

GEOGRAPHER INTERVIEW

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Read the interview of the real person who uses geography in his or her career. Answer the questions on your Geographer Interview Analysis sheet. Be ready to share your answers and ideas!

1) What is your job title?

Honorary research professor

2) How would you describe what you do?

Mostly I develop computer based models of geographical systems, working with a team at the Flemish Institute for Technological Research in Belgium. I develop and test the models, while the people I work with program them and prepare data necessary to run them.

What are these models?

Most of them predict the future changes in land use in cities and regions. Some of the more recent ones also predict the changing locations of where people live and work. Examples of output maps are shown below. These predictions are spatially very detailed; often the resolution is 100 or 200 metres. These models are being used in Belgium, Ireland, The Netherlands, France, and Puerto Rico, among other places.

I also supervise graduate students (mostly PhD level) at my home university, Memorial University of Newfoundland in Canada, and co-supervise graduate students at several other universities in Canada, Belgium, The Netherlands, and France. I used to teach urban, economic, and theoretical geography at Memorial University.

3) How do you work with Geography?

I try to create a new way of doing geography. Geography is a very old field, going back at least to Ptolemy, who devised the first scientific map projection. But geographers have mostly been content to describe the world by writing about it, mapping it, or photographing it from the air or from space. When we look at the geography of the earth—the agricultural areas, the location of the cities, the way they grow, the changes in the transportation networks as the years go by, we must wonder what causes these patterns, and the changes in them that we see over the years.

Theoretical geography seeks to explain the processes that generate the geography that we live in. If we understand the processes, then we can predict what the geography of our world will be like in the future. Not only that, we can predict the effect of some of our actions. For example, if we build a new highway connecting two cities, how will that change the pattern of growth in the region over the next 25 years? Do we like the long term effects of the road? Would the impact be better if it were built following a different route? Or if it were not built at all? The models help us make better decisions by giving us some idea of what the long term impacts of our projects will be. If we don't like the predicted effects, we can change the plan.

4) Why is Geography important to you?

Geography is important to me because I want to understand why the world is the way it is. Also, I want to be able to provide tools that will be useful for planners and other decision makers who are intervening in a practical way with actions that will affect the future geography for better or worse.

5) What kinds of Geographic questions do you try to answer?

I try to answer the basic geographical questions of why things are where they are, whether they will stay there, and if not, where will they move to. Being able to answer these questions allows many practical problems to be solved. For example, being able to predict where growth will occur permits us to know where we will need to build infrastructure like roads, schools, and hospitals. It also allows businesses to plan where they can most profitably locate new facilities like power centers, supermarkets, or coffee shops.

We sometimes develop geographic modeling tools for other kinds of systems. For example, we have developed a model of the lobster fishery which can be used to test the impact of possible regulations. This is more efficient than testing the regulations by imposing them and then seeing what their effect is.

6) What kinds of Geographic maps or tools do you use in your work?

I use maps of many sorts as inputs to the models: maps of the topography (digital elevation map), maps of transport networks (roads of various categories, commuter rail, light rail transit), land use and land cover maps, zoning maps, population density maps, employment maps, etc. Many of these maps are generated or pre-processed using a GIS (Geographical Information System). For testing the models, I use several types of pattern analysis tools (statistical techniques), as well as fractal analysis. All of these maps and tools are used in our work of creating new geographical tools that can be used by businesses, transportation engineers, urban planners, and emergency response personnel.

7) How do you decide which tools to use?

We use whichever tools we can find that allow us get the results we want. How do we find them? We do Google searches. We go to conferences and workshops and talk to others to keep up to date on new tools that are being developed. Frequently we must develop our own tools because no one else has yet done so. For example, we have developed several new statistical tools for pattern analysis of maps so that we can better understand the performance of the models we are developing.

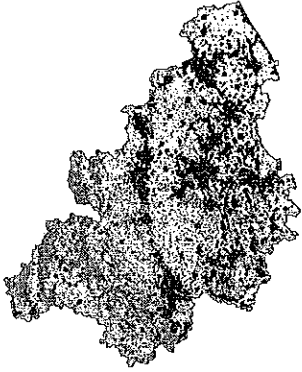
8) How would your skills help you in the event of a zombie apocalypse?

We've never had the thrill of working with an actual zombie apocalypse. But in collaboration with a team at Los Alamos National Labs we did once work with a disaster scenario for Los Angeles, where the city was destroyed by a mega-earthquake on an unknown fault. In this project we got together with a group of seismologists who with supercomputers could predict the pattern of destruction in the LA area in real time, and the resulting scenarios were fed to representatives of the utilities (gas, electric, water), Caltrans (freeways and traffic), and local emergency response organizations. Our geographical software was used to let the

participants practice coordinating their responses so that they could learn to work together rather than at cross purposes. It was also used to show how, in the longer term, the pattern of development in the LA area could be guided to lessen the impact of a giant earthquake. Zombies would be an interesting add-on to the software, since they would multiply rapidly in a disaster situation, and diffuse rapidly to cause problems even in relatively undamaged areas.



The greater Dublin, Ireland, area. Predicted population density in the year 2050.



Predicted land use in Belgium, 2060.