The Effects of Geographic Location on Communication Patterns Among Biotechnology Firms (Continued)

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Communication as a Function of Distance Among Firms
Returning to Our Old Studies of Communication Among Engineers
Network for a Single Department Showing the Effect of Physical Location.

Figure by MIT OCW.
Probability of Technical Communication as a Function of Distance Between Work Stations

![Graph showing the relationship between separation distance (meters) and the probability of weekly communication. The graph indicates a decreasing trend in probability as separation distance increases.]
Does this Effect Extend to Firms?

• Does a similar effect influence communication among firms?
  – If it does, that would argue in favor of geographic clustering.

• To test this, Ron Ozer determined the mean distance of each firm in the study from all of the other firms.
  – He then related this measure to the amount of communication that scientists in each firm reported.
Communication Reported By Scientists in Each Organization as a Function of Mean Distance From Other Organizations

Communication with Other Organizations in the Study Over a Six Month Period

Mean Distance From Other Organizations in the Study

Communication Reported as a Function of Distance
Universities

The scatter plot shows the relationship between the number of scientific communications over a six-month period and the mean distance from other organizations (in miles). The plot compares universities (represented by red dots) and other organizations (represented by black dots).

- The x-axis represents the mean distance from other organizations (in miles), ranging from 0 to 40.
- The y-axis represents the number of scientific communications over a six-month period, ranging from 0 to 120.

The data points suggest that there is a trend indicating that the number of scientific communications increases as the distance from other organizations decreases.
Big Pharma

Scientific Communication with Organizations within the Cluster Over Six Month Period

Mean Distance from Other Organizations in the Cluster (Miles)

- Big Pharma
- Other
Scientific Communication Over Six Month Period

Mean Distance from Other Organizations (Miles)

Big Bio

Other
Where To From Here?

• **What more can we learn?**
  – Analyses of the network to relate network position to firm performance.
    • Comparison between cluster ‘members’ and firms in the control group.
    • Long term growth.
      – Size, valuation, etc.
    • Patent filings
    • Investigatory New Drug Applications
    • Etc.
  – Follow-up interviews to flesh out the network results.
  – Advice to the many geographic regions attempting to stimulate the growth of similar Biotech clusters.

• **Is this the new model for doing R&D?**
  – How do individual firms capture the gains?