ONLINE, OFFLINE, AND INLINE: Jobportunity

by

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Invited Contribution:

“If you have $10 dollars and I have $10, you give me your $10 and I give you my $10, we each still have $10. There seems to be a ‘conservation of money’. If you have an idea and I have an idea, you give me your idea and I give you my idea, we each now have two ideas. Thus ideas propagate and the number of ideas multiplies.”

Hwa A. Lim, Opening Remark, “International Conference on Bioinformatics & Genome Research”, Inner Harbor Hotel, Baltimore, USA, 1996.

The best way to begin this article is with a navigational compass. And in this day of user-friendliness, almost everyone will use a GPS instead of a compass.

The difference between using a compass and a GPS is $$$: all successful entrepreneurs use a navigational compass of one form or another so that they can see through all the tortuous paths; some end-users also use compasses, but they fail to see the nuances and exploit the hidden opportunities. Otherwise, they would have been in line to become entrepreneurs who may turn out to be very very rich.¹

A case in point: early entrepreneurs in the IT who were successful became rich, filthy rich. They did not become successful in a haphazard way. They had a general navigational compass—an extremely simple-looking Form-Function table! This navigational compass is still being exploited by newer generations of entrepreneurs, albeit in a collapsed digitized form.²

Forms And Functions

Forms and functions are the essentials in the information world. Most information (in its generic sense) in the knowledge-based economy can be classified into four different forms, and for each of these forms we can perform various actions or functions.

<table>
<thead>
<tr>
<th>Functions / Forms</th>
<th>Generation (G)</th>
<th>Processing (P)</th>
<th>Storage (S*)</th>
<th>Transmission (T*)</th>
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<tbody>
<tr>
<td>Data (D)</td>
<td>(D,G)</td>
<td>(D,P)</td>
<td>(D,S*)</td>
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Computers started here
Types of Forms

The forms—data, text, sound, and image—are all mental impressions that we perceive through the senses. To date, in our current knowledge-based economy, sight (video) and hearing (audio) or combinations thereof (television, movies, YouTube…) are the most dominant.

The term data used here connotes a wider sense than its usual meaning. Data are any or all the facts, numbers, letters, symbols, and the like, that can be processed by a “processor”. Data existed before processors, but it is the ability of processors to handle data that led to the information economy. This was where the computer started—entry (D,P) in the Form-Function table.

Text is any written language, to distinguish it from spoken language (dialect) which technology simply treats as a form of sound. Though text is normally referred to as machine-printed language exclusively, our current technology has made it possible for machines to recognize hand-written text (for example, signatures, hand written notes and voice-recognition printouts). Thus, the term text used here includes text written by hand, or printed by machines. Search engines started in the (T,P) entry of the Form-Function table—when we search, we type in text as a search string.

Sound is what we hear. We basically hear voice and music. Radio, records, tape recorders, telephone and cell phones are inventions we use to handle this information. The telephone industry started in the (S,T’) entry of the Form-Function table, but the telephone directory would belong to (D,S’) entry. If you start sending it to someone else over the Internet, it is in (D,T’).

Images are visual forms. They can be photographs or paintings, artistic or practical, realistic or interpretive, presentations or representations, impressions or expressions. The pinhole camera started in the (I,G) entry of the Form-Function table. In our modern era, scanned texts or data are also treated as images. YouTube is in the lower right quadrant [(S,S’), (S,T’),(I,S’),(I,T’)] of the Form-Function navigational compass.

When these four forms are digitized into binary codes of 1s and 0s, they all merge, become data, and can be handled in subsequent functions as though they are the same. For example, for some time, the radio, the telephone, the record and the tape recorder were in separate sectors; in our current economy, they merge, for instance, in a cellular phone; the VCD (video compact disk) now becomes the DVD (digital video device); fax, copier, printer and scanner are four separate machines.
performing essentially the same task, and they merge in a 5-in-1 multifunctional center (MFC) or fax, printer, copier, scanner and PC fax. In other words, the Form-Function table has collapsed into a (1,4) table since all forms can now be treated as digital data:

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**Types of Functions**

Basically, we do four things with data (and information): generate, process, store and disseminate:

Generation takes data that exists in the environment and captures it for presentation in one of the four forms. For example, an abacus captures numbers of an accountant and generates a ledger (data or text); a typewriter captures the thoughts of an author and generates a book (text); a recording device captures a singer’s voice and generates a record, tape, CD, VCD or DVD. And a camera captures the image of a landscape to generate a photograph. In the current digital world, essentially, generation means digitization, or rearranging into “bits”.

Our current computer technology started in data processing, and later into word processing, and more recently expanded to cover all forms of processing including audio and image processing. The processing action converts, edits, analyzes, computes, and synthesizes. In this respect, computer hardware is a processor, and software is the set of rules by which gathered data/information is to be processed.

Storage takes data/information in one of the forms, and keeps it for later use. In the time of the Pharaohs, text and data were stored on tablets (e.g. the Rosetta Tablet). The Chinese invented paper for the purpose of storing, which unfortunately is not a very durable form of storing. In today’s acronymic, these storage processes are very static, or ROM (read-only-memory). Storage in the electronic age not only covers sound and images, but it is also dynamic. We can retrieve a WORD document and make changes. Thus, storage today is not only about space, but it can also be interactive.

Dissemination or transmission, simply put, is sending and retrieving all forms of data/information from one point to another. Whereas storage transfers information across time, transmission moves it across space. This fourth function, as “distribution”, includes broadcasting, switching, networking, WiFi, reception, signal processing, collection, and display. The main purpose of this journal (CAAADJ) is to disseminate information about careers.

The concept of Wikipedia, though currently is still not a generally accepted form of reference source, is a combination of these abovementioned storage and dissemination. And the currently very popular bioinformatics in this biotech century
is an exemplary of generation (sequencing), processing (analysis), storage (databases) and dissemination (portals). 3

While the computer dominates the first three functions—generation, processing and storage—telecommunications excel in transmission. Simple transmissions, such as books, VCD, DVD, telephone and TV, convey voices and message as is. Modern telecommunications networks, however, “value-add” by combining the other functions with transmission capabilities. These are the fundamentals of a communications network: many computers all linked together, from high performance computers, through desktop workstations and personal and laptop computers, down to the smallest, dumbest terminals or hand-held palm pilots, digital camera and cellular phones. They are LANs (Local Area Networks) or WANs (Wide Area Networks); when values are added, they are VANs (value-added networks). Grid computing and cloud computing are examples in this form. While grid is a combination of computer resources from multiple administrative domains to reach a common goal, cloud is enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources.

 Turbo-Charge Info-Exhaust

Despite popular belief, the information economy also produces information exhaust, except that the exhaust is not as harmful to health, and does not lead to global warming.

This information exhaust, too, can be turbo-charged—that is, captured, processed, and recycled to improve business performance. Opportunities exist to provide turbo-charged information services in all businesses and industries. In fact, a new generation of enterprises built around information emitted from older businesses has already taken shape for about a quarter of a century. The irony is that turbo-charged information service businesses often become worth more than the businesses from which the information is generated in the first place. And examples abound. 3

In the 1980s, Quotron provided information about security prices to brokerage companies. In 1986, Citicorp purchased it for US$628 million. Quotron did not possess proprietary access to securities information. It simply filled a need that brokers had not been attended to by simply capturing securities transaction information and recycling it back to the brokerage industry that generated the information in the first place. In doing so, it created a business with market value greater than the market values of the then leading brokerage firms such as Paine Webber and Smith Barney.

Similarly, Rupert Murdoch acquired TV Guide in 1987 for more than US$2 billion. This publication is essentially a well-packaged listing of TV broadcast schedules, information that is available to anyone from a number of sources.
Despite this, the purchase price for TV Guide had a market valuation higher than any one of the major broadcast networks, ABC, CBS, or NBC at that time.

And, Official Airlines Guide (OAG), a listing of monthly flight schedules, sold in 1988 for US$750 million. OAG simply consolidates flight information, yet the basic concept created a business with a greater market value than most airlines, and only slightly less than the market valuation of US Air then.

More recent examples are Yellow Pages compiled by telecommunications companies, which scoop in more revenue than selling standard telephone services, and not to mention Yahoo!, eBay, Amazon.com, Google, Yelp and many others.

These examples suffice to show that the proper order of things seems to be standing on its head. Someone, it would seem, had to perform brokerage services so that profits could be made selling financial information services; TV programs had to be produced and broadcast to create a need for TV Guide; during the downturns of the airline industry, it would seem someone had to fly airplanes so that money could be made selling flight information and reservation services. Now telephone services are provided to stay in touch so that there is a need for Yellow Pages, and for that matter, the Internet was introduced to transcend socio- and geo-political barriers. Yet in each instance, the turbo-charged information is worth more than the primary business from which the information is derived!

We thus see that information offshoots represent a tremendous business opportunity, and it would seem every business contains one or more latent info-businesses. This nonetheless, they all still operate along different parts of the Form-Function navigation compass.

**Terra Icognitio**

The form-function navigation chart which is based on technological factors such as innovation, design, and technology, get these companies only so far. To go further, we have to have a navigation chart of the psychology of the users. This is where we begin to wander into *terra incognitio* since human psychology is not a very well understood subject.

This notwithstanding, there are very strong indicators. A great Web 2.0 site needs a mob of people who use it, and live by it—and convince their friends and family to do the same. Mobs will devote more time to a site they love than they will to their jobs. They will frequently build the site for the founders for free, because they get something out of that site that is far greater than money.4

When done well, social networking, media, and user-generated content sites tap into—and exploit—core human emotions. Blogs and sites such as YouTube are ostensibly about getting the entertainment and news you want. But it is the stroking of your ego that makes them so powerful: Having thousands of people read your opinion on something or your minute-by-minute life story; having dozens of people
mark your review as “funny” or cool”; your video clip becoming a YouTube sensation; people you do not even know love you…

But more important than entertainment, self-expression, or ego-boosting is the human need to connect. This is far more powerful use of the Web than for something like buying a book online. That is why these sites are sometimes described as addictive. Machines are used to exploit what makes humans so uniquely human. Only a certain subset of people is addicted, to say, online gambling or online shopping, but everyone is addicted to validation and human connections.

*line

This is where “online”, “offline”, and “inline” come in:

Imagine this common scenario: At a party, the person in front of you is murmuring occasional assent to your remarks, or maybe nodding at appropriate junctures, but for the most part (s)he is looking beyond you, scanning in search of something or someone more compelling.

This is a contradiction of modern life: If (s)he is looking over your shoulder at a room full of potentially more interesting people, (s)he is ill-mannered; if, however, (s)he is looking into a smartphone in her/his hand, (s)he is not only well within modern social norms, but she is also a wired, well-put-together person!

That is, in the digital revolution it is fashionable to be multitasking and be rude. Conference rooms brimmed with wireless connections, the people on the dais competed with a screen in almost every seat: laptops, or even more commonly, tablets. In that context, the live presentation that the people in the audience had ostensibly come many miles to see was merely companion media. Even more remarkably, once the name-tagged horde spilled into the hallways or went to parties that mark the ritual, almost everyone walked or talked with one eye, or both, on a little screen. We were adjacent but essentially alone, texting and talking our way through what should have been a great chance to engage flesh-and-blood human beings.

It is not just conferences full of inforati where this happens. In the workplace, answering e-mail and looking after various avatars on Facebook, Twitter and Tumblr left little time to do what we actually care about or get paid for. In social groups, people gather in groups only to disperse into lone pursuits between themselves and their phones. Every meal out with friends or colleagues represents a negotiation between connectedness to the grid and interaction with those on hand.

Perhaps somewhere on the way to the merger of the online and offline world, we had all stepped across a line without knowing it.

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Social Network

This is the way the world works now. We are always connected and always on call. And some of us prefer it that way. There are a number of reasons why people at conferences and out in the world treat their phones like a Tamagotchi, the digital pet created by Aki Maita in Japan in 1996 that died if it was not constantly looked after and fed.

To begin with, phones glow. It is an instinctive impulse to stare at something in the hand that is emitting light. Beyond the gadget itself, the screen offers a data stream of many people, as opposed to the individual you happen to be near. The e-mail, Twitter, Facebook and other online social groups all offer a data stream of many individuals, and you can choose the most interesting individual, unlike the human rain delay you may be stuck with at a party.

Then there is also a specific kind of narcissism that the social Web engenders. By grooming and updating your various avatars, you are making sure you remain at the popular kid’s table. One of the more seductive data points in real-time media is what people think of you. The metrics of followers and retweets beget “a kind of always-on day trading in the unstable currency of the self”.

For those of us who are afraid of missing something, having the grid at our fingertips offers reassurance that we are in the right spot or gives indicators of heat elsewhere.

But all is not vanity. For anybody with children, a job or a significant other, the expectation these days is that certain special people, usually beginning with our bosses, can reach us at any minute of any day. Every once in a while something truly important tumbles into our in-box that requires immediate attention.

In this context, mobile devices do indeed make us more mobile, but that tether is also a leash, letting everyone know that they can get you any second, most often to tell you they are late, but on their way. This is yet another bit of bad manners that the always-on world helps facilitate, directly or indirectly.

Digital natives (or “young people”) will tell you that they can easily toggle between online and offline. Far from being a Luddite, but it would be difficult for digital natives to do both screen and eye contact simultaneously. The scenery never really changes when you are riding with your digital wingman. There are people who were sitting on panels surfing or e-mailing during lulls, and then were taken by surprise when it was their turn to talk. Oops.

Oops-portunities Within

Whether you are online, offline, or inline (for a job or planning to be a successful entrepreneur), you may want to take the technology and psychology charts seriously.

The iPod is a portable digital media player; the iPhone is a video camera, a camera phone, a portable media player, and an Internet client with email and Web
browsing capabilities, which exploits the technological chart; while Youtube take full advantage of the psychological chart.

Thus, besides healthcare and bioinformation, green and clean technologies, there are several areas where job opportunities abound—all centered around the Internet. The first being how to get users to stay online, the second being an offshoot of the Internet, and the third being how to use the Internet to get off the Internet.

The first two are obvious from the above discussions: iPhone gets users to stay online, Youtube taps into human ego, and Facebook into human nature to connect. The third, to use the Internet to get off the Internet is literally just what it says,

**Off-pportunity**

Many people are of the kind of persons who thought local community does not matter much if they have got the Internet and TV. The only time they think about their neighbors is when they hope the neighbors would not bother them.

Where other people see freedom—from the desktop, from social convention, from the boring guy in front of them—others see “a kind of imprisonment.” This is why there is a movement to try to get people offline. So people are using the Internet to organize groups for activities that do not involve getting online.

Meetup, for example, is a 9/11 baby. Ten years later, there are 10 million Meetuppers, and each day, thousands of Meetups happen: Moms Meetup, Small Business Meetups, Fitness Meetups...—a wide variety of 100,000 Meetup Groups.

But forming a social group does not have to wait for a catastrophe to happen or a well-known figure to fall victim to get started. Mundane everyday activities can get people offline. For example, using the Internet to get a group of like-minded people to form a social group, especially a local group, so that members of the group can gather together to meet face-to-face to enjoy their common hobby.

A good such example is promoting health through dancing. There is a caveat in this form (fitness) of social networking: “preventive” programs cost money upfront, but can cut overall treatment costs to insurers by 30% or more, yet few insurers pay for preventive care. One reason is a third of people with health coverage switch insurers every year. Insurers thus reason that their investment in preventive health measures could become another company’s gain. Thus the primary sources of revenue are the individuals or federal programs.

An irony with this type of social groups is that they use the Internet to get their members together, and members are thus very wire-savvy. And therein lies the real problem. When someone you are trying to talk to ends up getting busy on a phone, the most natural response is not to scold, but to emulate. It is mutually assured distraction, and every gets back online!

The Internet is here to stay, period!
Commmopportunities

Here lie great opportunities in communities (commopportunities). Let us take a more retrospective view:

Web entrepreneurs break down into generations. There are no hard-and-fast demarcations, but if you step back, you can see distinctions between the groups. The first generation were people like Marc Andreessen, who started Netscape before there was such a thing as an Internet start-up. This generation drew on a kinship with the young software and computer nerds from the ‘80s like Bill Gates of Microsoft, Steve Jobs of Apple, and Larry Ellison of Oracle—largely dropouts and misfits.

Then there were the real first Internet guys: Jerry Yang and David Filo of Yahoo!, Steve Case of AOL, Jeff Bezos of Amazon, and Pierre Omidyar of eBay. They were mostly Ivy League educated geeks who loved algorithms and sticking a finger in the eyes of staid old-economy companies, even as they employed scored of business development executives to court these companies into partnerships. They generally played by modern Silicon Valley rules, raising hundreds of millions and enjoying celebrated public market success. People from companies such as Google and PayPal are sort of the sandwich generation, a small group. They started their businesses at the peak of the bubble, amid all the enthusiasm in the world, but unlike so many others had real enough businesses to survive the crash and still come out on top. They valued good engineering first and foremost, not sales, business development, or the lure of IPOs.

Then starting in about 2002 came the Web 2.0 crowd. Most of them finished college, although there were a few dropouts as in any Silicon Valley wave. They were a bit too young to be the founders in the Web 1.0 wave, but were old enough to have been dotcom rank-and-file employees and shareholders. They graduated into the world of the late 1990s, in which they could make more money at their first job than their parents. But they were also most likely to get laid off. They like computers, but are of the generation when liking computers started to become okay, socially acceptable even. This generation consisted of people like Mena and Ben (Six Apart), Kevin Rose (Digg), Mark Zuckerberg (Facebook) and Brad Fitzpatrick (LiveJournal). Hip, irrelevant kids, yes; but savvy, cautious ones too.

It was largely the Web 2.0 movement that took the powerful idea of community and made it legal, palatable, and easy for a mass market.

Blogs need everyday folks to write them. Yelp has no content if people do not post reviews. Digg is nothing unless people contribute and vote on stories. MySpace, Facebook, and LinkedIn all need people to post their lives on those millions and millions of profile pages; otherwise who would go to them. Without people’s photos, Slide would be an empty slide show.

But you can also be a passive user in the Web 2.0 world. You could just use Yelp as Yellow Pages while others write the reviews. You do not have to spend hours searching the Web for cool stories to be part of the Digg mob; you could just
read the site. In the Web 2.0 world, people creating content and consuming content are all part of the community. And in this world, community is all-important. It is the single most powerful positive or destructive force.

There is no playbook for building a great community. It is all about listening to the users and knowing when to give in to them and when to stand firm with your vision. It always involves a great deal of trial and error and bobbing and weaving. But done right, these companies have something valuable that big media giants or the earlier Web wave simply cannot replicate. Done wrong, they are history. And it is not a one-time thing—good communities take round-the-clock care and feeding.

_Digipportunities_

Digitization of media was inevitable; Napster was just the one happened to spark much of it. Apple’s iTune is not much different from what Napster had hoped to build, but it took Steve Jobs to pull it off.

The true power of the Web would come from digitization of identity.

What does that mean? Basically, getting a true picture of who you are as a person (user) represented online. It includes tangibles like your favorite movies and music and who your friends are, but also all the fuzzy gray area in between that is harder to define—your essence. If the Web could capture that, it could unlock all kinds of new, powerful applications from meeting the perfect mate to finding the perfect job. The Web would know you, and as a result what you would like.

There was also a big moneymaking opportunity here: if the Web knows what you liked, a site could carefully pick and choose what advertisements to show you. It was the ultimate Holy Grail for advertisers. Instead of wasting millions of dollars mass-broadcasting messages and hoping to find a few potential customers, messages would be so targeted that every one would be almost guaranteed to result in a real interest. This is a Yellow cash cow (of Yellow Pages instead of the Green cash cow of green tech).

The Web had made interaction anonymous; Web 2.0 brought back in some of the social pressures that govern real world relationship. Amazingly through this idea of digital identity, the Web was groping its way back to the early Internet idea of the portal—the one place you could come to every morning to get all the information that mattered to you. Only this time you are creating your own portal. You were adding your friends, your photos, news feeds you were interested in, even contents from other people’s blogs and sites.
About the Author

Dr. Hwa A. Lim is an internationally respected authority on bioinformatics and biotechnology, active in both the academic and the private sectors. He has been senior executive, and is on board of a few companies; Program Director and tenured state-line faculty member at a university. His career started with a brief stint at the Strong Memorial Hospital, Rochester, New York.

Dr. Hwa A. Lim gained his Ph.D. (science), M.A. (science), and MBA (strategy and business laws) from the United States, his B.Sc. (Honours) and ARCS from Imperial College of Sc. Tech. & Medicine, the University of London, United Kingdom.

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1. This article is based on various lectures by the author, including a Plenary Lecture “Informatics, Bioinformatics, and Binformatics”, presented at the International Meeting on Frontiers of Physics, the Year of Physics to commemorate the centennial years of Einstein’s 1905 breakthrough paper on relativity, July 2005, The Mines, Kuala Lumpur, Malaysia.
3. Hwa A. Lim, Genetically Yours; Bioinforming, biopharming, biofarming, (World Scientific Publishing Co., Riverside, New Jersey, USA, 2002).
In computer technology and telecommunications, online indicates a state of connectivity, and offline indicates a disconnected state. In modern terminology this usually refers to an Internet connection, but (especially when expressed “on line” or “on the line”) could refer to any piece of equipment or functional unit that is connected to a larger system. Being online means that the equipment or subsystem is connected, or that it is ready for use. This means that online and inline analyses permit continuous process control. Offline and atline analyses, on the other hand, are characterized by manual sampling followed by discontinuous sample preparation, measurement and evaluation. The material properties can change during the time between sampling and the availability of the results, so direct process control is not possible. Our Jobportunity Migration Lawyers will save you hours of time by determining the best visa option for you. Our skilled professionals have a deep understanding of Australian visa requirements and can navigate complex criteria for your individual circumstances. We service you one sure step at a time and ensure that you understand what we’re talking about. We ensure that you focus on your application, not the complexity of the process! Send Enquiry. Online vs Offline Learning - Find out what's best according to your situation and your individual needs. Do you research, take your time, decide! Which is best Online vs Offline Education. I am pretty sure you have at least once in your life considered taking an online course, attend a free class online, or even one full semester program online. No? Not even once? Also the opportunity to engage with more day-to-day resources as additional study resources and integrating it into your habits, such as social media and shows in the language you’re learning. Through digital learning resources, engagement with the class activities is increased, students have more fun interacting with the lessons and as a consequence will learn better and faster, than in traditional learning.