Sharing Knowledge on PPGIS

Engaging Urban Indigenous Minorities in Western China

By:

Dr. Huhua Cao, Principal Investigator
Leah Weiler and Ziwei Liu, Research Assistants

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Full Name of Research Institution: University of Ottawa

Address of Research Institution:
75 Laurier Avenue East, Ottawa, ON, K1N 6N5

Name(s) of Research Team Members:
Huhua Cao (Principal Investigator)
Leah Weiler (research assistant)
Ziwei Liu (research assistant)
Liqin Zhang (research assistant)
Cam Nelson (research assistant)
Matt Gaudreau (research assistant)
Zhiting Lin (web designer/master)
Gaoxiang Li (web designer/master)
Jingle Liu (web designer/master)
Kenny Zhang, Asia Pacific Foundation of Canada (collaborator/researcher)
Anwaer Maimaitiming, Xinjiang Normal University (collaborator/researcher)
Fachun Du, Chinese Academy of Social Science (collaborator/researcher)
Zhizhong Zhao, Minzu University of China (collaborator/researcher)
John Zacharias, Peking University (collaborator/researcher)

Contact Information:
Dr. Huhua Cao
60 University St, Office: 030, Simard Hall,
Department of Geography, University of Ottawa,
Ottawa, Canada, K1N 6N5
ciaohuhua@uottawa.ca
613-562-5800 x 1043

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Abstract
In the rapidly urbanizing People's Republic of China, the complex issues of inequality and ethnic tension threaten the inclusiveness of future development. Ürümqi, the capital city of Xinjiang Uyghur Autonomous Region (XUAR), has been the site of tensions between the Han Chinese majority and the Uyghur minority that periodically erupt in violence, as occurred in demonstrations in July 2009. Following the demonstrations, the Xinjiang government expressed willingness for more inclusive urban development; however the local government lacks the necessary tools to facilitate participation, and so resident perceptions go unheard.

This project adapted resilience theory for the non-democratic context of Ürümqi. Residents' perceptions were evaluated and mapped using questionnaire, focus groups and PPGIS platform, through which it was shown that resident perceptions and use of urban space were heavily affected by their ethnic identity. This, coupled with the banning of Uyghur cultural practices and exclusion of residents from public affairs, exacerbates social tensions.

This knowledge-sharing project provides an innovative contribution to socially sustainable urbanization in non-democratic countries. A comparative analysis of the perceptions of Uyghur and Han people were carried out to better understand how tension is perceived by each ethnic group as it relates to urban space.

Keywords: China, Xinjiang, resilience theory, urban theory, urban development, Public Participation Geographic Information System (PPGIS)
Research Problem
The city of Ürümqi, capital of Xinjiang Uyghur Autonomous Region of China, has been the site of social tension between the indigenous Uyghur minority and the Han majority for decades. This social tension has sporadically turned into violence, most notably in 2009 where riots were held after the death of Uyghur factory workers thousands of miles away in Guangdong province. Despite the autonomous status of their region, indigenous Uyghur people face socio-economic marginalization. Conflict has typically been isolated to the far west of the province nearer to the city of Kashgar, but Ürümqi has been the site where Uyghur and Han experience tension in the same large city. This is complicated by the fact that most of the city's population, and especially people of Uyghur ethnicity, do not currently have the opportunity to participate in the urban planning process.

Under rapid urbanization, Uyghur and Han ethnic groups have come into more intensive contact in Ürümqi, and have developed spatially segregated ethnic enclaves. After riots that gained international attention in July of 2009, the central and Xinjiang governments have expressed strong willingness to foster a harmonized society and support an inclusive urban planning process. During the annual session of the National People’s Congress following the riots, Chinese Premier Wen Jiabao stated that the government needs to: “[…] get ethnic minorities and the people of all ethnic groups who live in ethnic minority areas to feel the warmth of the motherland as one large family” (CBC, 2010). This was reiterated through administrative and legal changes to encourage the improvement of ethnic relations across the country, and specifically in Xinjiang. The new secretary of the Communist Party and chairman of the provincial People's Congress of Xinjiang, Chunxian Zhang, has placed inclusion at the centre of his policy direction for the region. Mr. Zhang has made several policy speeches that focus specifically on encouraging ethnic equality, increased participation among minority groups, and ensuring compliance among state bureaucracy and political figures with these principles.

To reduce socioeconomic inequality, a new revitalisation project for several ethnic poor neighbourhoods in Ürümqi commenced in 2010. The municipal government wishes to have stronger participation of the local population in this new project, but lacks an innovative and efficient way to involve residents. The “National city and town planning law” which was passed in 2007, has come into fuller effect and requires community hearings before new construction projects. In the case of Ürümqi, this is significant because it implies a direction toward government
desire to include the public participation not only generally, but specifically with regard to urban planning. For example, there has recently been a nationwide call for university based proposals to develop methods of gathering public opinion using digital technologies including web-based data gathering. Our project is indeed perfectly suited to this developing context.

This knowledge sharing project provided an innovative contribution to the critical issue of socially sustainable urbanization in developing countries. Socially sustainable urbanization necessitates a form of urban development that is socially just, spatially inclusive, and sensitive to ethnic diversity. In order to better understand the relationship between urban development and social inclusion/exclusion, the research used participatory methods, including the use of information communication technologies (ICTs), to examine individual perceptions of spatial sources of tension among Uyghur and Han people in Ürümqi.

Relevant research involves the use of digital, often web based, map making using Public Participation Geographic Information Systems (PPGIS) to give voice to communities at a power disadvantage. Research has previously addressed topics such as engaging the residents of slums to map their access to utilities, comparing local knowledge of perceived pollution sites, and conveying perceptions of crime prone areas. The use of PPGIS in planning has yielded positive outcomes linked to participation of marginalized populations in several contexts. In a case study focused on the inclusion of villagers in rural planning in the Shanxi province of China, Wang et al. (2008) found that using PPGIS to improve communication between stakeholders can facilitate decision-making.

The common rationale is to engage the knowledge of locals to better understand the spatial dynamics at play in their communities, and to communicate issues of importance to participate in decision-making processes. A comparative analysis of the perceptions of Uyghur and Han people was carried out to better understand how conflict is perceived by each ethnic group as it relates to urban space. Additionally, the Chinese authorities’ introduction of the “harmonious society” discourse in 2005, which aims for an equal and balanced middle-class-oriented society, acknowledges that China’s cities need to be more inclusive (Geis and Holt, 2009). This project responds to calls from both the government and the population more generally for inclusive development in Ürümqi.

Ürümqi is not the only city where minorities are not able to express their ideas on urban development. While minority groups experience exclusion differently in different countries, this
project used tools that are applicable in numerous cases where the participation of minority groups is sought.

Over the course of this research project, the team's objectives evolved with their understanding of the specific context of Ürümqi. In particular, state censorship and surveillance of digital platforms presented substantial barriers to the collection of data. Extra measures and changes to methodology were made to protect the anonymity of research participants and ensure the integrity of responses. As a result, hard copy questionnaires were distributed and collected in two neighbourhoods of the city in addition to the online PPGIS platform, followed by two focus groups with residents of these same neighbourhoods, drawn from the pool of questionnaire participants.

Objectives
The general goal of this research is to use resilience theory and the concept of social sustainability to understand 1) the production of urban space, and the spatial perception of indigenous Uyghur people facing socio-economic marginalization in their neighbourhoods, 2) their specific concerns about current urban development, and 3) how the local government can establish appropriate urban planning policies to help reduce social tension and create cohesion between ethnic groups. All of these general goals were met with the adaption of an online PPGIS platform: project activities allowed the research team to gather data on local resident perceptions of urban space and concerns about future urban developments in Ürümqi, and develop policy options to ameliorate ethnic tensions in urban spaces of the city.

The specific objectives of the project are as follows:

1) to share the knowledge possessed by the team members with respect to both indigenous minority and non-indigenous majority development, and the use of PPGIS. This includes the creation and distribution of a simple, web-based, digital mapping platform capable of engaging the public in issues of planning, and assisting in the analysis of spatial data;

2) to build the capacity of relevant actors (XNU professors/researchers and graduate students, city planners, local government, neighbourhood residents’ committees, residents, etc.) in Ürümqi to co-develop, use, and maintain PPGIS platforms, and to
provide the diverse citizens with a means to express their spatial perceptions of exclusion and inclusion; and

3) to provide research that evaluates the value of wide participation among diverse actors in urban planning processes. This addresses social tension in urban space and puts forward the hypothesis that collaboration can yield a more sustainable future for the city. This objective extends to creating inroads in with the government planning offices to increase the ability and willingness of the government to reach out to citizens, particularly indigenous minorities, for a more inclusive approach in urban planning.

Fulfillment of the specific objectives above was more mixed. A PPGIS digital platform was developed, and team members in Ottawa were trained on the development and use of the system. This research did evaluate the value of wide participation (particularly across ethnic and linguistic identities) in urban planning processes. Although attempts were made to establish contacts in government planning offices and in academia, heavy levels of government censorship and surveillance of discussions surrounding ethnic tension in the city rendered these networks incommunicable.

Methodology
The theoretical approach employed in this research is a resilience approach to social sustainability. Social sustainability in the urban setting has been defined as the pursuit of development, which works alongside civil society and allows for diverse social and cultural groups to cohabitate and integrate for equal promotion of quality of life (Polèse and Stren 2000). Two overarching aspects integral to urban social sustainability, social equity and the sustainability of community, have been identified through empirical studies. However, how to achieve sustainability is a question of concern. Resilience thinking is an area of study that has achieved success in identifying and building sustainable practices.

The resilience framework for sustainability accepts change as a given, and assumes that shocks (both social and natural) are bound to occur. Empirical studies have found that one of the critical aspects of dealing with change and crisis is the inclusion of multiple sources of knowledge (particularly local knowledge). Likewise, where systems are currently unsustainable, elements of unsustainability must be identified through multiple sources of knowledge in order to build more
resilient systems. In the city of Ürümqi, the long term social tension between the indigenous minority Uyghur and majority Han ethnic groups undermines the ability to create social resilience. This research examined impediments to social resilience through understanding local perceptions of inclusion and exclusion in urban space, which in turn affects social relations and key indicators of resilience.

As studies in resilience have called for participatory approaches to include local knowledge, and given that this research involves inter-ethnic perceptions of urban space and inequality, PPGIS were employed to include local perceptions. However the implementation of PPGIS was hampered by concerns regarding anonymity of respondent entries online, which was particularly problematic given heavy government surveillance of the internet in China, and the political sensitivity of public unrest in Xinjiang more generally. As such, questionnaires and focus groups were chosen as supplementary methods that would best protect the anonymity of respondents in the research.

Ultimately, 2 neighbourhoods in Ürümqi were studied: Changjie, a Han majority neighbourhood, and Yuewan, a predominantly Uyghur community. Administered by the danwei, or local government-organized employment organization, under China's planned economy period, Changjie today consists of a mixed demography of elderly retired residents who used to work in a now dismantled concrete factory, and younger, low-income residents who live in the neighbourhood on an irregular basis. Yuewan by contrast is a much newer and ethnically homogeneous neighbourhood, with a largely Uyghur population.

The sample of participants was obtained through a mixture of convenience and snowball sampling in the two selected neighbourhoods in Ürümqi, with assistance from graduate students from the local university with competence in Mandarin and Uyghur. The sample consisted of residents aged 18 and over living in either of the two neighbourhoods. Every questionnaire participant was asked if they would be willing to participate in a focus group; as such, focus group participants were drawn from questionnaire respondents.

The questionnaire was first developed in English almost a year prior to field research, and underwent revisions following feedback from a pilot test of the questionnaire in the two neighbourhoods. Following that, the questionnaire was translated into Mandarin over the course of numerous very thorough drafts to ensure that the Mandarin version reflected as closely as possible the original English draft while also being culturally and linguistically appropriate to the context of China. Following that, the Mandarin version was sent to colleagues in Ürümqi who
translated the questionnaire into Uyghur. Due to time, geographic and linguistic constraints, we were unable to vet more than three drafts of the questionnaire into the Uyghur language. This resulted in a few errors in translation that went unnoticed until field research was already being carried out. However pilot tests with the Mandarin and Uyghur versions were carried out with a handful of residents in both neighbourhoods prior to the beginning of the field research, to ensure that the questionnaire was easily understandable by research participants.

A series of terrorist attacks and other incidents in XUAR during the period field research was to be conducted (BBC2014a; 2014b; Wee 2014) made for an uncertain security situation for field research. As such, field research was conducted in 1 week, rather than the 3 weeks originally planned. Due to these constraints a sample of 35 - 50 respondents per neighbourhood was desired, and was ultimately achieved. A total of 107 questionnaires were collected in total, with 51 from Changjie and 56 from Yuewan.

In the months leading up to field research a focus group guide was developed based off the questionnaire, and was translated into Mandarin. However it was revised substantially following the collection of questionnaires, as recurring themes became apparent in preliminary data analysis of the questionnaires. Almost identical focus group guides were developed for each of the two neighbourhoods, with slight changes to reflect specific places mentioned by questionnaire respondents in Changjie and Yuewan. Gaoxiang Li conducted both focus groups in Mandarin, and Ziwei Liu provided translation throughout while Leah Weiler took notes during the sessions. For the Yuewan focus group, local students with Uyghur language proficiency were present to assist with translating when necessary.

Due to the time constraints explained above, only one focus group in each neighbourhood was organized, while at least two each for Changjie and Yuewan was desired to have separate groups for people of Han Chinese and Uyghur or other ethnicities. Fortunately all focus group participants for Changjie and Yuewan were Han Chinese and Uyghur respectively, and so the need for separate groups was somewhat mitigated. Focus group participants were drawn from questionnaire respondents on a voluntary basis.

The focus groups explored issues of ethnic identity, language and urban spaces in the neighbourhoods, and in Ürümqi more generally. The qualitative data gathered from these sessions complement the largely quantitative information obtained from the questionnaires by allowing participants to express their perceptions of urban governance and ethnic identity in Ürümqi in their
own words. These groups also allowed for further exploration of some of the main trends observed in the questionnaire data, which unearthed more complex perceptions than the questionnaire data could convey. In a few cases, the data gathered in the focus groups provided an alternative and even contradictory data from what was gathered in the questionnaire.

Analysis began by going over the questionnaires and eliminating those with three or more non-responses. This resulted in 94 valid questionnaires from the original 107, with 50 from the Changjie sample and 44 from Yuewan. Following this, each question and response on the questionnaire was coded and the data from each valid questionnaire was entered on a Microsoft Excel spreadsheet. Each questionnaire was given an identifier consisting of a letter ('S' for Changjie and 'J' for Yuewan) corresponding with the spreadsheet, to make the coded data easily accessible. Following data entry, excel tables were drafted for responses to each question, both for each neighbourhood but also for the reported ethnicity of each respondent. Based on these data tables and graphs were then developed to represent the data visually.

Analysis of the two focus groups took place throughout the questionnaire process described above. Written notes from team members were fully transcribed as soon as possible following each focus group. With the data and some preliminary conclusions from the questionnaire data, it was possible to draw relevant connections and discrepancies between the questionnaire responses and focus group participant responses.

Project Activities
This project supported multiple activities for the objectives and research problem identified earlier. First, this funding supported the development of a PPGIS database, which was developed from November 2013 to February 2014. This database is a functional tool that can also be used to support future research projects on this same theme. The project supported the development, translation, distribution, collection, and analysis of a questionnaire from December 2013 to March 2014, conducted in two neighbourhoods of Ürümqi in April 2014. A third activity undertaken as part of this project was two focus groups developed in March 2014 and conducted with questionnaire respondents in April of the same year. The development of the questionnaire and focus groups were supported by graduate students at the University of Ottawa and Xinjiang Normal University, who were paid for their research contributions. The participation of students local to Ürümqi was particularly invaluable to the project as a result of their ability to translate
between Uyghur and Mandarin, and because of their knowledge of local resident networks. Analysis of data gathered was conducted from April to September of 2014.

The importance of thorough communications and training for all team members prior to activities was a major lesson learned in this project. As a result of awkward timing for the Canadian research team's arrival in Xinjiang, coupled with the need to shorten the research duration from three weeks to one week for security reasons; it was difficult to ensure that all team members fully understood the project. All future projects undertaken by this research team will feature mandatory training prior to the commencement of activities.

Project Outputs
The following outputs have been achieved for the project:

Peer-reviewed article:

Thesis:

Documentation:

Technology:
- Web-based PPGIS APP on Android system

Presentations in Conference/Seminar/Workshop:

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1 Bold name indicates this author is a team member.
The creation of the PPGIS online database increased the capacity of team members to develop and use PPGIS mapping software for research purposes. This innovative output, which has substantial potential for conducting research among marginalized communities, will be also put to good use in future projects conducted by the team.

This project allowed for the development of a research network between the University of Ottawa and Xinjiang Normal University that could be useful for future research.

**Project Outcomes**

Ultimately, this research project allowed for a greater understanding of resident perceptions and use of urban space in the city of Ürümqi. Participants in the research expressed a desire for additional activities of the same kind, suggesting that further research in this area is feasible. As mentioned previously, this project resulted in the development of a PPGIS database that can also be used by the team in future projects.
This research team is currently engaged in activities that build on the research and findings from this project. First, our Chinese contacts are very interested in the use of PPGIS as a research tool. We anticipate further collaboration in this area. Second, our team is organizing a workshop exploring these themes in a global context, titled "Urbanization and Identity-Based Tension: A Global Perspective," as part of the International Conference on Chinese-African Sustainable Urbanization to be held at the University of Ottawa in October 2015 (please see Annex for the tentative agenda). We are also building a Partnership Development Grant with Social Sciences and Humanities Research Canada comprising 4 countries: Canada, China, Romania, and Angola. Lastly the publication of one academic article is currently planned to be published in China Quarterly, or a similar journal. As such, there is much potential for further work to expand on the research conducted as part of this project.

**Overall Assessment and Recommendations**

The research team's partnership with professors and students at Xinjiang Normal University was central to the success of this project. Our Chinese colleagues' competence in Uyghur and Mandarin, and connections with residential networks made it possible to access local populations and gather our data.

This project made clear the complexities involved in conducting participatory, development-oriented research in a non-democratic state. Government surveillance and regulation of information related to Xinjiang made it difficult for many residents to speak frankly about this research's more politically sensitive subject matter. While many respondents expressed enthusiasm at the opportunity to express their views on the state of urban development in Ürümqi, there were few opportunities for us to transfer these insights to urban planning bodies, at either the local or national level.

In the future, training prior to the commencement of the project will be mandatory for all team members in order to establish a common understanding of research objectives, and to establish consistency in the conduct of research. This is particularly the case for international teams that do not all speak the same language. If it were possible to stay in the city longer, our team would have conducted more focus groups with residents and attempted more interviews with local planners and government officials. Unfortunately the security climate was unstable, and our funding did not permit us to return to the area a second time. Nonetheless, we felt that the project
outputs and achievement of the general objectives were valuable, given the amount of investment made for the project. In the future, we would recommend increased funding from the IDRC to support these projects.
## Tentative Agenda

**Urbanization and Identity-Based Tensions Workshop**

**Saturday, October 24, 2015**

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<tr>
<td>13:30-13:35</td>
<td>Workshop Opening remarks</td>
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| 13:35-15:00 | **Special Panel** **Urban Brownfield Redevelopment and Anti-Roma Discrimination in Oradea, Romania, Cezar Morar**  
|           | **Power Relations between European Martiniquais and Creole Identities in Urban Planning, Martinique, Kevin Depault**  
|           | **Empowerment of Marginalized People using Mobile Geospatial Technology, Ruibo Han** |
| 15:00-15:15 | Coffee Break                                                           |
| 15:15-16:15 | **Panel Session 1:** Exclusive politics and the importance of dissent: Lessons from the Arab Spring  
|           | **Panel Session 2:** Critical urban studies and identity-based tensions: The importance of theory |
|           | **Panel Session 3:** Aboriginal urbanization in Canada: Promises and challenges for building inclusive urban communities |
| 16:15-17:15 | **Panel Session 4:** Colonial cities and vulnerability: Indigenous and minority group experiences  
|           | **Panel Session 5:** Is there a "right" to the city in non-democratic countries? |
|           | **Panel Session 6:** Global migration flows and changing urban landscapes in Canadian cities |
| 17:15-17:30 | Coffee Break                                                           |
| 17:30-18:30 | **Panel Session 7:** Opportunities and challenges for urban development, inclusion and planning  
|           | **Panel Session 8:** Participatory methodologies: considerations for urban studies |
|           | **Panel Session 9:** Protection of language and culture: Francophone communities in urban Canada |

**Sunday, October 25, 2015**

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| 09:00-11:00 | **Keynote Speech** **Struggles of Marginalized People in Cities: A Global Challenge, Alioune Badiane**  
|           | **Ethnic Minorities and Changing Urban Landscapes in China, John Zacharias**  
|           | **“I Basically Mostly Stick with My Own Kind”: First Nations Appropriation of Urban Space in Saskatoon, Saskatchewan, Evelyn Peters**  
|           | **Public Opinion and Media Treatment of the "Reasonable Accommodation" Crisis in Quebec, Jack Jedwab** |
| 11:00-11:15 | Coffee Break                                                           |
| 11:15-12:00 | **Training Session** **Ethics of conducting research with marginalized people, Instructors: Jean-Philippe Leblond and Luisa Veronis** |
| 12:00-13:30 | **Lunch Speech** **Role of NGOs in Empowering Indigenous Populations: Case of Kinshasa, RDC, Tambwe Musangelu** |
| 13:30-14:15 | **Training Session** **PPGIS workshop: Developing a participatory tool to engage marginalized populations, Instructor: Saeid Homayouni** |
| 14:15-14:30 | Coffee Break                                                           |
| 14:30-16:30 | **Roundtable** **Challenges and Opportunities for Identity-Based Tensions in Global Urbanism, Moderators: Jeffrey Cyr & Huhua Cao** |

* Each panel session (one hour) will have 3-4 presentations.