. The reservoirs will be vast energy-efficient data centres – 7,000 of them in the US to date. Google has two million servers running around the world. Yahoo! is busy building server farms and Microsoft is adding up to 35,000 servers a month in places like its data centre outside Chicago, which covers 500,000 square feet at a cost of \$500 million and will hold

400,000 servers. Sitting on top of these will be more pooled applications, like the apps used on the iPhone. The software company Salesforce.com has a cloud of 300 free software programs and 500 that can be bought per unit of usage.⁹

The potential benefits are already becoming evident to some leading global companies. Bechtel, the Swiss engineering firm, for example, estimates data storage costs could fall from \$3.75 per gigabyte per month under its proprietary system to \$0.15 per month with an external provider such as Amazon. Bechtel estimates its computing costs should fall by more than 30 per cent just in the first limited phase of its shift towards cloud computing. Bechtel's head of IT Geir Ramleth put his aim this way: 'We want anybody to be able to have access to the right resources at any place at any time with any device, in a cost effective and secure environment.'¹⁰ Cloud computing should also bring benefits for many millions of smaller organisations. A small business should be able to draw down from the cloud basic programs for customer relationship management, online marketing, payroll, e-commerce, inventory management.

When computing becomes merely a utility we plug into, the focus for innovation will shift to the demand side. Imagine for a moment that electricity was used only to power one kind of machine known as an *electricity machine*. That is what computer power is like now: it mainly powers devices that sit on our desks with qwerty keyboards attached. As computing becomes a utility it will power many more devices, many of them with no user interface, more of them mobile and handheld. The cloud should also encourage collaboration. Different people, using different devices should be able to access the same documents and resources more easily. Work on shared projects will become easier, especially as collaboration software and

web video conferencing becomes easier to use. This should allow far more of what Hal Varian, Google's chief economist, calls 'combinatorial innovation',¹¹ as developers mashup data from different sources, as many people are doing already with Google maps. It is more sensible not to think of *the* cloud but clouds taking different shapes and forms.

From the Cloud to Clouds

The clouds in our skies take many different forms by mixing the same basic ingredients. They are often huge but fleeting, rarely retain their shape for more than a few minutes and often migrate from one form to another in the course of a day. Clouds range from the giant cumulonimbus to the shreds of stratus fractus, the fair weather cloud cumulus fractus to the beautiful wisps of cirrus uncinus. Clouds can be produced en masse by the advance of a depression or as a single form by a local convective eddy. Clouds live at ground level in the form of fog and at very high altitudes, the famous Cloud 9. If we are moving to a future of cloud computing and cloud culture then we should hope for a similar variety in the forms it takes.

The basic classification of clouds into cirrus (fibres), stratus (layers) and cumulus (heaps) was developed by Luke Howard, an amateur meteorologist working in London's East End.¹² Howard's classification, first published in 1803, allows for constant mutation as one form of cloud becomes another: thus cirrus clouds that are becoming stratus clouds are cirrostratus. The first international inventory of clouds published in 1896 distinguished clouds by their altitude as well as their shape, with refinements to Howard's schema added by German and French meteorologists. That has since become a ten-point basic classification from 0 for

cirrus to 9 for cumulonimbus, the highest climbing cloud. Within this scheme there are 52 main varieties of clouds, from low cumulus clouds – Cumulus humilis through to high-altitude Cirrocumulus floccus.

We may well need something as flexible and expansive to distinguish the many varieties of digital clouds that will emerge in the decades to come.

Digital clouds will be either commercial, social or public. Commercial clouds are either enabled or managed and supported by a commercial provider, which might also mine data from the cloud and provide tools for people to contribute to the cloud. Flickr's clouds of photographs would probably fit into the commercial cloud sector. Google and Amazon are offering commercial cloud services. The World Digital Library, on the other hand, which is being created by government-funded libraries around the world, is a prime example of a public cloud. Wikipedia is a social cloud: it has mainly been created through voluntary effort.

Clouds will be either open or closed. Bechtel's cloud is a private, closed and commercial cloud for the use of its employees. Twitter is nominally a commercial cloud but it is open for anyone to join. Wikipedia is both social and open. The cloud of online activity around the Muslim Brotherhood is social but closed. Governments are creating both open and closed clouds. The Open Data movement is forcing governments to be more open with data and to allow social entrepreneurs and citizens to reuse it. Meanwhile governments are also creating large closed clouds of data for intelligence and security purposes.

Some clouds will be fairly permanent while others are more transitory and emergent. Science, for example, is providing models for what might happen to the rest of cloud culture. Some clouds of scientific data and global collaboration are quite institutionalised and permanent,

for example, around the Large Hadron Collider at CERN. Other clouds are more fleeting and passing. Viral marketing campaigns succeed only if they allow people to spread content very easily and openly and when successful create huge balloons of media activity. Clouds will also differ in their reach. Some might be ultra local, others global.

The web has already had many incarnations. Once it was thought of as the digital superhighway. Others have likened it to a frictionless market. In the last decade the social and networked features of the web have come to the fore. In the decade to come it is likely that the cloud will be the most persuasive and powerful metaphor, to link both technical developments in how computers and the internet work but also to understand its cultural impact and significance. What will the rise of cloud computing mean for culture?

Culture and the Cloud

Culture is our ever-evolving store of images, texts and ideas through which we make sense and add meaning to our world. Our culture, in the broadest sense, helps us to frame and shape our identity, to say who we are, where we are and which generation we are a part of.¹³ Culture is not something we choose but find ourselves belonging to; it shapes what matters to us, and how we see the world. Culture is customary and collective, to some extent intuitive and unreflective; it is just there from the style of food that we regard as ours, to the stories we had read to us as children, the songs of our teens, the television characters we identify with, the music we play at weddings, the poems we read at funerals, the way we design our houses, what we wear, how we distinguish ourselves. Culture is what we assemble our identities from and so it also provides powerful points of coming together, often in uplifting shared experiences, especially perhaps in societies where ritual, religion and politics no longer provide that focus as once they did. Most of our culture is not kept in special cultural houses – museums, galleries, concert halls and cinemas. It is all around us like the air, grass, rain and language.

As so much of our culture is not owned by anyone, much of it is open to constant adaptation, evolution and reinterpretation, to be remade and remixed. A culture that is alive is never entirely closed. As culture is vital to what matters to us and explaining who we are, so giving other people access to what we count as *our* culture is a vital way for us to understand one another,

what we share and what makes us different. Culture comes from specific and distinctive ways of life. In a less ideological but more incessantly connected world, the most powerful way to distinguish what matters to us as individuals, communities and nations is through culture. As a result culture can be a point of disagreement as much as a point of union.

If culture provides much of our sense of identity, then creativity helps to give us our sense of agency: who we want to be, what mark we want to leave. Culture gives us roots, creativity a sense of growth. Creativity gives us a way to add to and remake our cultural stock: it allows us to escape being entirely defined by our traditions.

The growth of the digital cloud will change both culture and creativity. Digital stores of data in the cloud, ubiquitous broadband, new search technologies, access through multiple devices – these should make more culture, more available than ever before to more people. We are also living through a massive proliferation of expressive capacity to add to and remix culture with cheaper, more powerful tools for making music and films, taking and showing images, drawing up designs and games. That is why we are in the midst of a series of cultural eruptions that are throwing up vast clouds of new Pro-Am culture.¹⁴ For some these clouds are beautiful and inspiring. Others believe cloud culture will drop the equivalent of acid rain. The most telling contemporary example of this tension is music.

We can create and reorder our own vast collections of musical content and play them wherever we want thanks to our iPods. We can draw from a variety of music clouds, from the legal and commercial iTunes and Spotify, to sites which have led to illegal file sharing, such as Kazaa and LimeWire. We have console games like *Rock Band* and *Guitar Hero*. Our computers carry software such as Logic and GarageBand, which allow us

to create and score music. Entirely new musical genres could emerge from this mixing, as James Boyle argues in his book *The Public Domain*.¹⁵ Soul was created in the early 1950s when the singer Ray Charles decided he needed to leave the shadow of Nat King Cole and establish his own style. His first successful attempt to do so – ‘I Got a Woman’ – was a blend of gospel and blues, the nightclub and the church, the sacred and the profane. Charles’s formula was generative: it made possible many more different kinds of soul music. As Matt Mason points out in *The Pirate’s Dilemma*,¹⁶ most new cultural forms, and so most new markets for culture, are opened up by people who initially are regarded as pirates and renegades: much the same was true for Hollywood films, commercial radio and hip hop. More people are listening to, making and playing more music than ever before. All that makes for faster evolution, with more rapid mutation and adaptation.

Yet the heart of this modern culture of music recording depends on a reasonably ordered and controlled process for recording, marketing and distributing music. Cloud culture threatens to disrupt every aspect of the industry’s value chain. The music industry is in a state of disarray, even while musical expression explodes. There has never been more music played, shared, created and listened to by so many people, in so many places. Yet this explosion of music culture has been accompanied by deep angst over how to sustain music as an industry, from the training of classical musicians, to the future of minority genres and the prospects for the mainstream pop recording industry. The same tension – exploding possibility combined with morbid anxiety – afflicts most other areas of cultural production.

Culture is increasingly important for nations, regions and ethnic groups to distinguish and explain

themselves. We relate to one another increasingly through shared cultures rather than shared religious or political belief. Yet the rise of the cloud will disrupt how culture is expressed and organised. As a result it is bound to have an impact on cultural relations: how people in different societies relate through culture. It follows that cultural relations will increasingly depend on the future of the cloud.

The Cloud and Cultural Relations

Cloud culture could allow disparate and particular interests to be brought together and connected in new ways. This will not be a new common global culture but at least common reference points and shared platforms for diverse cultural expression. This could provide a new story for how we relate to one another through culture.

The dominant story of modern cultural relations is that ideas have spread around the world from Europe and the US, especially through industrial era media, which requires heavy capital investment for production and distribution. Whether in film, architecture or literature, the modern international style was largely an extension of the Western style, sometimes imposing itself on and often inserting itself into foreign contexts. Western ideas were carried through trade and business, in the search for markets and profit, but also by missionaries and social reformers, armed with a civilising sense of purpose. Industrial era media – film is a classic case – is still dominated by small centres of production in the West such as Hollywood. The lion's share of the \$1 trillion a year world trade in cultural products comes from the US and UK, although China and India's share is rising fast. In half of the 185 countries in the United Nations a feature-length film has never been made.¹⁷ In the last decades of the twentieth century the most potent forces shaping cultural relations seemed to be the aspirations for Western products and lifestyles spread by major brands, a process which Naomi Klein critiqued in her 1999 bestseller *No Logo*.¹⁸

This has led many critics to allege that Western culture carried by Western media is eradicating distinctive national and local cultures and languages. Jeremy Tunstall's *The Media are American*¹⁹ captured this mood along with descriptions of the process as *Dallasification*, *Coca colonisation* and *McDisneyfication*. Seven of the world's top ten media companies are American, among them Walt Disney, Viacom, News Corporation and Time Warner. There are other important sources of film and television: Bollywood makes more films than Hollywood, the Latin American *telenovela* has a global following. Yet the US and some parts of Europe dominate traditional, industrial era media. As deregulation and digitalisation have opened up yet more television channels and fragmented audiences still further, smaller national broadcasters have found it increasingly difficult to fund their own productions and so have increasingly relied on imported US products: more than 70 per cent of the content of some European television channels come from the US.

In 2002 UNESCO estimated that rich countries exported \$45 billion worth of cultural goods and services, compared with \$329 million from the poorest countries.²⁰ People are increasingly buying goods and services linked to rich world brands, which are some of the most powerful cultural carriers. The UK was the world's largest cultural exporter at \$8.5 billion, compared with India at \$284 million, South Africa at \$56 million and Brazil at \$38 million. The recorded music industry tells a similar story. Three quarters of a world industry worth \$31 billion at the start of the decade was accounted for by the US and Europe. Just one per cent of recorded music came from Africa.

The West's cultural dominance has spawned its own response: a defence of particular, distinctive cultures, particularly those at risk, whether fast-disappearing

languages being displaced by the many varieties of English, religious faiths threatened by Western individualism or local producers being run out of business by global brands. Cultural relations can become cultural conflict, as described, for example, in Thomas Friedman's *Lexus and the Olive Tree*,²¹ Benjamin Barber's *McWorld vs Jihad*²² or Samuel Huntington's *Clash of Civilizations*.²³ As Edward Said argued in *Culture and Imperialism*,²⁴ the yearning to return to distinctive cultural roots can quickly become a breeding ground for fundamentalism. Culture becomes a protective enclosure for endangered identities rather than something that unfolds and opens out. Meic Pearse's *Why the Rest Hates the West: Understanding the roots of global rage*²⁵ argued that the spread of Western culture, especially in the way it threatened traditional moralities and authority, would license violent reaction and resuscitate traditional cultures. In much of the world young consumers want Western brands. In some parts of the world the new cool is to reject them in favour of tradition.

Both these accounts frame culture in the rest of the world in terms of its relationship with the West: either other cultures are dominated or they are dissenting. A third approach – associated in the West with postmodernism and multiculturalism – has been to reject grand cultural narratives in favour of celebrating difference. This set off a search for origins as the prime source of culture and identity. In the West, on the other hand, postmodernism expressed itself as an irreverent, eclectic and often lurid mix of old and new, exotic and banal, high and low culture. In this account the best that we could hope for is an acceptance of how different we are. The ideal of common cultural reference points is an illusion or, worse, a cloak for dominant Western values.

The truth is, few people are one thing and one thing only. Our cultures are increasingly entangled by their

shared histories and the reality of international travel, trade and communications. Writers like Ulrich Beck in *Cosmopolitan Vision* and G. Pascal Zachary in *The Global Me: The new cosmopolitans*²⁶ take this as their starting point to celebrate the rich and poor migrants of this liquid world, living in diasporas, circulating from a home in one country to work in another. Beck describes a global culture of mobility, constant and eclectic consumption, openness to others and ceaseless connections between cultures. Marwan Kraidy in *Hybridity or the Cultural Logic of Globalization*²⁷ and Jan Nederveen Pieterse in *Globalization and Culture: Global melange*²⁸ focus on a culture shaped by people with hyphenated identities – Black-British, Chinese-American, what economic geographer Annalee Saxenian calls the ‘new argonauts’ in her book of that title, people who shuttle from Bangalore to Silicon Valley, between Pune and Dubai.²⁹

These stories – Western domination; resistance to it; celebration of difference; the culture of modern nomads and hybrids – have shaped our view of the possibilities and the power embedded in international cultural relations. Cloud culture offers to create another story, one which allows for much greater diversity of cultural expression from many more sources, as technology costs fall, but which also allows for much more diffuse reciprocity and connection, based on the shared resources of the cloud. Cloud culture is a recipe for more cultural difference to be expressed, on an equal footing *and* for more connections to be made to find points of shared interest. The task for cultural relations in this context is to allow as many people as possible to contribute and connect, translate and blend culture.

Pierre Levy led the way in painting an optimistic account of what cloud culture might mean in his 1997 book *Collective Intelligence*,³⁰ which imagined an

intricately connected, all-encompassing knowledge space for all of humanity, which would be an archive of data and a place where a community of researchers, thinkers and artists would search, explore, connect and consult, in a space at once universal, pluralistic, collaborative and evolving. A decade later in *The Wealth of Networks*, Yochai Benkler³¹ hailed the emergence of commons-based peer production, a new kind of productive community that would be ‘radically decentred, collaborative, non-proprietary, based on sharing resources and outputs among widely distributed and loosely connected individuals who co-operate without relying on market signals or managerial commands’.

The World Summit on the Information Society, in Tunis (2005), pledged to create an information society where ‘everyone can create, access, utilise and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life’.³²

Henry Jenkins in *Convergence Culture*³³ writes about the power of fans and hackers to remake culture, cycling between the do-it-yourself grassroots and the mainstream media of television and publishing. Manuel Castells in *Communication Power*³⁴ describes a culture of mass self-communication in which people increasingly communicate to and through one another, rather than through formal media organisations like broadcasters and publishers:

It is self-generated content, self-directed in emission and self-selected in reception by many who communicate with many. This is a new communication realm, and ultimately a new media, whose backbone is made of computer networks, whose language is digital and whose contents are globally distributed and globally interactive. True, the medium, even a medium as revolutionary as

this one, does not determine the content and effect of its messages. But it has the potential to make possible unlimited diversity and autonomous production of most of the communication flows that construct meaning in the public mind.

In short, according to the optimists, web culture should be a rare and delicate mix: more decentralised, plural and collaborative; less hierarchical, proprietary and money-driven; the boundaries between amateur and professional, consumer and producer, grassroots and mainstream are breached, if not erased.

Where might we turn for signs of what that might mean for international cultural relations? One guide might be the way science is being remade by global collaboration over the web.

Signals from the Future: Science and Software

The most innovative science of the twentieth century was done in big laboratories. The most innovative science of the twenty-first century will be done in a cloud of international, interdisciplinary collaboration.

Science in the twentieth century was driven by state-funded basic research, mainly in the physical sciences: so-called Big Science. Between 1923 and 2005 US government funding of research and development increased from less than \$15 million to more than \$132 billion a year. By the end of the century R & D spending averaged 2.2 per cent of GDP of countries in the OECD. World R & D spending reached \$729 billion in the year 2000. Total public spending on all aspects of science and technology development was worth about \$1 trillion.³⁵

The latter decades of the twentieth century sowed the seeds of a shift away from national science systems towards international and interdisciplinary collaborative research. This will be the most potent way to do science in the century to come. The more elite the scientist, the more likely he or she is to be a node of international collaboration. The best science and the most cited articles are the product of international collaboration.

Take seismology as an example. In 1990 about nine per cent of articles in internationally recognised science journals were internationally co-authored. By 2000 the figure was 16 per cent. Between 1980 and 1998 international co-authored papers in seismology rose by 45 per cent while nationally co-authored articles rose by 26 per cent. Internationally co-authored articles were more

likely to be cited by other scientists, suggesting they were of higher quality. The networks supporting this collaboration became much denser: the ties between seismology researchers tripled in the last decade of the twentieth century. Seismology was not alone. Sciences as different as astrophysics, which requires heavy capital investment, and mathematical logic (which requires very little), exhibited large increases in international collaboration. In astrophysics the proportion of internationally co-authored articles rose from 29 per cent in 1990 to 47 per cent in the year 2000; from 21 per cent to 38 per cent in mathematical logic; from 11 per cent to 33 per cent in soil science and from 14 per cent to 24 per cent in virology.³⁶

Scientists are being driven to share knowledge because they are tackling such complex fields that no one has the complete picture or answer. They want to match themselves with collaborators with complementary skills and assets, to pool data and resources, to develop their reputation by attaching themselves to internationally renowned research projects. The web is not the sole driving force behind international collaboration in science. But it is making it a lot easier. All research is becoming more interconnected, collaborative and networked.

In part that is because science is increasingly driven by the analysis of large overlapping clouds of data. Carol Goble, a professor of computer science at Manchester University, estimates that in just one subfield – nucleic acids – researchers now routinely start work by scanning 1,070 connected databases. The Large Hadron Collider will generate the equivalent of 400,000 PC's worth of data a year. PubMed lists more than 17 million articles. According to Goble, scientific data will be held in large, overlapping clouds that will require 'mixed stewardship'; the scientific method will depend on new kinds of international, virtual collaboration, and scientific

research will be published in forms that allow the data, software and results to be easily recombined to be used in other research and publications.³⁷

Caroline Wagner describes this process in *The New Invisible College*, her account of the rise of virtual collaboration in science:

*Self-organizing networks that span the globe are the most notable feature of science today. These networks constitute a new invisible college of researchers who collaborate not because they are told to but because they want to, who work together not because they share a laboratory or even a discipline but because they can offer each other complementary insight, knowledge or skills.*³⁸

One way to understand scientific clouds is to look at where people work and how they share resources. Scientists working on various challenges with different kinds of resources are finding new ways to collaborate. Some are creating clouds around science projects so big they require the resources of several governments to create the shared infrastructure: the Large Hadron Collider at CERN is a prime example. Scientists from many locations come together in a single place to work together. Other collaborations are formed around particular locations, which become the subject of study for researchers from different places: the thousands of scientists involved in the International Polar Year is a prime example. Projects such as the Human Genome were initiated by a small central team, based in the UK and the US, which drew in thousands of other contributors and collaborators. Emerging fields, like nanoscience and synthetic biology, in which basic knowledge is still evolving, depend on weak ties between flexible teams drawn from many different disciplines. Other fields, like seismology and the work done by the Global Biodiversity Information Facility,

rely on more diffuse bottom-up networks with very little central co-ordination and lots of shared information.

Another way to think of scientific clouds is to focus on the different challenges people are tackling. Some are localised and acute challenges such as flooding or water pollution. Others are global and acute challenges such as the spread of SARS or the H1N1 virus. These acute challenges often lead to loose, emergent and rapid response science to help find solutions to an urgent problem. The Boston Children's Hospital has created a real-time world health map showing where disease outbreaks are being reported. The response to SARS in particular showed quite clearly that international collaboration outstripped national efforts – for instance of the Chinese – to find a solution. Chronic challenges meanwhile – global warming or poor local soil conditions – require more structured, patient and institutionalised forms of collaboration.

The chief challenge for scientists and policy-makers is to make these diffuse forms of collaboration work. As Wagner puts it:

*No nation can have a fully contained science system because all parts of science interact with and support each other. To create knowledge, scientists must find ways to identify and connect to each other. As a result the goal of policy should be to create the most open and fluid system possible.*³⁹

The following are some of the lessons that science might have to offer other areas of cloud culture:

- clouds form around key contributors and interesting questions, which attract contributions from many people
- someone trusted has to put in place a kernel, the beginnings of a project to which others add

- it has to be easy for people to share knowledge, access codified data and do something with it
- leaders of the community respected by their peers must set the rules of engagement
- individual contributors must get something from their participation – either in helping them to solve a problem, in terms of their reputation, standing in the community, opportunities to learn and to make further contacts in the network
- the collective effort needs to be fed by transparency, open information sharing and rapid feedback, so people can adjust quickly. An approach that is too bureaucratic or centralised will kill off collaboration.

How might we carry these lessons into the field of international relations? Let us examine what it could mean for public diplomacy.

Open Source Diplomacy

The idea of public diplomacy rose to prominence in the 1990s as governments came to terms with an international environment that had become more complex and less stable. Governments had to interact with a multiplicity of international actors – regions, cities, NGOs, corporations, radical political groups. State to state diplomacy became just part of a game involving many more players and ever-shifting sets of rules. A widespread response was to invest more in public diplomacy: attempt to manage the international environment and promote national interests by engaging directly with foreign publics, to 'win the battle of hearts and minds', for example through dedicated television

and radio channels, education and cultural initiatives. Yet public diplomacy retained an important continuity with the past: it was the projection of power, albeit by soft means, to persuade and attract foreigners to buy into a state's goals and values, rather than through the hard power of military action and economic sanctions. Public diplomacy was a different tool to do the same job. The soft power of public diplomacy was a license for brand building to be applied to nations much as it was to international products.

This kind of top-down branding approach, which treats people as targets rather than participants in an exchange of views, is unlikely to work in the era of cloud culture, when people will have many more sources of information, places for debate, the means to have their say and an expectation that they will be engaged rather than lectured. A more fruitful model is instead to see this as a task for building cultural relations, links between people through culture. The best way to understand how that might be done is to adopt an approach inspired by open source software.

Open source software is software that anyone can use, in which the source code is left open to be modified by other users. Open source software proceeds from the assumption that the basic code is probably unfinished and at best a rough approximation of what is needed. The best way to improve it, open source programmers argue, is to leave the code open so people can add improvements and fix bugs as they use and adapt the code in situ.

The key to that process of collaborative learning and improvement is that no one – including the originators – has the right to prevent someone else using the code. Generally people who seek to use open software are also under an obligation to contribute back any improvements they make. They cannot prejudice the rights of other people to use the code by locking it up.

Open source has set off a cycle of collaborative, shared development among geeks. Most of the web and many corporate computer systems, including Google's, run on open source software. These communities, such as Linux and Ubuntu, are the inspiration for much of the optimism about the collaborative potential of the web. Steven Webber in *The Success of Open Source*⁴⁰ argues that open source represents a new way for communities to organise work by labour self-distributing itself to relevant tasks rather than following a division of labour handed down from on high. Richard Sennett in *The Craftsman*⁴¹ argues that the self-regulating, problem-solving work done in open source communities represents a resurrection of the craft tradition. Christopher Kelty in *Two Bits*,⁴² his journey through open source communities, describes them as 'recursive publics': self-sustaining communities that are simultaneously a market, a network, a public space and a movement. Media theorist Axel Bruns in *Blogs, Wikipedia, Second Life and Beyond*⁴³ writes of communities that share resources but reward individual contribution, through a process of peer-to-peer evaluation. This has all helped to feed the arguments of other commentators – Clay Shirky in *Here Comes Everybody*, Ori Brafman and Rod A. Beckstrom in *The Starfish and the Spider* and Charlene Li and Josh Bernoff in *Groundswell*⁴⁴ – who argue that the web opens up a wider menu of possibilities for people to be organised without organisations and leaders.

Eric Raymond, one of the original theorists of open source software, famously distinguished between the cathedral and the bazaar as models for organising work.⁴⁵ For Raymond, a proprietary software program designed by a central team was like building a cathedral according to a master plan. Open source software emerged through a more chaotic, collaborative and

decentralised process that was more like a bazaar in which good ideas spread fast, from the bottom up. Traditional diplomacy is the diplomatic equivalent of the cathedral: teams of experts in endless talks over the detail of treaties. The recent climate change summit in Copenhagen was a classic example of this kind of diplomacy at work on a global scale. However, more of the future will belong to open source style approaches, modelled on the bazaar. These involve mobilising a mass of players, many of them in civil society, behind a new initiative. The Copenhagen talks were shadowed by an encampment of NGOs and other groups, who were the geeks-in-chief of climate change policy-making open source style. From now on almost every large-scale effort at traditional diplomacy on controversial issues, to organise treaties between states, will be accompanied by an open source equivalent.

Creating platforms for these often grassroots, multinational communities to form will be a vital goal for cultural relations. Some international NGOs and charities – Greenpeace, Amnesty International, Oxfam – themselves creatures of the old media world, are developing ways to enable their supporters to become more engaged in campaigns, contributing more than money, and engaging more directly with those they are trying to help in the developing world. Ali Fisher, director of Mappa Mundi consultants, puts it this way:

The open source approach argues for working as a genuine partner with groups that seek to achieve congruous ends through providing them with what they need in an open and transparent manner. The key is control; support cannot be used for coercion. This approach builds a community that is based on common interest and ability – not a hierarchy that is based on power.⁴⁶

Kinds of Clouds

We associate science with laboratories. But increasingly it will also be conducted in the cloud, through virtual collaboration. We associate culture with books and films, cinemas and libraries. But, like science, culture increasingly will be conducted in the cloud as well. Cloud culture is likely to take a huge diversity of forms:

- Permanent clouds of global cultural resources for people to draw on will be created by public, private and voluntary contributions. An example of global public cloud culture is the World Digital Library. Wikipedia is the prime example of a global cultural resource created by volunteer contributions. Google is providing private funding to digitise a vast collection of out of copyright books. iStockphoto is a quasi-commercial collection of photographs mainly taken by amateurs. Flickr allows the creation of a vast collection of user-generated photographs
- Emergent clouds will respond to crises. A prime example is Ushahidi – a mashup of Google Maps for people to report where attacks were taking place in the violence following Kenya's disputed elections in late 2007.⁴⁷ Ushahidi is in embryo a mass, social human rights cloud – an emergent response to crisis – that may in time become more permanent
- Fans-based clouds of culture will form around global media properties. Star Trek fans, for example, have created hundreds of feature-length films in homage to the series
- Communities will form around particular pieces of shared and common culture. An example is the self-organising community of young guitar players on YouTube dedicated to mastering Pachelbel's *Canon in D*

- Clouds will form around particular tools and platforms for creativity. A global community of lead users has formed around Sibelius, the score-writing software
- Clouds will morph from one form to another, just as they do in the sky. Susan Boyle became famous because a video of her doing an audition for *Britain's Got Talent* became an overnight sensation on YouTube, garnering 93,5 million views in just 11 days, more than five times the number of views of the video of Barack Obama's inauguration address. Boyle's success online then played back into traditional media: her first album was a global hit. The successor to the hit television show *American Idol* is due to start online to build up a loyal following before transferring to television
- Clouds will connect previously dispersed cultures. An example is the way that part of the international Jewish community has taken up social networking to make and remake connection. As globalisation creates more diaspora communities, so the web will also create ways for these communities to remain culturally connected
- Cloud culture is likely to be as nationalistic as it is cosmopolitan. Much of the Arab blogosphere, which now amounts to more than 4,000 blogs, is nationally oriented: they are commentaries on national politics. Russian nationalists have used mashups of Google Maps to show where ethnic minorities live in Russian cities to co-ordinate their harassment. There is no reason to imagine cloud culture will be purely civic. It could also be predatory and vicious.

The question of which culture you belong to and how you identify yourself will be bound up with which clouds you belong to.

Storm Clouds

Technology is creating the possibility of a different kind of global cultural relations, simultaneously more diverse, plural, participative, open and collaborative. Yet for all its promise that is no more than a possibility. Indeed, the emergence of this new kind of communication-based power, vested in forms of mass collaboration in civil society, is already provoking a fierce struggle as governments and companies try to wrest back control. The web may prove to be such a pervasive and unsettling force, both for governments and corporations, that it will provoke a counter-revolution, which will bring with it more pervasive surveillance and tighter controls. As the web reaches deeper into the detail of our lives so too will the apparatus designed by governments and corporations to keep it under control. Having promised to be a zone of free, lateral association and collaboration the web could soon become densely policed by official censorship, copyright restrictions and corporate policies. These are just some of the threats to the web's potential for creating a new global cultural commons. These threats will need to be met for the potential of cloud culture to be realised.

Censorship and the Power of Government

Cyberspace is providing a new space in which civil society organisations in authoritarian societies can organise. The costs of producing a samizdat that can reach thousands of people has fallen dramatically and will fall further with the advent of cloud computing.

New collaborative tools should help civil society organisations and campaigns. Yet as fast as this space is opening up, authoritarian governments are becoming increasingly adept and sophisticated in closing it down. The idea that authoritarian governments will always be so top heavy that they will be outwitted by the fast-moving throng on the web is mistaken. As Evgeny Morozov, a contributing editor at *Foreign Policy* magazine, shows, many regimes are eschewing direct confrontation in favour of more subtle, pernicious and pervasive forms of cloud management.⁴⁸

The Thai authorities, for example, have used crowdsourcing to uncover the addresses of websites making comments critical of the Royal family, which are gathered in a site called ProtectTheKing.net. The Saudi government has taken a similar approach to videos on YouTube that are critical of the country. In Georgia the authorities have helped to mobilise 'denial of service' attacks on blogging platforms to force them to evict bloggers critical of the government. The most critical bloggers have been turned into refugees unable to find a home in cyberspace. In China up to 50,000 people are members of the so-called 50 Cent Party: the sum they are paid for noting a critical comment on a web site or making a favourable comment in support of the government. Google's controversial provision of a filtered search service in China, in line with vast government censorship, points to the complex role of corporate power in the cloud. The history of Google's problematic relationship with China has included hacks into the Gmail accounts of Chinese human rights activists. The Nigerian government is recruiting a force of bloggers paid to support the government online and to monitor web activity. The Russian regime has been most adept at using the web to consolidate its power, according to a recent report by the Reuters Institute

at Oxford University, using the web as the basis for 'authoritarian deliberation' – online discussion to legitimise state policies. A think tank closely linked to former President Putin has led the way in creating a social network site to act as a gathering point for young professionals.⁴⁹

Even when cloud culture does seem to threaten authoritarian rule it is easy to overestimate its power. A classic example is the role played by Twitter, the micro-blogging site, in the protests in Iran in June 2009 following the country's disputed elections. Twitter became one of the ways that web users in Iran distributed news of protests and crackdowns, as supporters of Mir Hossein Mousavi took to the streets to protest against the victory awarded to President Mahmoud Ahmadinejad.

Twitter provided a direct and compelling connection with events in Iran as they unfolded. Original tweets from Iran were passed on – re-tweeted – by other Twitter users in the West, often people with large followings, amplifying their impact. The scale and intensity of the activity led some web commentators to dub it 'the Twitter revolution'. Between 7 June and 26 June there were 2,024,166 tweets about the Iranian election. For a few days it seemed as if Iran would provide conclusive proof of the web's power to remake the world. As the dust settled, however, the complex reality emerged more clearly. A study of 79,000 tweets about the protests by Mike Edwards, a social network researcher at the Parsons New School for Design, found that a third were re-tweets, people passing on an original posting. The majority of Mousavi supporters are young and urban, the main demographic of Twitter users. About 93 per cent of Iranian Twitter users are based in Tehran. Ahmadinejad's supporters were older and rural. Twitter provided a partial sample of

opinion in the country as a whole. Twitter is a public medium and people can dip into it anonymously, so it was an unlikely tool for secretly organising demonstrations. Traditional methods, closed social networks and blogging may have played a more significant role. Most importantly the numbers do not add up. According to Sysomos, which analyses social media activity, there was a surge in the number of Twitter accounts in Iran from 8,654 in May 2009 to 19,235 in June 2009. Part of this surge, however, might have been due to Twitter users outside Iran registering in the country to confuse the authorities. Yet even the higher figure of 19,235 is equivalent to only 0.027 per cent of Iran's population (70,049,262 according to the 2006 census.) A survey carried out by the The Centre for Public Opinion and the New American Foundation found a third of Iranians have internet access. That would mean Twitter users at the time of the revolution made up 0.082 per cent of internet users in Iran.⁵⁰

Twitter was an important additional source of real-time information from the protests that became especially important as traditional sources were closed down. But in retrospect it's clear that its influence in co-ordinating a serious challenge to a powerfully entrenched regime was wildly overstated. Clouds come and go, they balloon up into the sky and then they disperse. That is why cloud culture can be both mesmerising and bewildering.

Not only do these authoritarian regimes often use technology developed in the West to monitor and disrupt online dissent, they also use Western government policies, for example to crack down on illegal file sharing and monitor email traffic on security grounds, in support of their own censorship. Recent moves in Australia and the UK to put more onus on internet service providers to control how the web is used will have been welcomed by authoritarian regimes keen to justify their own controls.

Keeping the cloud *genuinely* open for cultural exchange means we should focus on:

- providing online activists in authoritarian regimes with help to find their way around firewalls and to connect them with potential supporters outside
- defending their rights to free speech and association
- avoiding restrictions in the West in the name of security and decency that authoritarian regimes will use as an excuse for their own efforts to control the web
- empowering NGOs to monitor authoritarian regimes' censorship of the web
- asking Western technology companies to publicly account for any sales of technology to authoritarian regimes that might be used to control or limit public access to the web, just as arms companies are expected to account for sales of sensitive equipment.

Copyright: Old Media Seeks Protection from the Storm

From the point of view of many copyright owners the internet is not a technology of cultural freedom but of destruction: it is destroying their business models by making it easier to copy content for free. They argue this will undermine the creation of high-quality commercial cultural products – whether books, films, television. Far from opening up a cultural cornucopia, quality culture will be blighted by a mass of low-grade, user-generated content. Critics such as Andrew Keen and Nicholas Carr⁵¹ argue that the web is already dousing us in the cultural equivalent of acid rain:

poor quality, short attention span, amateur culture will displace crafted, professional culture, which requires patience and application.

To prevent that destruction, traditional publishers and content owners argue that they need increased control over how their content is used, reaching deep down into how people listen to, watch and share culture. As content can so easily be copied and shared, complete control over a single piece of content – like a song or a book chapter – would be impossible without control over all the links made by someone sharing it. The promise of the open, collaborative web could eventually license equally pervasive forms of control in the name of established commercial cultural industries threatened by the web. Not surprisingly, content owners are pressing for expanded protections, longer copyright terms and harsher punishments for illegal downloading. Thus as cloud culture is taking shape we also have attempts to bring it back down to earth, with the US Digital Millennium Copyright Act, the No Electronic Theft Act, the Sonny Bono Copyright Term Extension Act among others. The UK Government, in late 2009, proposed retaining the right to make changes to copyright legislation without needing primary legislation debated in Parliament. All this could limit the spread, scale and creativity of open cloud culture.

Cloud culture will breed creativity only if people can easily collaborate, share and create. Culture, knowledge and information products are invariably made up of fragments of other culture, knowledge and information products. If access to those fragments becomes harder, because they are wrapped up in copyright, then so will the cumulative and collaborative process of creativity. Our cultural clouds will be rendered sterile and inert. Ray Charles would never have invented soul music.

Already much of our culture that could be in the open cloud is kept out of it by copyright. According to the British Film Institute, for example, thousands of British films are under copyright but are no longer commercially available. The copyright holders do not think they will be able to make money from them but neither are the films in the public domain, free to be used and reused. Clearing the rights to use these orphaned works is still very hard. A tragically high proportion of our culture lies in this cultural coma, including perhaps 95 per cent of commercially published books, according to James Boyle:

We have locked up most of the twentieth century culture and done it in a particularly inefficient and senseless way, creating vast costs in order to convey proportionally tiny benefits. Worst of all, we have turned the system on its head. Copyright, intended to be the servant of creativity, a means of promoting access to information, is becoming an obstacle to both.⁵²

Excessive intellectual property controls could be all the more damaging to emerging fields of knowledge, such as synthetic biology, if researchers find that the basic building blocks of the field are legally tied up and beyond their reach. This could prevent the development of entirely new fields of knowledge and culture by preventing the kind of borrowing and blending that is at the heart of creativity.

If content in the cloud becomes so entangled in copyright and other forms of intellectual property then it will become increasingly difficult to mingle, match and collaborate. The creative potential of the web to create new mixes will be vastly reduced. To promote more open cultural relations on the web the following are important points of focus:

- Collaborative solutions need to be found to the problem of orphaned works, perhaps by allocating them to forms of collective ownership, which would make it far simpler for people seeking to enjoy or adapt the content to negotiate rights. The collective owners would own the rights and hold money for the original rights holders
- Governments should resist attempts to extend copyright terms
- The copyright regime should increasingly put the onus on rights holders to justify their need for copyright and to pay for extensions. Any work not re-copyrighted after the expiry of its original term would automatically fall into public ownership rather than being orphaned
- The presumption should be that all cultural products are in the public domain after a basic period of copyright or intellectual protection has expired
- New forms of creative licensing are required, modelled on open access and creative commons, which are designed to allow sharing but also to clearly apportion credit to original work and authors
- Most media industries will need new business models, which are tailored to allow more interaction with content and more peer-to-peer distribution. Countries that experiment successfully with these models will lead the next wave of cultural and creative industries
- Ways need to be found to create more Pro-Am cultural exchanges which will bring together the best of professional and amateur content.

Cloud Capitalists

Just as traditional media companies are trying to resist the emergence of open cloud culture, so a new generation of media companies, most created in the last decade, are trying to profit from its explosive growth. These are the cloud capitalists – Facebook, Google, Salesforce, Twitter – that seek to make money by creating and managing clouds for us.

These cloud capitalists are the new powers behind global cultural relations. Their rise has sparked an increasingly vicious civil war with the media old guard. In the autumn of 2009 Rupert Murdoch, the archetypal global media baron, unveiled plans to charge readers for his newspapers' content online. It was virtually an admission that traditional newspapers would not remain commercially viable for much longer. It was also a broadside against Google. Murdoch accused Google of giving people access to his newspapers' content for free but refusing to share the advertising revenues that Google garners from its information search business.

This battle between old and new media powers, however, has distracted attention from the question of how these new global cultural platforms will seek to organise cloud culture. Elements of their businesses resemble traditional public service culture, for example Google's work with a consortium of libraries around the world to digitise books that are out of copyright. However, these companies are also businesses: they will want to organise the cloud to make money. Cloud culture will develop only if we trust remote, third-party providers of digital services to store our stuff for us and provide us with platforms – like YouTube, Facebook and Twitter – on which we interact. There are ample reasons why people should not automatically trust the clouds these corporations are creating.

One is reliability: outages of Google servers have left millions of Gmail users without a service and Twitter

can often be overwhelmed by traffic. Another is security: having your data, on your computer, in your office, at least gives the impression that it is under your control, rather than floating in the ether. Privacy is another issue: cloud service providers will need to persuade people they can be trusted not to give away or lose sensitive data. There will be disputes over who owns data: witness the recent furore over whether Facebook owns pictures posted by its users and members. Commercial providers of cloud services will have strong incentives to manage their users to maximise revenues and so to discourage them from roaming from one service to another. We could find that we are so enmeshed in Amazon's cloud of services that transferring all our data and history to the Facebook cloud would be too costly and troubling. Equally, we might find the cloud providers pushing services at us, compromising the neutrality we have come to associate with the net. Providers of cloud services are bound to have preferred suppliers of software and other services. Pretty soon we could find them managing most of our lives for us. Once again the offer of a more open collaborative culture may ironically pave the way for more of the most intimate aspects of our lives to be stored and controlled in vast data centres in the US Midwest, delivering us into dependence on Google, Amazon and Facebook. To counter the threat of corporate control of the cloud public policy should focus on:

- maintaining a diversity of funding for the development of web platforms, so that some will be social and public to complement the corporate platforms. Wikipedia is a prime example of a cloud funded by voluntary and social contributions. Open access science is promoting publicly funded clouds of scientific information. Public funding for open, shared cultural clouds, like the World Digital Library, will be vital as a counterpoint to more commercial services

- ensuring people have a diversity of potential suppliers of cloud-based services; anti-monopoly legislation covering social media and web platforms will be central. At some point Facebook will become an incumbent social networking platform that stalls innovation from new entrants
- keeping open spaces for experimentation on the web, rather than allowing incumbent media companies to occupy emerging spaces
- defending net neutrality rather than a system in which those that pay more – large companies – automatically get a much better service
- ensuring people have freedom to move between suppliers of net services and content, to avoid being locked in to cloud services provided by one supplier.

Traditional media companies are trying to stall and resist the emergence of cloud culture. New media companies are engaged in a battle with one another over who will control which bits of the cloud. What is likely to get lost in all this are the interests of citizens and consumers.

Unequal Access to the Cloud

Cloud culture could become a new shared, common cultural space, enabling people with diverse interests and values to come together. But it could also provide a way for elites to reassert themselves. In reality, despite cheaper, more powerful technologies, access to the cultural commons is deeply unequal.

A case in point is the African state of Mali, one of the poorest in the world. Mali, a democracy with few restrictions on freedom of the press, has more than 40 newspapers in several languages; more than 150

community and private radio stations; cable and public service television stations; a privatised telecommunications utility and one of Africa's oldest internet service providers, as well as a wealth of ancient culture in Timbuktu. Yet Mali's poverty means that its population of just over 12 million has just over one million mobile phones, 835,000 landlines, 570,000 radios, 160,000 televisions and perhaps only 30,000 regular web users. In principle Mali should be well placed to join the cloud but in practice it's a long way off.⁵³

Nor is it alone. The World Bank estimated in 2005 that there were still ten times as many mobile phone subscribers in rich countries as in low-income countries.⁵⁴ In Burundi, Ethiopia and Sierra Leone less than three per cent of the population had a mobile phone in 2007. That year in the most developed countries there were 152 telephone subscriptions per 100 people, compared with 31 per 100 in the poorest countries. Mobile phone users in the rich world are much more likely to get the smartphones designed for creativity and web access.⁵⁵

There are similar discrepancies in the way people access and use the web. In 2006 fewer than five per cent of Africans used the web compared with more than 50 per cent in the G8 countries. Even within rich regions such as Europe there are huge disparities. In 2007 only a fifth of Bulgarians and Romanians were connected to the web, compared with more than 75 per cent in the Nordic countries. Access to the net is growing fast in some middle-income developing countries, such as South Korea and Brazil. But it is rising only very slowly in low-income countries: 0.06 per cent of the population in low-income countries had access to the web in 1997, rising to six per cent ten years later. Underlying this story of unequal access to the cloud are other, equally important factors. Electricity is one. You do not need

a plug to read a newspaper but you do to run most computers. In Ethiopia less than one per cent of the rural population has access to electricity and only 13 per cent of households have regular electricity supply. More important still, only half the population can read.⁵⁶

When people from the poorest countries arrive in the digital world, they will find people in the rich countries a long way ahead. Most of the protocols, software and platforms will have been created by organisations from the rich world, especially the US. For cloud culture to genuinely promote global cultural relations, rather than more intense interactions among highly connected people in the developed world, we should focus on:

- developing open source tools that will allow local solutions to emerge and develop capabilities outside the dominant regions
- creating more initiatives like Wikipedia, a model with many different applications in different cultures and languages. Wikipedia is public, shared and diverse
- promoting more global exchanges such as Kiva, which allows resources and skills in one place to be matched with need in another. Kiva was established in October 2005 and in its first four years it enabled more than 517,000 lenders to provide loans worth more than £79 million to more than 100 field partners in 46 countries who have invested the money in thousands of entrepreneurs.⁵⁷ There is huge potential to create more of these social exchanges, not just to allow people to invest in entrepreneurs, but to exchange cultural resources as well. This could create new ways to fund grassroots cultural development just as Kiva is funding grass roots entrepreneurial development.

Cloud culture will enable mass, real-time, self-communication and collaboration, at low cost. This has huge potential for promoting a vast array of cultural exchanges, many of them fleeting and small scale. But the potential for a more cosmopolitan, open, cloud culture will be realised only if we tackle the four major threats to it: increasingly intrusive government censorship; controls over content by traditional copyright holders; the power of the new global media companies to shape the cloud to their own ends; and the vastly unequal opportunities open to people in the poorest parts of the world to influence cloud culture.

A Future of Many Clouds

We are living at a time of huge cultural possibility. We have access to untold stores of culture in digital form. We have more tools to allow us to search, modify and amend the ingredients of these stores and to create our own cultural products. We are more able than ever to find outlets for our cultural creativity and to connect with people who share our interests, our culture.

The web is changing culture more quickly and profoundly than it is changing politics and even business. It is changing how we express ourselves, how we communicate, how we share and find what is important to us. Culture and media in the decade just gone was dominated by the rise of Web 2.0 and social media. The decade to come will be made by the rise of cloud culture, a culture based on even more intensive collaboration and connection. That will fundamentally change how we relate to one another through culture.

In the twentieth century cultural experience was mainly associated with watching, listening and reading. The dominant mass culture – television – is engaging without being too demanding. It offers stimulation while people are at rest. As a result it is often wonderful but oddly hollow. The traditional alternative to this mass culture of enjoyable watching was the more demanding and educative high culture of intellectual inspiration and challenge. But now another alternative is emerging, a mass culture which is more participative and collaborative, which is about searching, doing, sharing, making, modifying. It is stimulating because

people become active participants, makers of culture not simply receivers.

The optimists see in this shift great possibility, a global platform for cultural expression and exchange, which will be more open and connected, more diverse and plural. The optimists see vast new clouds of cultural expression mushrooming across the landscape, in a variety of wonderful shapes and sizes. The sceptics warn that these clouds are more likely to produce the cultural equivalent of acid rain or worse, heavy storms. They worry that we are heading for a culture of constant interference, noise and distraction, in which the more music and writing, photos and films there are, the more cultural chaos and social disorder there will be. It will be harder and harder, they warn, to cull any lasting sense of meaning from the vast fog of meaningless cultural mediocrity about to engulf us.

This essay has sought to map out a position that is both hopeful but realistic. The web has huge and still unfolding potential to allow for more cultural self-expression and connection. However, we are still a long way off this being a truly global and cosmopolitan space. Access to the global cultural commons is still tilted in favour of the richest. Our interests as citizens and consumers will be best served by there being a rich variety of cultural clouds: public and private, social and voluntary, global and very local, cosmopolitan and nationalist. We should seek the maximum possible diversity of clouds rather than thinking simply of *the* cloud. It is inevitable that some of cloud culture will not be benign and may well be predatory and even vicious. However, there is still untold potential for us to enrich our own cultures, understand one another's cultures more fully and enjoy greater freedom of cultural expression. That possibility, a new kind of global cultural commons, will be kept open only if we resist the threats

to it from governments and companies, new and old, seeking to control cloud culture for their own ends. The new kinds of cultural relations the web seems to offer will come about only through thousands of struggles around the world as citizens try to prevent governments and corporations wresting complete control over the web.

The cloud culture the web is creating is already enabling new forms of international cultural relations, for people to connect, collaborate and converse. Drawing on five waves of surveys between 1981 and 2007 of nationally representative samples in more than 90 countries, home to 80 per cent of the world's population, Pippa Norris and Ronald Inglehart found clear evidence that communications were becoming more cosmopolitan and open.⁵⁸ Greater engagement with news, including through the web, was associated with greater trust in people from other cultures and greater tolerance of other faiths, while simultaneously strengthening not weakening national identities. People who were more engaged in news and communications were more likely to believe in Western-style forms of individualism, to have more liberal and open attitudes towards sexual and moral values and to be more critical of corruption and nepotism. Engagement with modern media was strongly associated with higher levels of civic and political engagement. On all these measures internet users were more cosmopolitan and open in their values and beliefs than any other group. Lead adopters of the web everywhere, by and large, buy into shared values that would support an open cloud culture of self-expression, debate and collaboration. International cultural policies could play a vital role in supporting the growth of this open cloud culture, but they too will need to be reframed.

International cultural relations policies have generally been framed in terms of free trade and protectionism. Those advocating free and open trade

in ideas and culture stress that greater connectedness is conducive to economic and social development. An open press should be good for democratic debate to enable citizens to hold government to account. Transnational social movements can link campaigners in the rich and poorer parts of the world. For all these reasons maximising access to information and communications in poor and developing societies has been seen as a key goal of international development, in part by lifting barriers to communication and trade in cultural goods and services, encouraging investment in digital technologies, growing capacity to use the web and shrinking disparities in access to the internet.

Opposition to this approach has brought together cultural conservatives and radicals. Their argument is that a free trade in culture will reward dominant Western companies, particularly from the US. Critics charge this process with opening the rest of the world to a flood of mindless American entertainment, encouraging people in traditional cultures to emulate Western values and habits, to the detriment of local cultures and their own sense of identity. Critics of cultural globalisation argue for measures to protect local producers from international competition and to support local languages threatened by the spread of forms of English. Thus, Sarkozy's move to protect French culture by creating a national digital store house.

Both approaches see global culture through the lens of trade, in which cultural goods and services pass from one place to another, much as containers do on ships. The spread of the web, however, is creating a platform for mass self-expression and collaboration, as well as delivering content to people in new ways. It is not just a market place for exchange but also a space in which people can share and collaborate. Our aim should not be just to calibrate trade but to expand connections

and allow for greater collaboration. The best metaphor for that activity is open source: projects in which the goal is to maximise useful contributions to projects of shared value, which are supported by a community of developers. Open source cultural relations would focus on who can contribute, to what and how, rather than simply seeing people as either producers of content or recipients of it. The aim is not to balance trade but to equalise opportunities to participate, to open up new cultural conversations.

Such an open source approach to cultural relations, building communities of collaboration around shared interests and ideas, would require very different kinds of leadership and organisation as well. Leading international cultural relations in the era of ubiquitous participation, connection and collaboration will require different skills and resources. It will require open leadership, the ability to address interesting challenges, to provide a starting point for a collaborative effort, platforms for people to share ideas and tools to create content. Cultural relations will be less about delivering culture to and for people and more about doing it with and by them. In this world you will be defined not just by what you own but by what you are prepared to share and how much effort you put into making it easy for others to share with you. It is not just what you do but how you link with others that counts. Cultural relations in the era of the pervasive web and ubiquitous participation will mean thinking, working, creating *with* other people. Welcome to the world of with.

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