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### Exurban Discussion

The following is a presentation to elicit discussion of the article, *Representing and Negotiating Uncertain Geo-spatial Concepts—Where are the Exurban Areas?*, written by Hyowon Ban and Ola Aahlqvist.

#### Outline of Discussion

I will pose a series of questions and conclude with a discussion with the finding posed from the article. I will then pose some of the shortcomings of methodology if there are any.

What is the purpose of the paper?

Hyowon's article discusses the concept of exurban spatial boundaries. An exurban boundary is basically urban fringe or the outskirts of an urban development that is not quite urban and not quite rural. It is development on the periphery.

She not only defies exurban boundaries using the available peer review literature but also tries to model these definitions in GIS. She tries to examine what are the exurban definitions and if they are consistent and inconsistent within four counties in north central Ohio study area. The paper also provides the results from a user evaluated development software to support the exchange of knowledge between other users.

Why do the authors feel the research is important to do?

She states in the introductory paragraph on page 233, "Berube, Singer, Wilson and Fey (2006) reviewed 18 existing studies of exurbanization but found little consensus between the studies in their definition of exurbia. Since definitions are different, data and measurements of exurbanization are highly dependent on the researchers."

Hyowon tries to develop a model to discover what the consistencies and inconsistencies are between the available methods in defining the exurban landscape. She also makes her work available online to others can make the distinction between exurban definitions.

Identify the hypothesis and/or alternative research questions?

- 1: Title of paper—Where are the exurban areas?
  - a. What are the semantic uncertainties of exurbanization from existing definitions in use?
  - b. How do you demonstrate the developments of the interactive tool for working with uncertain geographic concepts?
  - c. What are the implications of semantic uncertainty of exurban boundaries on empirical spatial data?

Identify the data?

Good Secondary Data: In our study the US Census 2000 summary File 3 data including population density, population ethnicity, household income, household density and commuting time of block group level aerial units are used.

Good Primary Data: She also used data in the form of comments made by model participants online.

Identify the methods used to process the data?

I am a bit unclear. She probably used some sort of ranking technique and weighting technique to create the initial raster surface layers. Then she probably unioned or intersected them as needed to produce a final layer. She probably repeated this process according to each of the definitions she wanted to illustrate.

Identify the structure of the article?

1. Introduction
2. Theoretical Background
  - a. Existing Definitions of exurbanization
  - b. The uncertainty of exurbanization concepts
  - c. Definitions of exurbanization as conceptual spaces
3. Data and Methods
  - a. Data and study area
  - b. Development of fuzzy set membership functions
  - c. Combining different definitions of exurbanization
  - d. Concept of defining activity
4. Results
  - a. Spatial demonstration of uncertainty in exurban boundary
  - b. Difference between the definitions of the combinatory approaches
  - c. Evaluation of the interactive tool for comparison and definitions of uncertain geographic concepts
5. Discussion and Conclusions

Conclusions:

- d. Answer to Question a: What are the semantic uncertainties of exurbanization from existing definitions in use? “When these definitions were applied to empirical spatial data they demonstrated surprisingly similar spatial patterns or exurbanization despite their differences in the defining attributes.”
- e. Answer Question b: How do you demonstrate the developments of the interactive tool for working with uncertain geographic concepts? “We anticipate that the software interface can help communication and collaboration between a variety of stake holders that seek to discuss hard to define concepts and reach consensus by creating of their own definitions as well as negotiation multiple definitions.”
- f. Answer to question c: What are the implications of semantic uncertainty of exurban boundaries on empirical spatial data? “We demonstrated that the spatial outcome of six seemingly different definitions of exurban land use turned out to produce similar spatial patterns of definition agreement.”

What are the shortcomings of the article?

This is not necessarily a shortcoming of the article but I did notice the epistemological break between the GIS methods used by Ban and the remote sensing technique called change detection.

Both techniques can be used to model urban fringe but in the available literature they do not overlap.

Primary reasons for this is the structure or ontology of each.

The GIS method used a vector approach to solve the problem. Some common techniques of a vector-based approach to exurban areas is centrality, nearest neighbor, density, etc.

The remote sensing method uses the change between two images to denote how much an area has changed from lets say agriculture to suburban. You could easily devise a ratio where if agriculture to suburban is less than 50 percent this could be classified as exurban etc.

On page 236, Pond and Yeates suggest that transition from exurban to suburban into five stages: agriculture stage, early urban influence, small town/exurbanization and urban stages.

It seems to me that there would be an exurban stage between agriculture/early urban influence, early urban influence/small town, and small town urban.

Ban identifies exurbanization as one occurrence and defines the one occurrence a number of ways.

I believe there are several definitions of exurbanization and each can be defined a number of ways.