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INTERNET MAN: Eric Brewer thinks search engine technology has matured.

A Doctorate holder from MIT, Massachusetts., he co-founded Inktomi Corporation and remained its chief scientist until he turned the company over to Yahoo! Search in March 2003. Since then professor and inventor, Dr. Eric A. Brewer, University of California, Berkeley, has led a remarkable transition that began in 2001.

From an entrepreneur and technologist, he turned his attention to developing and deploying technology for rural development. The World Economic Forum called Dr. Brewer, "The Global Leader for Tomorrow"; he figured on the Forbes cover. The Industry Standard called Dr. Brewer the "most influential person on the architecture of the Internet", the InfoWorld rated him one of the top 10 innovators and the Technology Review called him one of the top 100 most influential people of the 21st century.

Rakesh S. Katarey, Faculty In-charge, Amrita School of Journalism, Coimbatore, spoke to the search engine specialist when he visited Amrita Vishwa Vidyapeetham, Coimbatore, last month.

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To what would you attribute such a grand transition from technologist to a technologist for development? Yes, I agree there has been a transition partly because of the momentous events that occurred over five years ago. To me, the connection to 9/11 is simple that you cannot prevent terrorism just with stronger security.

The only long-term solution is providing hope, and technology has not done much to provide that hope. If you look back about 300 years ago, there were no differences between farmers in the United States and farmers in India. The average income was much the same. So why is it so high in the USA? Partly also because of the technological changes that have occurred over this time. So if technology is the cause of the digital divide between peoples, then it certainly must be made a part of the solution.

Do you think search engines have much more to offer in the coming years?

Well, the innovation is about the sheer size. When we started the Inktomi project, most search engines had less than a million documents. The modern search engine might have five billion. The core of our technology was how do you handle a billion documents.

The only solution was to have many many computers together. That actually was the Inktomi innovation of grouping many computers to build one search engine. In fact, that remains the architecture of all modern search engines.

Are you saying that search engine technologies have fully matured?

Yes, certainly. So, do I think there are big changes coming? Probably not. Most projects I see people working on are relatively incremental compared to their early days. There's been continuous progress on the way.

Engines are getting bigger, better and smarter. But generally speaking, I don't see any big changes in quality. Part of that is because the quality is already high. People have been working on it for many years now. That being said there are a lot of related areas that are wide open for innovation including things like image and video search that are not done well today. Searching physical spaces in the future is not entirely inconceivable. Search is a substitute to organising things, which was the earlier way of doing things. Search allows people to leave things where they are and retrieve them when necessary.

How about new interactive technologies then? Do you think people are harnessing interactive and pull technologies?

Well, I think the bottomline is you must be able to show people when something works before trying to broaden its usage. And by showing how it works does not mean that it merely works technically but in a sustainable way for all the people involved.

Coming back to search engines, do you think there is too much consolidation at the top in the search engine market?

Well, certainly it is down to less than five real search engines. Also because it requires much effort, manpower and capital. So you are not going to see new entrants too often.

How about smaller and specialised search engines? Won't they replace the large general search engines?

I think the dream of everyone involved is to still have that one single box that finds everything. I still think it is a noble goal and I actually don't rule it out. What's in that single box will vary over time. So you may have the one search engine that helps you find everything and there are efforts to make its path as good as a specialized search engine. Is it possible? Probably not but if it is close enough, you would use it instead because it is so much more convenient and you may not even know the difference.

So what would you say is the future of the smaller search engine companies?

If you start making significant money from innovation, you are going to have two problems: either you got to broaden out to other areas or if it looks profitable enough, dig in and start focusing on that speciality.

The question then is: can you compete with them after they focus on your speciality. It is easy to compete with them before the big boys close in. You can still win but I am skeptical if you can do. But that depends on many factors because the Chinese have done it overcoming cultural barriers. Otherwise, it is much harder than what people think.

How do you foresee India grow from here in IT?

Fantastically. The biggest problem India has is it can't produce employees fast enough. In general, most companies can't make it. Let's face the facts. We only seem to have smaller companies that eventually are getting integrated into larger companies.

Even big companies get acquired. So as long as people get a reasonable earning from their innovation, congratulations! That is a great model that will give a strong incentive to other people to innovate. The real risk is if you innovate and don't sell, your ideas can be easily stolen and that I think would be a harder issue.

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