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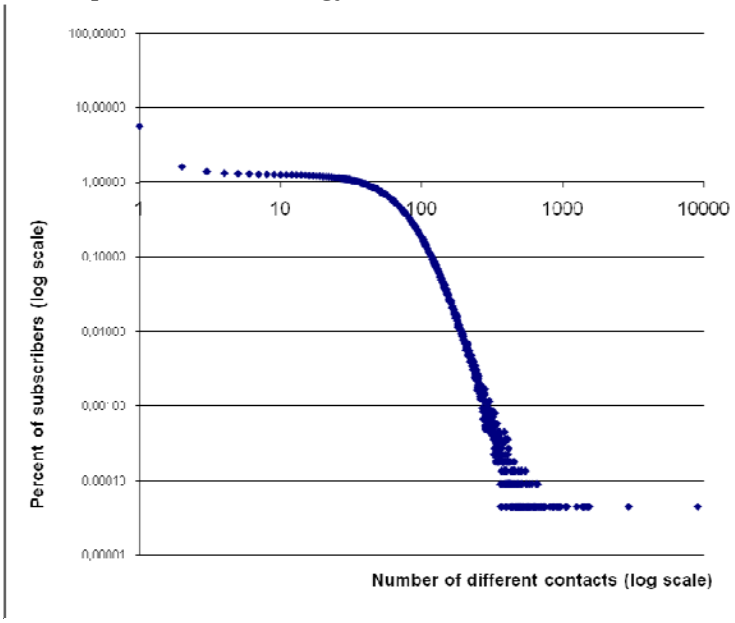
Mobile Communication as a Mundane Medium

An instrument of the intimate sphere

Mobile telephony has quickly become one of the most used forms of mediation. Within little more than a decade it has moved from being the province of well-heeled business people to being an almost pervasive technology. In some cases, this excites the suggestion that the mobile phone will become the babel fish of our time, neatly connecting people across globe in a chorus of interaction and understanding.



Analysis shows that we have taken the mobile phone into our hearts. However, it is not necessarily to interact with people on distant shores. Rather, for the vast majority of users, the mobile phone is actually quite insular. It is used for mundane interactions with those that are close to us. There is the potential for hundreds and thousands of contacts and there additional functionality of internet access also opens up new worlds via the mobile phone. While some take advantage of these opportunities, the majority of people operate much closer to home.

To be sure there are some very social individuals. In some cases people talk with seemingly countless others. However, analysis of telephone traffic data shows that the vast majority of us have relatively few contacts. This is seen in the data from the figure above. In the figure, the vertical axis is the percent of subscribers. This is presented in a log scale that ranges from 0,00001% to 100% of the users. The horizontal axis, again in a log scale, is labeled the "out degree." It shows how many different telephone numbers an individual calls. It is not how often a particular number is called, rather it is the spectrum of different numbers being called. The data describes 188 309 642 unique interactions in Norway over a three month period in the third quarter of 2009.

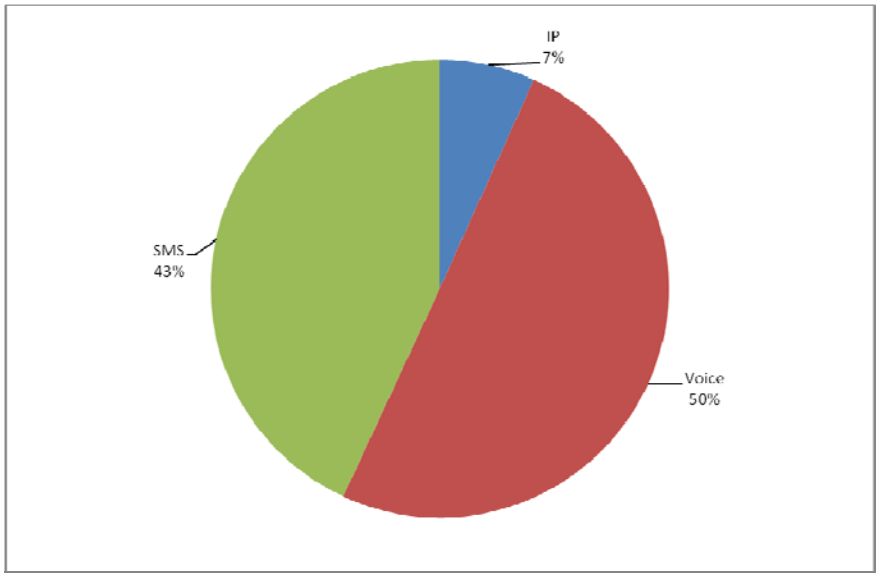
There is an interesting story to be told with these numbers. The general form of the curve shows that at the upper left there are a relatively large percentage of persons who do not have many other people that they call while on the lower right, there are progressively smaller and smaller

percentages of people that call many different numbers. In general, the distribution is quite skewed so that there are many people who call few others and a there is an exceedingly small number of people that place calls to hundreds, if not thousands of different others.[1]

The vast majority of the people place very few calls. Indeed during the three month period covered in this figure, half of the people called 25 or fewer different numbers. They may call the numbers many times, but they call only to a very limited set of people. Approximately 75% of the people called 50 or fewer different numbers and 80% called fewer than 100 numbers. We come very quickly to a very small group of people with seemingly boundless sociability. Thus, while there are social gadflies who seem to have infinite social connections, the preponderance of people have a more manageable number.

The mobile phone as a mundane technology

When we do use the mobile phone, it is relatively seldom that we use it for advanced services. Rather, we talk into it and we send text messages. In the vast majority of cases, it is a technology that is used for point to point interaction with our nearest family and friends.

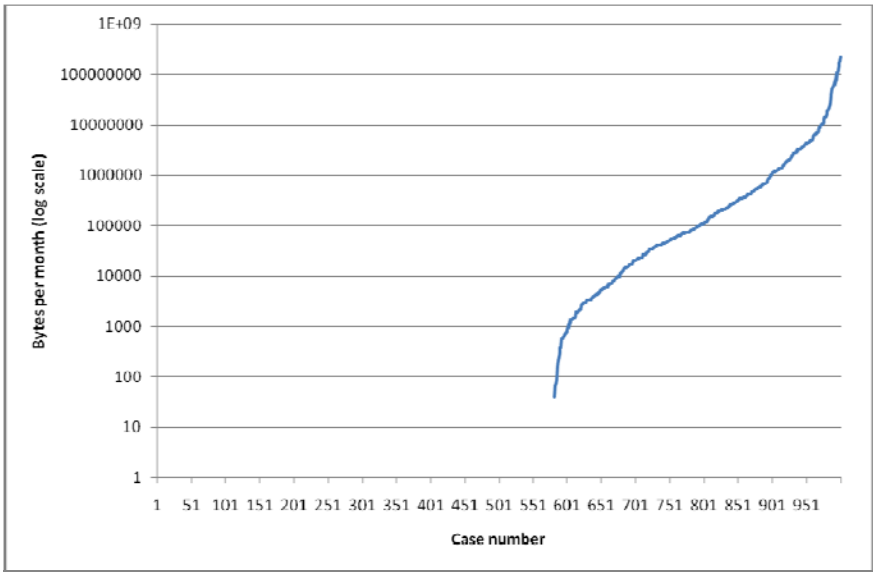


This contradicts the image that is often portrayed in the media of the mobile phone as a portal to endless social networking. The mundane nature of mobile telephone use can be seen in the data showing the "events" carried out by 20 000 individuals attached to the mobile telephone network in Norway over a one month period. The table shows the distribution of approximately 6.8 million "events." These included calls, text messages and logging onto the mobile internet. The sample was a representative sample of Norwegian users. It is clear from the data that the vast majority of the events were calls and text messages. Only 7% of the events were internet based interactions (noted as "IP" in the chart standing for Internet Protocol). Thus, while there is an intense interest in the press and there are intense efforts to develop mobile internet services, their use by normal individuals is rather limp.

This same point can be seen in the actual amount of IP traffic that is being generated. Although there is no sharp boundary, the data indicates that there are super users and there is a much larger

[1] In some cases these extreme "users" may be machines. They are difficult to identify in the data.

corps of less colorful subscribers. If we look at the use of the iPhone it is possible to see that there are very different styles of use associated with mobile telephony.



The distribution of consumption can be seen in the figure on the left. The vertical axis is the monthly consumption of IP traffic in bytes. It is a log scale. The horizontal axis is the specific case number. The sample included the use of IP traffic for a sample of 1000 general telephone users. It shows that almost 60% used none at all. Looking at the total budget of IP traffic, 10% of the budget is used by the lowest 960 of these randomly selected 1000 mobile phone subscribers. The most active single user consumes 10% of the total budget.

The same general pattern is seen in the case of the iPhone. At the point of departure, the iPhone is a breech with other handsets. It has an advanced user interface, the touch screen allows for refined manipulations and the iPhone is a portal to the so called “app store” where users can gain access to over 100 000 applications ranging from the ridiculous to the superb. Analysis of the use of the device indicates that indeed users generate more internet traffic than do other users.[1] [2]However, if we look at the distribution of the IP traffic for a sample of 20 000 iPhone users it is obvious that only some of them take advantage of the possibilities associated with the device. The vertical axis is the number of bytes that are downloaded per month. Again, this is a log scale that ranges up to 100 000 000 000 bytes per month. On the lower left it is possible to see that a large group used no IP traffic and indeed this is 18% of the iPhone users. At the other end of the scale, there is an exceedingly small group of iPhone users that consume huge amounts of IP traffic. If the “budget” of all the traffic shown in the figure were divided up into 10 equal bins, The bin for the lowest users would include over 16 000 persons. The bin for the most intensive users would include only three persons. Thus, as with the other analyses there is an extremely skewed distribution of traffic generation. In fact a small handful of users generate the vast majority of all IP traffic

Conclusion

In some cases there are people who are doing innovative things with their phones. They are using them to connect with broad social groups and they are actively using them as terminals for accessing the internet, sometimes in an exceedingly greedy manner. At the same time, much of the

[2] R. Ling, 'Taken for granted: The infusion of the mobile phone in society', Interactions of the ACM 15, 55 - 58.

use is far more commonplace. It is not people working in cutting edge jobs, holding virtual meetings with a colleagues across the globe, exchanging digital artifacts in real-time and downloading the latest films to their mobile phones. Rather, it is more the image of couples figuring out how to do the shopping and get the kids to their next piano lesson or soccer practice. It is friends exchanging the latest chitchat or working out how they can meet up at a café. It is not new innovative stuff, it is people doing the mundane activities of getting through the day.

	Males	Females
18 – 27	47.7	56.4
28 – 39	69.2	67.1
40 – 49[3]	60.0	68.1
50 – 59	66.7	65.4
60 – 68[4]	42.3	28.9
> 68	31.8	38.1
All	57.0	58.5

Would it be "very hard" or "somewhat hard" to give up your mobile phone? (Source: Traugott et al. 2008)

Thus, our attachment to the device does not come from its potential as a window towards future services, rather we are attached to the mobile phone Because the mobile phone give us access to those who are closest. Indeed we increasingly see the mobile phone as a necessity. It is taken for granted that we have a mobile phone and that we are accessible to others.[5] In her analysis of students at the University of Toronto, Rhonda McEwen asked them which device or service would be the most difficult to do without for a day. Slightly fewer than 20% said email and another 20% said social networking sites. About 5% of the students said search engines. The big news is, however, that 45% said that they would not like to go without their mobile phones.[6] Similar results were found by Traugott et al in their analysis of a random sample of people in the US.[7] In the work done by Traugott et al as many as 69% of the respondents in the 28 – 39 year age group felt that the mobile phone was an essential tool for their lives. Interestingly it was the young adults who felt this the most keenly. Adult women were more likely to say this than were same aged males. At the same time 60 – 68 year old males were also more likely to feel the need for a mobile phone than were same aged females.

People have the sense that the mobile phone is a central technology in their lives. A businessman in a focus group said: "I am completely dependent on the telephone, so if I forget it, I just have to get it." He spoke about how it provided him contact with clients and was his connection to social interaction. Others spoke of the photos they had on their phones and the way that it gives them a link to friends and family.

The mobile phone allows us to reach one another and it is a device that we can use to coordinate everyday affairs.[8] We use it as a safety link should plans go awry and we carry it with us so as to be

[3] Chi2 (3) 6.3, sig. > 0.096

[4] Chi2 (3) 8.7, sig. > 0.033

[5] R. Ling, 'Taken for granted: The infusion of the mobile phone in society', Interactions of the ACM 15, 55 - 58.

[6] R. McEwen, 'A World More Intimate: Exploring the Role of Mobile Phones in Maintaining and Extending Social Networks', School of information, (Toronto: University of Toronto, 2009).

[7] M. Traugott, S. H. Joo, R. Ling and Y. Quan, 'The mobile phone: An essential item for the US public', After the Mobile Phone? Social Changes and the Development of Mobile Communication, M. Hartmann, P. Rössler and J. Höflich (eds.), (Berlin: Frank & Timme, 2008).

[8] R. Ling and B. Yttri, 'Hyper-coordination via mobile phones in Norway', Perpetual contact: Mobile communication, private talk, public performance, J. E. Katz and M. Aakhus (eds.), (Cambridge: Cambridge University Press, 2002), 139 - 169.

accessible to others. While there is often the sense that the mobile phone will allow the broader world to come crashing into our daily life, it is often such that the calls we receive and the texts others send to us concern themselves with who is going to do the shopping or the whereabouts of a child who is late coming home from school. Along the way the mobile phone also helps us to maintain the cohesion of our social group.[9] Using the language of network analysis, it is not a device that is primarily used to cultivate weak ties. Rather it is used to interact with people in our close social sphere.

All of this also comes to a resource/engineering question. Is it proper for the development of systems to be pushed by the image of the super users, or is it more correct for the design of system to take into account the use patterns of the majority of the people. With his inclination to over-simplify things, Henry Ford is reported to have said that if asked for improvement in transportation, they would have asked for a faster horse. According to Ford, the visionaries who were able to give us the automobile were more correct.[10] To be sure, it is important that good ideas be implemented. However, it is wrong to adopt the position that mobile telephony is a boundless new frontier. It is a very useful tool that we are carefully integrating into our daily mundane routines.

[9] R. Ling, New Tech, New Ties: How mobile communication is reshaping social cohesion (Cambridge: MIT Press, 2008).

[10] The resulting pollution, congestion and carnage might cause us to question the development.