For this week's individual assignment, I read the PNAS street-network sprawl paper by Adam Millard-Ball and Christopher Barrington-Leigh. Within this paper, the authors discuss how street-network sprawl patterns are changing worldwide. Within the first section, they discuss how the United States has historically stood out on a global scale for having disconnected streets driven by a dependence on automobile centered development. On a global scale, there has also been a recent trend towards increased street-network sprawl. This trend towards increased street network sprawl is found to be particularly striking in countries with higher incomes, with developments in these countries tending to be built in a less-connected manner. While this trend is present, the authors find that it has begun to level off more recently. On the other hand, low- and middle-income countries have historically shown more connectivity but some of these countries are now beginning to trend towards increased street-network sprawl as well. I find it interesting how in this case, having more connectivity is correlated with being a low- and middle-income country even though increased connectivity is being promoted within the paper as a means of possibly generating improved environmental and economic outcomes. Followed by analyzing the overall connectivity of street networks via the street-network disconnectedness index, or SNDi, the authors also classify global street-network types to further their analysis. Based on this section, it is found that the most disconnected types of nodes almost doubled from pre 1975 to 2014. While Europe, Asia, and Latin America have increased in their disconnectedness, North America has actually seen a shift towards more connected node types. To conclude, the authors discuss the policy implications of their analysis. The authors note how in the long run, less connected street networks are less able to adapt towards newer and more efficient urban forms, limiting their future prospects for climate and other outcomes. Because of this, it is proposed that policy interventions be used in order to increase the connectivity of new developments. This could include requiring that new communities are completely gridded, possibly banning gated communities, or requiring that a certain number of routes be incorporated as a part of every new intersection ("3-ways-out rule"). Aside from this regulatory/policy perspective, the authors also suggest that market approaches such as various tax schemes could also lead to more connected street networks. Overall, I find this discussion of connectivity within street networks interesting and believe that more attention should be paid to understanding how street interconnectedness impacts social, economic, and political outcomes.

Questions:

1) What is it about different street-network types that contributes to different growth patterns?
2) Why is it that disconnected street networks have been more common in recent urban growth patterns?