
Strangers on a Train: Serendipitous Meetings, Intelligent Networks, and Je Ne Sais Quoi

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Abstract

For better or for worse, meeting a stranger is a grab-bag of experiences. This position paper will promote the thesis that our march to ubiquitous communication in a nomadic, multi-media world not only inhibits spontaneous introductions, but presents challenges in UI constructions far more complex than merely 'blocking' calls coming from 'strangers.' The definition and growth of 'accidental relationships' will likely be facilitated in a reflective capacity rather than a predictive capacity.

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Human Factors, Artificial Intelligence

ACM Classification Keywords

User Interfaces D.2.2, H.1.2, I.3.6; Artificial Intelligence Learning I.2.6

Introduction

For better or for worse, meeting a stranger is a grab-bag of anonymous presentations, fortuitous introduction, and embarrassing episodes not to be repeated. When a person finds oneself having a conversation with a stranger – depending on the length

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of that meeting and the inclination of both parties to continue that relationship, there are multiple paths to developing the relationship. This position paper will promote the thesis that our march to ubiquitous communication in a nomadic, multi-media world not only inhibits spontaneous introductions, but presents challenges in UI constructions far more complex than merely 'blocking' calls coming from 'strangers.' Personalization and predictions for convenience of communication may be realizable in the immediate term for social relationships of convenience with strangers, but interpersonal relationships that grow from such introductions that have hard-to-define value are not easily supported by intelligent networks. At best the definition and growth of 'accidental relationships' will likely be facilitated in a reflective capacity rather than a predictive capacity.

Social Networking and Technology

At Bell Labs, innovation has been driving research into how people organize their existing social networks – and this research is leading to technologies and services that manage what is known about how people organize their communications and relationships. It's about convenience and personalization. The goal is to serve up what is needed for improved communications with known people. Examples of such technologies range from simple address books and their organization, to complex requester-targeted call routing [1], to networks that learn your habits and those with whom communicate to improve and personalize your experience [2]. This approach assumes an organic ebb and flow of contacts and content. Such an approach delves into predicting travel patterns, modes of communication, and consumer habits. But where is the technology assistance when an individual expands his

or her social network? How does that occur and what are the impulses that drive to communicate with a stranger, perhaps in a public space? Are such meetings desirable, and can the network facilitate such interactions?

What happens to the opportunity to meet somebody new when we find ourselves joining 'do-not-call-lists' and checking caller ID? Research into the effects of mobile phone technology on social interaction has investigated nomadic intimacy, involvement shields, and civil inattention – all of which point to mobile communication inhibiting serendipitous meetings with strangers [3,4,5].

Can Mobile Services and Intelligent Networks Facilitate Meetings Between Strangers?

Mobile services that promote interaction with strangers have been investigated. Cell mobbing, clubbing, and dating services have all sprung up to address the introduction of people who hold similar interests: political activists, hikers, and busy singles looking for a date all have benefited from a background intelligence serving up a potential 'match' [6,7,8]. In an intelligent network, the likely algorithms focus on similarities – similarities in travel patterns, a profile on interests and habits, and other encodings of individual preferences. Research into such meetings with strangers has found that the length of the initial meeting with somebody new can dictate the success or failure of the retention of the relationship [9]. But in a learning network, how does the intelligent network process a failure in match, and what is the burden on the end user to teach the network why there was a failure?

The immediate term work in intelligent networks finds that most users will not invest a significant amount of time provisioning profile data or preferences. Therefore, it is natural to want to shift to the network the task of observing the user, and inferring the user's preferences based on such observations [10]. But this too has limitations. At best, the network can find patterns of movement, application use, and communication initiation/reception. Working from there, the network can suggest modes, alternates, and opportunities to the

end user which the user will either accept or reject. For meaningful learning to occur, the network needs to discover information about a failure in prediction without placing an undue burden on the end user. It may be reasonable to occasionally prompt the user to confirm or deny a hypothesis formulated based on network observations, or to select among a small number of choices, of which at least one will be correct, but this cannot happen continuously. We are concerned that users will rebel.

While we concede that network learning can assist in furthering relationships between semi-strangers (people who have met previously but don't interact or communicate with one another very frequently – yet – but are perhaps traveling to the same location at the same time), it is much more difficult when the people have never met at all. Network learning and user prompting to facilitate meetings with complete strangers is more complex. Strangers are, after all, strangers – people with whom the user has never interacted. An analysis of a user's past interaction with the network will not lead the network to the new stranger. The network would have to, in parallel, observe the action of each user, find matches between

pairs or groups of users, and suggest to those users that an interesting match may be available. And it should do all this while preserving the privacy and anonymity of strangers, at least until such time that those strangers decide to meet or break the anonymity veil, at which point they cease to be strangers [9].

What Do Intelligent Networks Miss

Proposals based on a related set of categories reveal their blunt effect, however, when the complexity of social interactions and the limitations of intelligent networks are fully examined. What does the common phrase 'opposites attract' or research into interpersonal complementarity tell us about how people match up? What about the role of *je ne sais quoi* – as expressed in literature – that two people holding the same exact virtues can only be differentiated by an unknowable quality in which one person is found pleasing and the other not [11, 12]. This points to the severe limitations in intelligent networks' interpretative powers: learning algorithms have to take on associations, contradictions, and the unknowable during prediction [13], and then receive sufficient data back from the end user as to why a predicted match failed.

Even in a successful condition in which a match is achieved, there may be little the network can do to support the activities around getting to know this stranger. This is where the availability of services for sharing and the ability to store history/patterns of interaction can be of value to an end user. If one can rapidly access personal content to share (e.g., photos), quickly provision contact information, keep reminders of meetings, and evaluate the locations, durations, and content of interactions with this stranger, the erstwhile strangers have a common collection to describe why

their friendship, business relationship, or romance matured. The network can be thought to be supporting reflective, collection activities, rather than predictive, generative activities.

Early Research at Bell Labs

Finally, the question remains of how accidental meetings are allowed to occur when the current trends in mobile communications promote nomadic intimacy. Will society develop a concept of those who choose to disengage from the network in order to facilitate accidental interactions? Will the perceived value of accidental interaction decline in favor of 'guided introductions' through personal or network prompted avenues that hold more potential for 'success?'

At Bell Labs we are investigating why people are motivated to communicate in the first place, and how the quality of that impulse is mediated by it being an existing or completely new relationship. We are beginning to conduct research into the communication between strangers with and without access to their personal mobile devices. Our position is that a fundamental human need to increase knowledge and experiences of others is suppressed because meeting strangers is inhibited by "always on" network connectivity.

References

- [1] Hull, R., Kumar, B., Lieuwen, D., Patel-Schneider, P. Sahuguet, A., Varadarajan, S. & Vyas, A. (2005). Improving User Experience Through Rule-based Service Customization. *International Journal of Cooperative Information Systems (IJCIS)*. Vol. 14. No. 4.
- [2] Dinoff, R., Hull, R., Kumar, B., Lieuwen, D. & Santos, P. (2006). A Framework for Learning to Personalize Converged Services Involving Social

Networks. *IEEE Mountain Workshop on Adaptive and Learning Systems (SMCals/06)*.

[3] Geser, H. (2004). Towards a sociological theory of the mobile phone. http://socio.ch/mobile/t_geser1.pdf.

[4] Ling, R. (2002). The social juxtaposition of mobile telephone conversations and public spaces. *Conference on the Social Consequences of Mobile Telephones*, 2002.

[5] Persson, A. (2001). Intimacy among strangers: On mobile telephone calls in public spaces. *Journal of Mundane Behavior*, Vol 2. No. 3.

[6] Ashbrook, D. & Starner, T. (2002). Enabling Ad-Hoc Collaboration Through Schedule Learning and Prediction. *CHI2002 Workshop on Mobile Ad-hoc Collaboration*.

[7] Eagle, N. & Pentland, A. (2004). Social serendipity: Proximity sensing and cueing. *MIT Media Laboratory Technical Note 580*.

[8] Axup, J. & Viller, S. (2005). Conceptualizing New Mobile Devices By Observing Gossip and Social Network Formation Amongst the Extremely *Mobile - Mobile Information Sharing 1 (MIS-1) Study*. Brisbane, Australia: ITEE Technical Report #459, University of Queensland.

[9] Juhlin, O. & Ostergren, M. (2006). Time to meet face-to-face and device-to-device. *The 8th International Conference on Human-Computer Interaction with Mobile Devices and Services*.

[10] Dinoff, R., Hull, R., Kumar, B., Lieuwen, D. & Santos, P. (2006). Learning and Managing User Context in Personalized Communications Services. *Context in Advanced Interfaces Workshop (associated with AVI2006)*.

[11] Thorman, W. E. (1958). Again the "Je Ne Sais Quoi." *Modern Language Notes*, Vol. 73, No. 5, pp. 351-355.

[12] Dryer, D.C. & Horowitz, L. M. (1997). When do opposites attract? *Interpersonal complementarity*

versus similarity. *Journal of personality and social psychology*. Vol 72, pp. 592-603.

[13] Bickhard, M. H. & Terveen, L. (1995). *Foundational issues in artificial intelligence and cognitive science: Impasse and solutions*. Elsevier Science Publishers.