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An Interview with Tom MacTavish: Knowing Customers and Business Relationships in Emerging China

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Tom MacTavish is Vice President, Motorola Labs' Center for Human Interaction Research which is comprised of laboratories in Phoenix (AZ), Schaumburg (IL), and Shanghai (China). This center of excellence focuses on creating next generation user experience solutions for Motorola products and services by applying user centered design principles and appropriate interaction technologies including voice dialogue, tactile, vision, and intelligent systems. Tom is an experienced research and engineering manager and has led global teams that have created high volume, high impact products including smart-phone applications, wireless data (802.11) products, telecommunications applications, multimedia kiosks, and bar code scanning systems.

MacTavish joined Motorola in June 1999 following more than 20 years of research and development experience with NCR Corporation where he rose to the position of vice president and head of that company's Human Interface Technology Center in Atlanta, Ga. He has master's degrees from the University of Michigan and the University of Iowa, and a bachelor's degree from Central Michigan University.

Tom MacTavish, Vice President for Motorola Labs' Center for Human Computer Interaction Research, was interviewd by phone on September 30, 2005.

Zachary Jean Paradis - I'm aware that you've helped establish a design center in China. Could you tell me about it?

Tom MacTavish - What Motorola has done and what I've done is that in January 2000, we established a research center there. It has grown from an initial exploratory activity up to having a very substantial positive impact on the company now because of the knowledge we gained by being there and having it staffed by local research talent.

Zachary - Tell me about Motorola and its activities in China and other emerging markets. Motorola's a big successful company. Why are emerging markets important to it?

Tom - We look for countries that are politically stable; that have an ability to implement business according to international law and provide a stable environment for us from a commercial standpoint; and ones that are receptive to adopting new technology. Motorola's principal product line, the biggest revenue that we have, is generated from our mobile telephony business. We're very fortunate that we work in a marketplace that addresses a fundamental human need to communicate. The payback for consumers who buy our product is very straightforward, in that if you can communicate more easily across great distances, then that usually translates to direct economic benefit. Prior to modern communications, you may have had to walk three miles to a telephone or walk five miles to the nearest village to find information. Now that you have a mobile telephone that information is instantly available to you and you can save a tremendous amount of energy and time, so for us the proposition is pretty simple and pretty fundamental to human social structures.

If you look at it just numerically, currently there are about one billion cell phone users, and the population of the Earth is about six times bigger than that. We would love to bring the advantages that the current one billion users have to the other five billion people who are eligible with some sort of economy to use that. So for us we're seeing mature markets in the US and in Europe where the saturation of cell phone usage varies country by country, anywhere from 60 – 80% -- well actually there are some countries that everyone, or a large number, have almost more cell phones. Germany has the highest density of cell phone users, by the way, with many people owning multiple cell phones.

Zachary - Interesting. Getting back to our earlier discussion, you were talking about how the US and Europe are mature markets, so you have an opening...

Tom - The greatest growth areas that we can see are China and India. They are the two biggest booming markets in terms of people who are not yet served by cell phones. Access to mobile telephony would make a significant improvement in their lives by really solving some communications problems for them, so that's a very receptive market for us.

Zachary - Perhaps you could tell me about your experience in China and provide a few anecdotes regarding your work and experience there?

Tom - I've had a couple of experiences. One was in setting up the research institution I mentioned earlier. That's been a very positive experience in China. What I found is that there is a wealth of talent coming out of the schools, and that it was very important for us to pick an appropriate location to leverage the right level of quality of life, talent pool and openness to international business practices. We located our research center in Shanghai because it met many of our criteria and it has worked out very well for us. We have an excellent workforce there and access to design talent in small companies that have started up within the last five to seven years. There seem to be more design companies that are ready to do international business. We think Shanghai is a very progressive city and that they have the right base of technologists, educational institutions, and design skills that we can leverage.

We've learned a lot about the market while we've been in China and that is a key thought I would like to register. One thing that all companies doing business in China should realize is that there are unique consumers here, and in other emerging countries, and they need products that are designed for them. One example of that is the fundamental problem that anybody who lives in a graphical character language world has: if you have a traditional keypad-oriented cell phone, you can not easily enter data in your native language unless there is some way to translate our input to graphical characters. In the West, with Roman based languages, a 10-key key pad with alphanumeric overlays will allow us with some reasonable effort to input data. What we found in China was that touch screen based products, or other innovations, to allow graphical character input was very important.

We also found that we had to dig deeper in some cases and that there are different methods for inputting Chinese language-based data into cell phones. If you're entering an address book or you want to send someone a text message or something like that you really have to look at the specific context in more detail. They have different writing systems. They've got the standard graphical input system but they also have something called pinyin which uses Roman characters to phonetically represent the pronunciation of Chinese characters, and there is another, similar system called Zhuyin. Getting that kind of insight into their needs and the options that are important to them is much more difficult if you are outside country doing this research, and very straightforward if you are inside the country doing it.

Two key points are that, one, you have to recognize those unique consumer needs in those markets and, two, you have to have the attention to detail to really drill down and understand what it is that they need. Based on just that simple example of how you get text into a cell phone for various purposes, we were able to create some unique products which have helped us be very successful in that market.

Zachary - That's really interesting. More specifically, what sort of research and methods are you using to understand consumers?

Tom - We're great fans of what I would call classic user-centered design. I've followed

the work of Don Norman and other people who have worked in this space for a number of years. We generally apply standard cognitive engineering and user-centered design techniques to help us understand and identify people's unarticulated needs. We've used classic methods like initial concept discussions with focus groups. We've done shadow visits where we observe how people do a task today and try to understand how we can make that task better. That's where you really drill into the details. We are big fans of rapid prototyping, where we will put together our best efforts at an initial concept and figure out what the reasonable acceptance criteria for the task that concept will enable. Then we'll do some iterative prototyping until we get it good enough. So those are the general principles we use as we move into a local country and try to understand the local needs they have.

Zachary - Are you outsourcing at all, or are you relying mainly on Motorola's research capabilities?

Tom - We've developed our own skills and talent in research there and don't use much outsourcing. We outsource certain other aspects though. For example, if we want to build a prototype of a new product we typically will outsource the creation of the printed circuit board for the product and even, for the first go-round, some of the physical design aspects, to get to a crude first model as quickly as possible. There's a big premium in our business on competing time. When you latch on to a new concept in our business, you have to respond to it quickly. So what we tend to do is retain the core design and research skills, the early prototyping skills and so on in our own organization. When it's time to do an initial run of let's say 200 units of a new product concept, we'll outsource that. There is such a great network in China of companies that can collaborate to quickly build new product. It's a great advantage in that sense.

Zachary - So you do feel like you can only access that network if you are there?

Tom - I would say to access it efficiently and with good results it's best to have somebody there locally, because there is a tremendous amount of dialogue in the initial stages. You need to be able to iterate with them very quickly. So I guess I would say you need somebody there to develop those relationships, or you need somebody who has lived there and can do it remotely. Generally, the establishment of trust and a broad view of all of the capabilities available is best grounded in a local position.

Zachary - Motorola entered the market 20 years ago, and there are many companies who would be interested in your experience with the social, cultural and political landscapes. Perhaps you could talk about some of the risks companies face?

Tom - I think the first thing that I've learned there is that relationships are extremely important. I guess if I had to characterize it at a very high level I would say that the West does business based on transaction, to a large degree. I could call up a supplier here and say, "Hey, next Tuesday I want 30,000 widgets dropped on my dock and here's what they ought to look like." Chances are I could get this done fairly easily. In China, I wouldn't just call somebody I didn't know and who I didn't have a relationship with, or any insight into their strategies, their interests or their abilities.

I guess if I had to compare and contrast I would say that the West can help sustain business based on good transactions, and in the East the foundation is a good relationship and the sharing of strategies and partnerships at a deeper level. The tradeoff is that in the West, there is an inherent short term-efficiency, because you are doing transactions 1-2-3, pretty quickly. In China, there is an inherent advantage strategically, because you're having deeper and longer discussions about how to partner.

Zachary - Interesting, so a risk would be that companies from the West will assume this transactional approach works in China?

Tom - Exactly. Where I can see companies getting into trouble is approaching Chinese companies with a transactional attitude and what may happen is that they may not get the result they had expected because there was an inaccurate or incomplete understanding. That's usually the thing you run into. I think in the common transactional culture in the West there's a lot of shared assumptions about the various aspects of some delivery. What's the quality level or their responsiveness or ability to change if the task needs changing for some reason? I think you have to work those out in more detail in China.

Zachary - I was interested that you have this center where you are doing design research, including the various methods we discussed like ethnography, contextual observation, etcetera. How do you combine that with more traditional research to handle market segmentation there? I ask because it seems like the segments change so drastically and so fast. Perhaps you could tell us a bit about how Motorola handles segmentation in a rapidly changing China.

Tom - We have a group within the company called the Consumer Insights group, and have a constant survey going on globally where we are trying to get better insights into markets and their dynamics. For us, it's just recognized as a major cost of business, and that we need a standing group that just does that on a routine basis. We do things, for instance, like studies where we'll go to 25 countries worldwide, do a large number of interviews, and take that data and see if we can discover segments and opportunities. I think the general methodology we have is go collect the data and then see if there are affinity groups within the data that then help us identify how to adjust our segmentation.

Zachary - So you don't think you're doing anything differently in China with regards to segmentation compared to the rest of the world? Perhaps the number of times you change it or address it?

Tom - Well, since it's a real-time event we're doing it all the time everywhere. We don't really have to do anything special for China in that regard. China has some unique dynamics in terms of how you emphasize segments in that country. Broadly characterized, there are a lot of what I would call "value shoppers" in the US, the "Wal-Mart culture" if you will, where price point and visible, tangible and immediate value per dollar is a huge part of their purchase criteria. What we see in countries with emerging economies, and technology-based emerging economies, are segments of

people where price is not as important. Advanced capabilities (especially those that can translate to higher productivity) are much more emphasized than we see for the value shopper in the US. Based on the economy in a country and their adoption of new technology, that tells us something about the dynamics as well.

Zachary - We've talked about a lot of different topics, Tom, but what excites you most about China and other emerging markets?

Tom - I guess to me it falls into the category of looking for "leap-frog" opportunities. You know, what happens typically is that when any new technology or new products get deployed, you get a sense of inertia or adequacy. I guess a prototypical example is that we installed wire-line phones in America approximately 80 years ago. That's when general access to telephones began and so for many, many years this was a person's mental model of what a phone was. It was in your house and the number was associated with your location and you willingly shared it with your family members. In countries that have never had land-line phones, their mental model when they see a cell phone is, "A cell phone is my communication device and that number is associated with me, and I wouldn't dare leave a cell phone on a table in my house because someone else might receive my call. It is a reflection of me and a private insight into me."

So those are two different mental models depending on when you got on board with voice communication technology. That's why I bring that example up. What I see in emerging countries is that because they are not weighed down by any existing assumptions, they are very often able to adapt and accept new technology much faster, if they can afford it and it meets their needs.

When we look at China, for instance, they have a large organization that helps them drive investment in internet technology. To me, it seems obvious that China will be the first to implement the "next Internet". The current Internet is based on a protocol called IPV4 or Internet Protocol Version 4. China is heavily going after Internet Protocol Version 6, which is a leap ahead in terms of capabilities. The thing about IPV6 is that it gives you a huge number of available addresses to connect devices to the Internet. China got a relatively small set of addresses in IPV4, and they recognize this as a problem. When you go to IPV6, you can suddenly connect millions and millions of devices to the Internet. So, their thinking is very open to "We never knew what IPV4 was and the restrictions associated with it."

A world in which everything is connectable to the Internet is very obvious to them and they are pushing very hard for things that we are struggling with in the US, like Wi-Fi connections in municipalities. Philadelphia is the leader in installing 802.11 wireless networks as a municipal utility that anybody can plug into. In the US there are tremendous fights that must be waged between the various carriers and local municipalities, and it's slowing the process down. In China it's going to happen much faster and they are thinking the Internet can address everything: we need a wireless infrastructure in here; let's put in this unlicensed spectrum and devices that anybody can use faster than anybody else, and let's move on. I would expect we'll see greater innovation in those markets than we will see in existing markets.

Zachary - So that would also force you to be more innovative, in that you have to say, what if Wi-Fi was everywhere in China, and what does Motorola have to do to be successful in that environment? Obviously the standard cell phone tower, limited spectrum paradigm is sort of meaningless in that context.

Tom - That's right. It's a different world and the obvious advice to any Western company going into China is, "Don't assume that the products and life cycles that you have in product development for Western markets will work in China." It's moving too fast and it's a different market.

Zachary - Do you think that the lessons you've learned in the China market can be applied to the Western market and the United States?

Tom - Yes, for sure. A fun example is that when I go to Shanghai, I ride on the Maglev railway that they have between Pudong airport and downtown Shanghai. It goes 460 kilometers per hour and moves me the 30 kilometers in six or seven minutes. It is thrilling, so whenever I get a chance with Western colleagues I make them ride on the Maglev train so that they can start to imagine what the world could look like if we could have the ability to move thousands and thousands of people extremely quickly between point A and point B.

I do the same thing with products. The reason I carry a Motorola Chinese phone in my pocket is so that I can flip it open and show my Western counterparts some of the great new applications and technologies that are being deployed in China and aren't here yet. It allows me to model what the future could look like here by leveraging things that have been done and been deployed over there.

Zachary - That's really interesting, because I bet a lot of Westerners would think that China or "insert emerging market here" would be behind us. What you seem to be teasing out is that maybe the general or rural population of these places are "behind" in terms of technology but, in fact, the bleeding edge is there too.

Tom - I think it is. I think the Maglev is a good example of that. They can drive a broad strategy in China. They had to displace a lot of people and martial a huge capital investment to create the Maglev, but they could do it because they have very large, well worked out and unified plans. You contrast that with India or America which are messy democracies in a sense. It's very hard for us to drive big strategies because we're just not organized in that way, and especially so when it comes to deploying big systems. I think we'll see over time countries like China will continue to deploy those big plays. Now they may get it wrong and the commercial models might not work. That's the risk of it, but you'll see some interesting developments as a result.

Zachary - One of the reasons I have a lot of interest in China is because of the numbers of people and energy usage, and there is so much room for innovation around this stuff because essentially it is going to be demanded. The health ramifications, for example, of every Chinese citizen driving in the way that we currently drive in the US are just going to be untenable. Costs will skyrocket and they are going to be forced

to find solutions for it, so it's pretty interesting in contrast to our country, where big business, for good or bad, drives a lot of decision-making in terms of the grand strategy that you're talking about. It's hard for our government to be directive.

Tom - Exactly. It's a case of Darwinian economics in the West and socially controlled economics in the East, and we'll see how it works out. To me, when you're in the center of Shanghai and you realize there are 16 million people all trying to live in a space about the size of Chicago, it's a daunting challenge and there are a lot of interesting problems to solve.

Zachary - One more thing that I wanted to touch on briefly is, what are the big questions for you about emerging markets generally and China more specifically? What would you like to know more about right now if you could?

Tom - I'm curious about regionalization. As we see markets evolve, will there be products and goods that speak, for instance, either to Manchuria in the north, or to Fujian province in the southeast, or Guanzhou in the southwest? Will there be geographically-based products because there are a lot of cultural differences between those regions? I'm really curious to know if people are looking and thinking about that.

I think the other challenge I see is that there are many well-known huge urban centers that we can serve with goods and services and currently meet their needs, but what are the strategies to help develop the undeveloped and rural areas? We should not view China as a monolithic market. It is a culture unified by a handwriting system and a government system, but it is wonderfully diverse based on unique regions and 12 different dialects. I would like to know how people are dealing with that challenge. A simple example is that it is well known that their writing system was driven by the Mandarins and that the official language is Mandarin, but would people use products that spoke to them in their own dialect? From a design point of view, I'm curious if companies in the West are becoming sensitive to that.