



***Hub_**

More Art than Science? Exploring the Roles of Technology Innovation Hubs for Urban Regions in Developing Countries

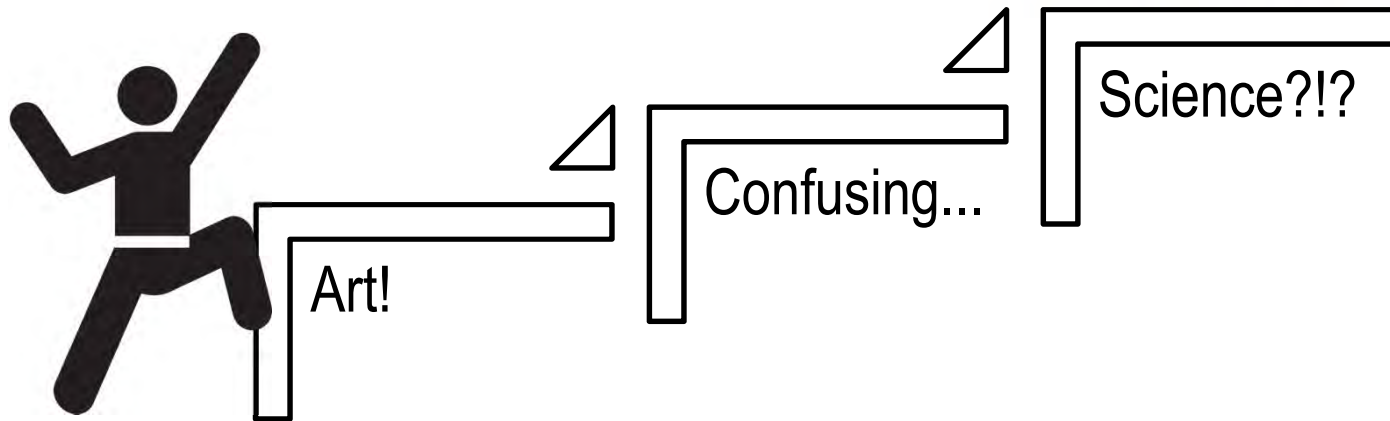


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A word about the title (and me)

**Technology innovation hubs
as...**



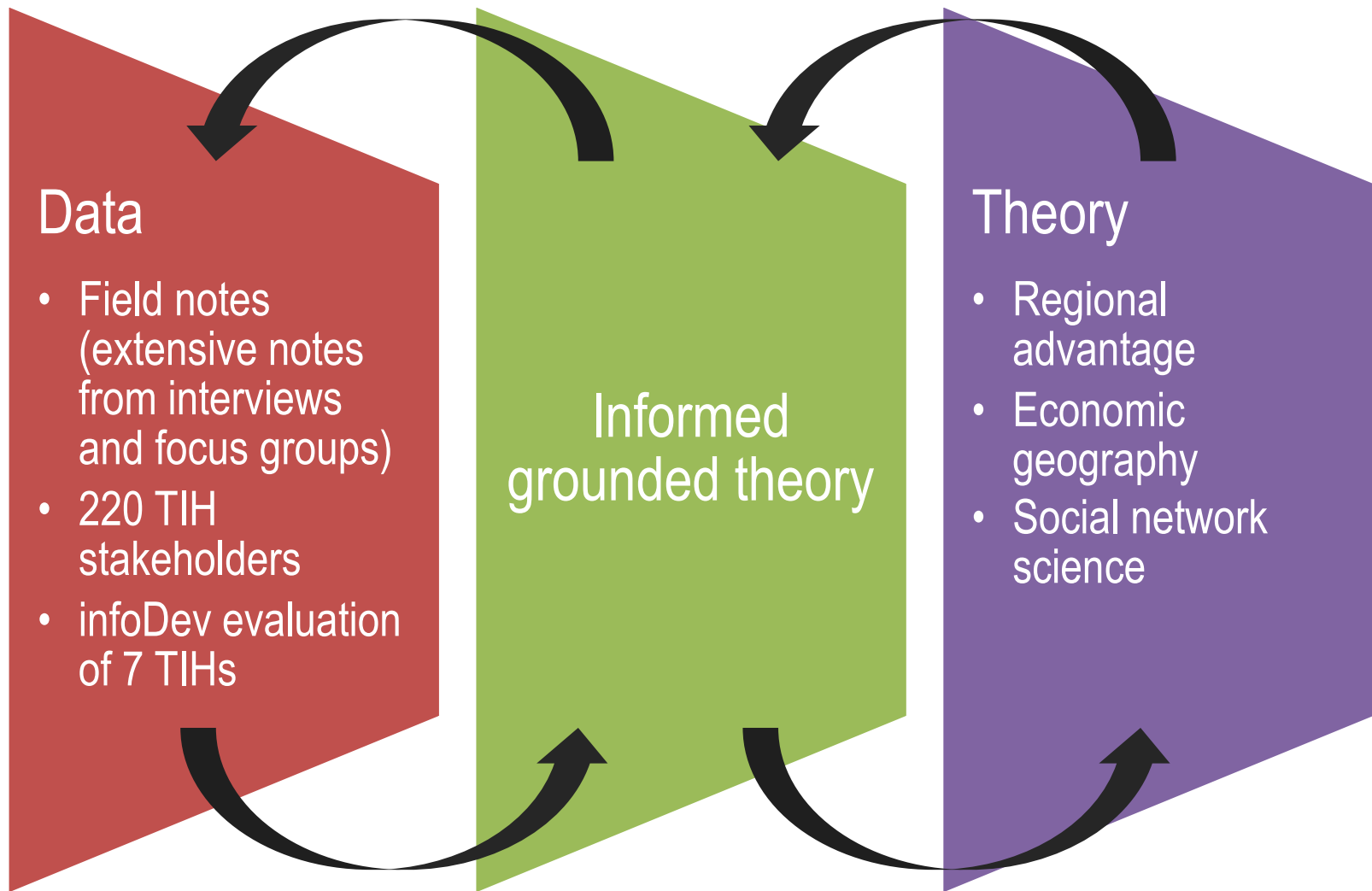


Around 100 technology innovation hubs (TIHs) have emerged across SSA alone in recent years

RQs

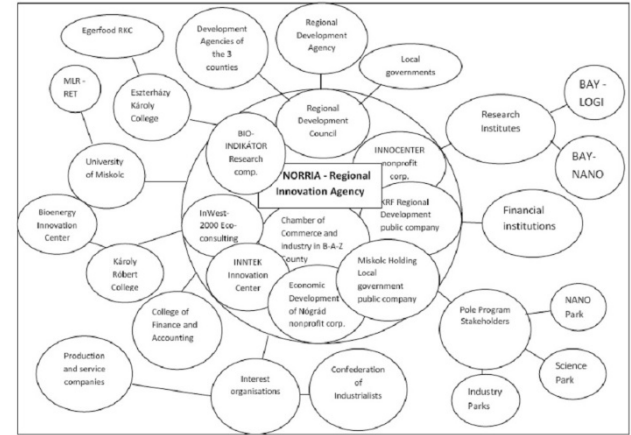
- (1) What is TIH stakeholders' understanding and expectations about TIHs' roles in supporting entrepreneurs and enabling locally developed technological innovation?
- (2) What theoretical and empirical approaches should be used in future research to analyze the emerging phenomenon of TIHs?





Innovation ecosystems

Regional innovation systems (Cooke 1998, 2001); Clusters & tacit knowledge flows (Audretsch & Feldman 1996, Audretsch & Keilbach 2005, 2008, Maskell 2001); Localization vs. urbanization externalities; specialization vs. diversification (De Vaan, Boschma & Frenken 2013; Martin & Sunley 2003, Storper & Venables 2004); Ecology (Auerswald); Complexity, evolution, and system dynamics (Klepper et al., Uyarra 2009, 2011, etc.)



<http://www.norria.hu/files/772>



<http://www.brookings.edu/research/opinions/2013/12/30-silicon-cities-katz>

Proposed Definition

Actors and their **interactions** that contribute to the creation of technological innovation within a non-statutory, narrow geographical boundary (usually an **urban area**); degrees of **affiliation** with the ecosystem, with entrepreneurial **innovators at the core** and actors that affect the emergence of innovation more indirectly at the **periphery**; technological subsector such as ICT; analogous to a biological ecosystem as **actors interdependent** on each other in that (“species”) exist and perform (“survive”) based on complex interactions with other actor groups and those groups’ existence and performance (“survival”).

Innovation Ecosystem Attributes



Technology Innovation Hubs

Incubators; tech and science parks, technopoles

(Hassink & Hu 2012); cluster promotion & policy (Martin & Sunley

2003); bottom-up vs. top-down cluster promotion (Fromhold-

Eisebith & Eisebith 2005); TIHs as enhancers of linkages of technological learning (McCormick & Maalu 2011)



http://egretwest.com/wp-content/uploads/2011/12/nott-sciencepark_03-565x417.jpg

Proposed Definition

ecosystem promoters; support early stage technology

innovators by allowing them to **establish linkages** to other members of the innovation ecosystem, with the goal to improve their business performance (and thereby the ecosystem's output of innovations); engaging actor

groups that would **otherwise** be **less likely to**

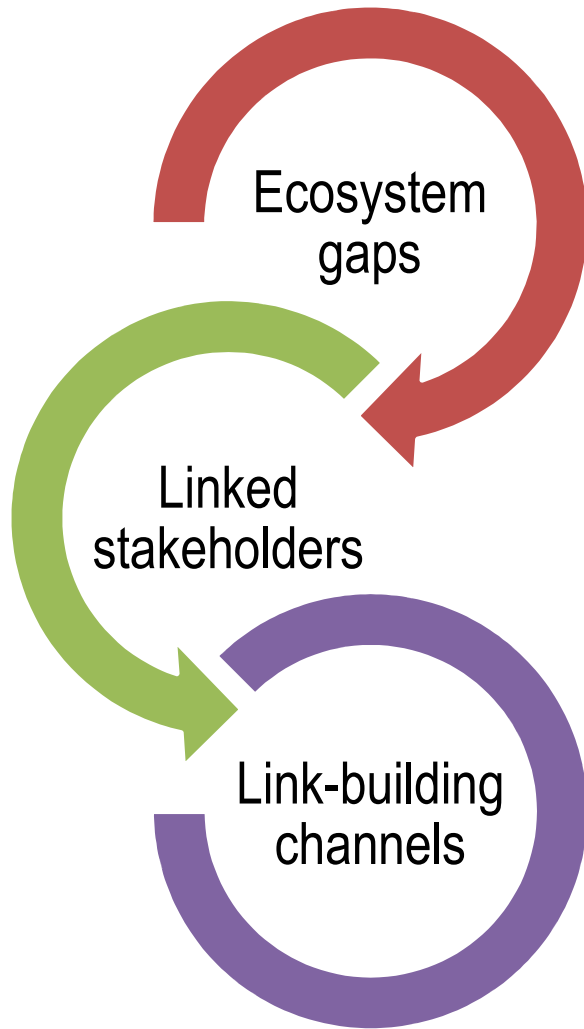
connect with TIH clients (such as experienced entrepreneurs, local and international ICT corporations, mentors, investors, potential customers and business partners unfamiliar with ICT products, or government representatives);

provide **virtual and physical spaces** where clients and stakeholders can meet and establish ties; variety of **more and less**

structured mechanisms to facilitate tie-building



Roles of Technology Innovation Hubs



Creating
visibility &
credibility

Pooling &
leveraging
resources

Feeding the buzz

Bottom-up

Top-down

Towards a theoretical framework of innovation networking

Social proximity and knowledge flows as ties

(Audretsch & Feldman 1996, Audretsch & Keilbach 2005, 2008, Boschma 2005, Freel 2003, Letaifa & Rabeau 2013, Ter Wal 2013, Ter Wal & Boschma 2009,)

Strong-weak-tie tradeoffs

(Aral & Van Alstyne 2011, Dunbar 1998, Hill & Dunbar 2003, Miritello et al. 2013, Roberts et al. 2009, Saramaki et al. 2014)

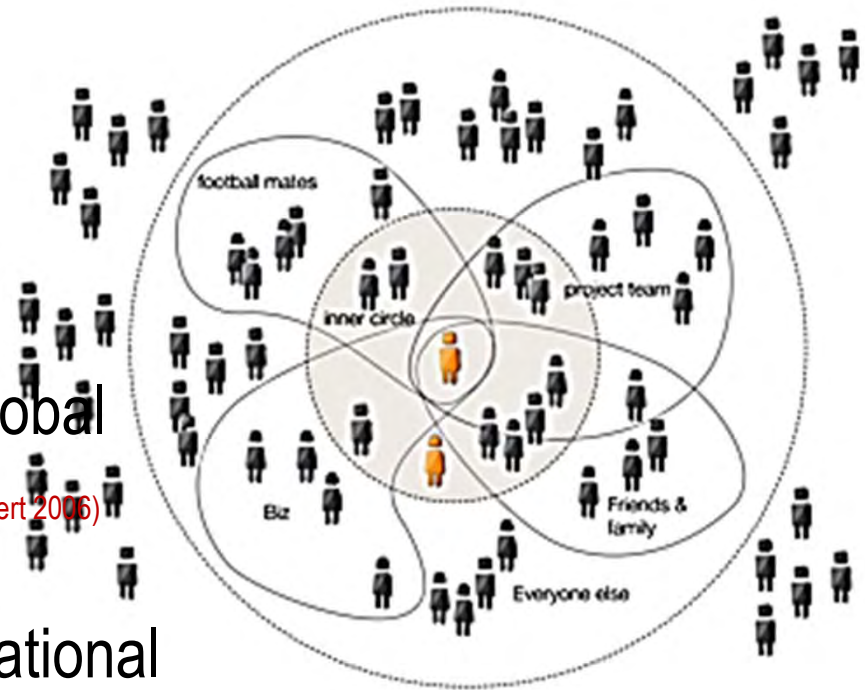
Strong=close / local, weak=distant / global

(Bathelt, Malmberg, & Maskell 2004, Storper & Venables 2004, Boschma 2005, Saxenian 2007, Boschma & Immarino 2009, Chen & Wellman 2009, Grabher & Ibert 2006)

Innovation networks and inter-organizational collaboration

(De Vaan, Boschma & Frenken 2013, Mizruchi & Marquis 2006, Ter Wal & Boschma

2009, Uzzi 1997)



>>> Conclusions >>>

- TIHs can only be understood in the context of **innovation ecosystems**
- TIHs **establish linkages** for the benefit of grassroots ICT innovators, often **with larger / older organizations** that they could typically not access
- TIHs define their **roles based on ecosystem properties**, but generally they feed the ecosystem's **buzz**, while creating **visibility** and **leveraging resources** for their clients
- Given the focus on **relations** both for innovation ecosystems and TIHs, a **network science** approach to **innovation networking** is probably the only way to quantitatively capture the interaction between the two

(Not cutting edge “science” yet, but a starting point.)

*Hub_

Thank you.

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Appendix:

More information on dissertation project

Some working hypotheses

TIHs function as “bottom-up” enablers of agents’ proximity configurations (or building and dropping of ties)

Higher relative value for small businesses or entrepreneurs that otherwise have no access to ties; generally for nascent innovation ecosystems

Coordinators of diverse, loosely coupled systems

(Boschma 2005)

Strong-weak-tie/bandwidth-diversity tradeoffs becomes stronger in advanced ecosystems

Proximity to international stakeholders is sought after in developing countries; implies enhanced use of branding and exposure for TIH



http://www.mcf.org/system/asset_manager_images/0000/3113/pse3.png?1375195769

Methodological framework: Outlier case studies

Tier 1



Accra, Ghana

- advanced innovation ecosystem with diverse TIHs
- MEST, Busy Internet, iSpace, Mobile Web Ghana, AITI-KACE, Hub Accra

Tier 2



Kigali, Rwanda

- emerging innovation ecosystem with one established, government-funded TIH
- kLab

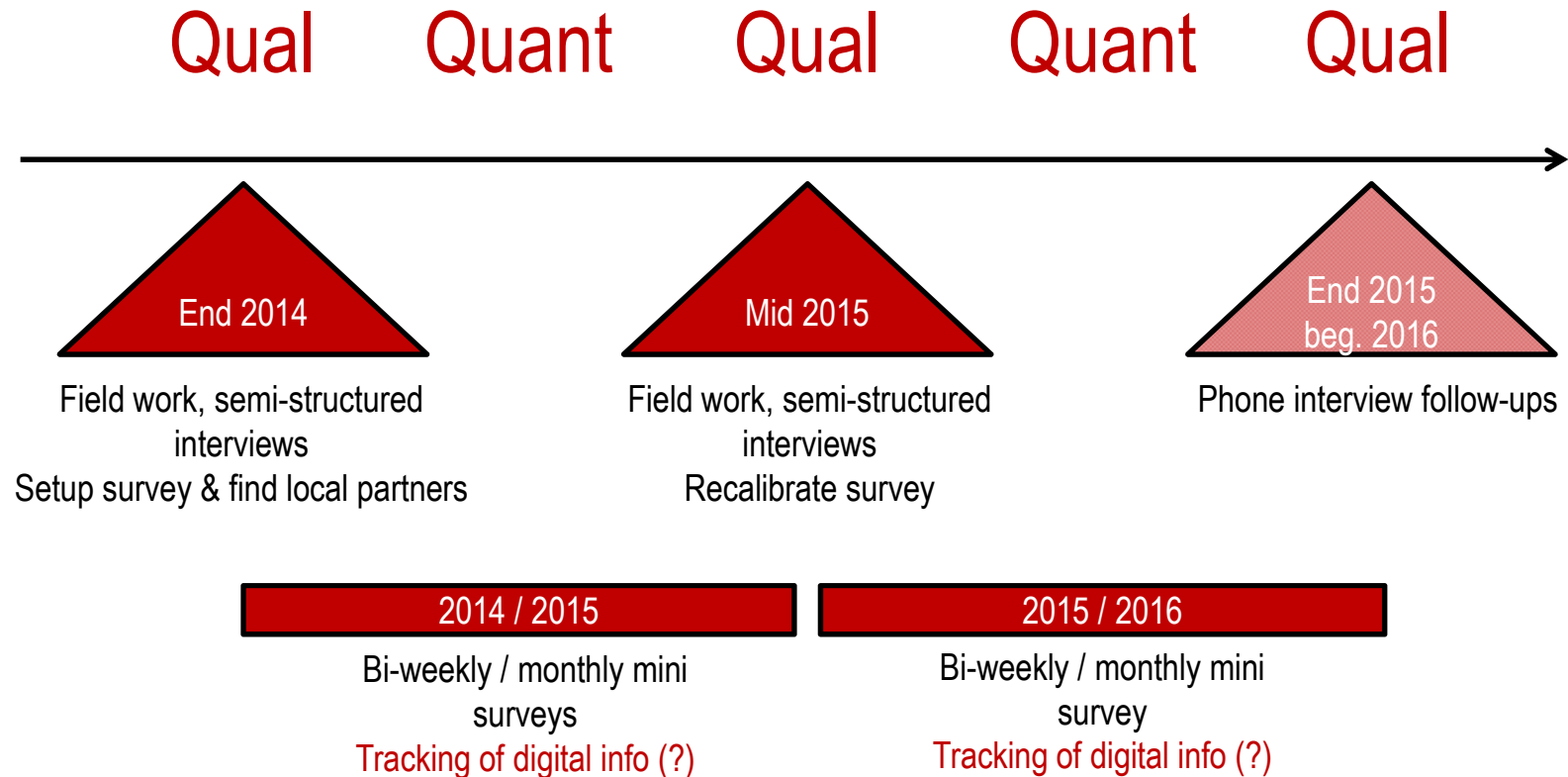
Tier 3



Harare, Zimbabwe

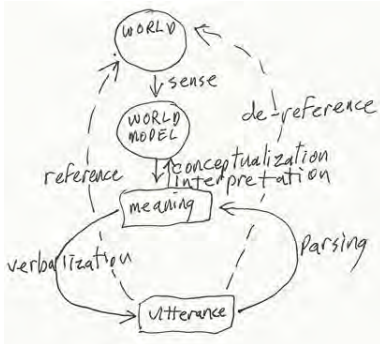
- immature ecosystem with one recently established TIH
- Hypercube

Mixed Methods & Data



- Participants: innovation ecosystem stakeholders
- System boundary determines sampling frame

Interviews



http://kashori.com/archives/2004_12_05_archive.html

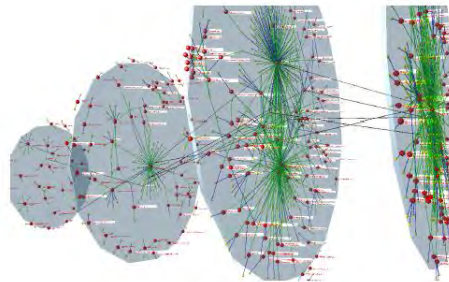
- About 30 interviews per city visit
- Total of about 180 interviews with about 130 unique interview participants

Survey



<http://www.indiantrail.org/uploads/survey-checklist.jpg>

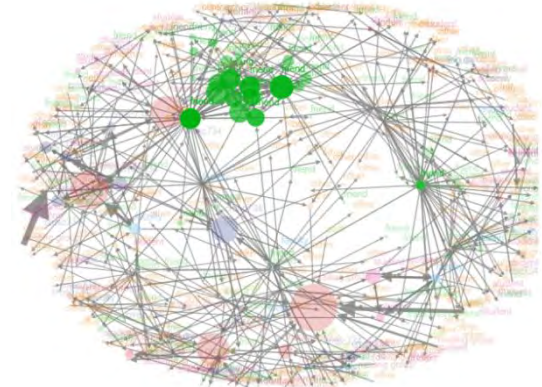
- About 50-100 participants per city
- Total of 300 unique survey participants
- Brief but frequent



Dynamic network analysis

http://www.blog.telecomfuturecentre.it/wpcontent/uploads/files/2011/02/dynamic_network.png

Observed digital info?



https://wiki.cs.umd.edu/cmssc734_09/index.php?title=File:Important_friends.png

- Mobile data (texting & calling patterns)?
- Emails?
- Twitter?
- LinkedIn?



Spatial modeling?

<http://www.spacesyntax.com/project/valuing-urban-layout/>