



Institutionalisation and Informal Innovation in South African Maker Communities

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<https://www.wits.ac.za/linkcentre/>

<https://techlaw.uottawa.ca/>

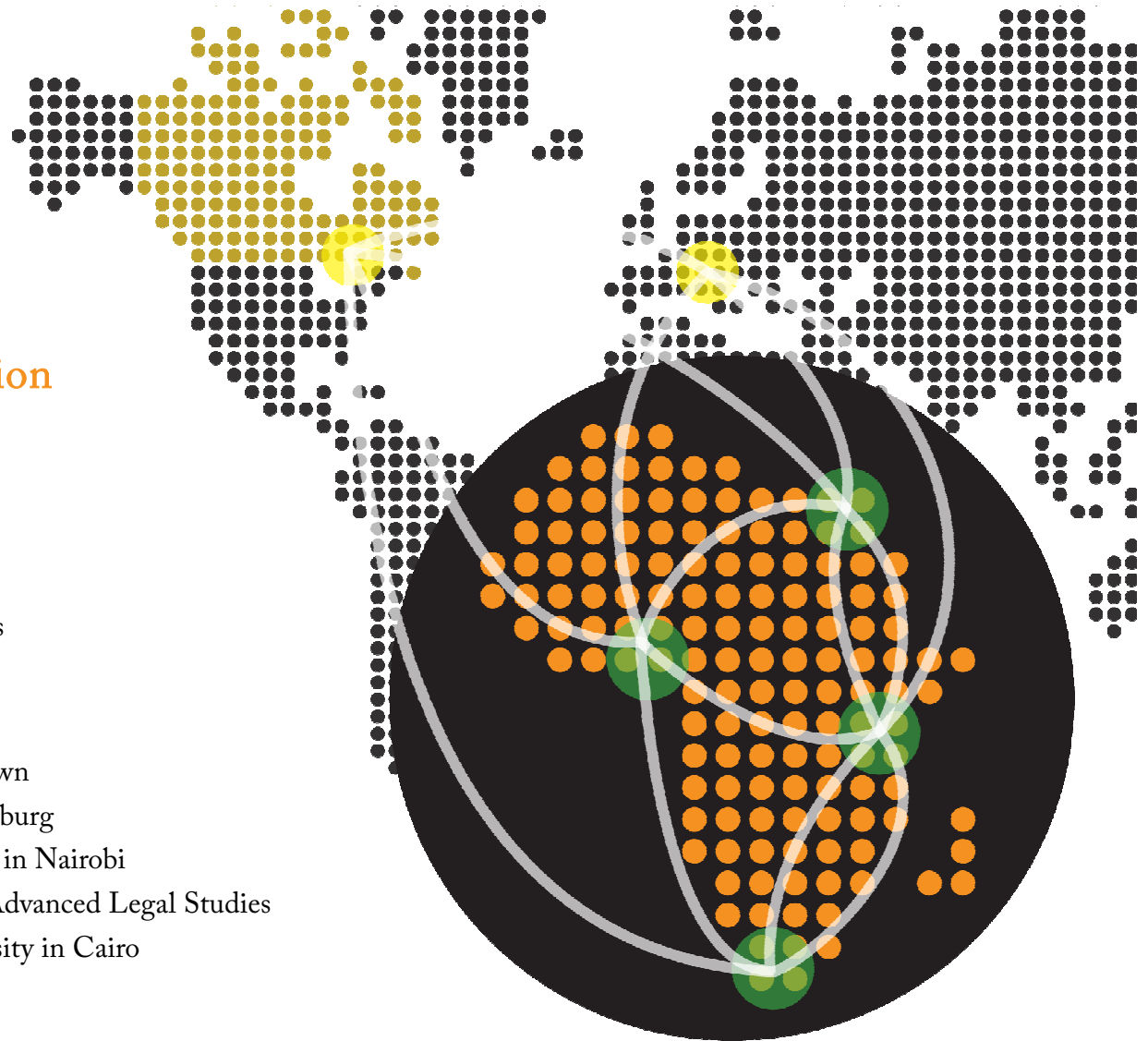
<https://openair.africa/>



Open African Innovation Research (Open AIR) network

<http://openair.africa>

- researchers:
 - in 20 African countries
 - in Canada, Europe
- hubs:
 - University of Cape Town
 - University of Johannesburg
 - Strathmore University in Nairobi
 - Nigerian Institute of Advanced Legal Studies
 - The American University in Cairo
 - University of Ottawa
- funders:
 - Social Sciences and Humanities Research Council of Canada
 - International Development Research Centre
 - Queen Elizabeth Scholars





Open AIR's thematic research clusters

<https://openair.africa/research-2020/#researchclusters>





Open AIR research with South African maker communities

2016-18 data collection

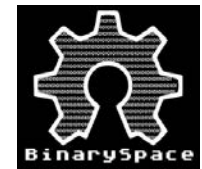
National scan of maker movement:

- data collection on more than 30 maker communities in 6 provinces
- desk research, site visits, informal discussions
- national maker workshop, in Pretoria, in collaboration with the South African Maker Collective
- 31 in-depth interviews with participants in 15 maker communities

2018-19 data collection

Follow-on study: maker communities and socio-economic inclusion:

- 37 in-depth interviews with participants in 7 maker communities



South African maker communities

Gauteng Province (Johannesburg, Pretoria)

- Binary Space
- eKasi Labs (Ga-Rankuwa, Mamelodi, Soweto)
- FADA Fablab, University of Johannesburg
- Ekuherleni FabLabs (Tembisa, Thokoza, Tsakane)
- Geekulcha (Geekulcha Makers, Raeketsetsa)
- House4Hack
- Tshimologong Digital Innovation Precinct
- I Make Makers Lab
- Made In Workshop
- Makerlabs
- TMG Makerspace, Wits University Tshimologong Digital Innovation Precinct
- Sebokeng FabLab
- South West Gauteng College Makerspace
- TMC Innovation Space, Wits University
- UP MakerSpace, University of Pretoria
- UJ Makerspace, University of Johannesburg
- ZS6COG Fablab



North West Province

- Taletso TVET College Makerspace

Free State Province:

- Bloemfontein FabLab

KwaZulu-Natal (KZN) Province

- The MakerSpace

Eastern Cape Province

- WERK

Western Cape Province

- Arduino Cape Town
- Craft and Design Institute (CDI)
- Product Support Space
- Curiosity Campus
- Knysna MakerSpace
- Maker Station
- Modern Alchemists
- Our Workshop
- Workspace



Data analysis

descriptive elements

4 Management Variables

formation; governance and management; funding and revenue model; vision and mission

4 Activity Variables

tools and equipment; participants; skills development; events and activities

4 Spatial Variables

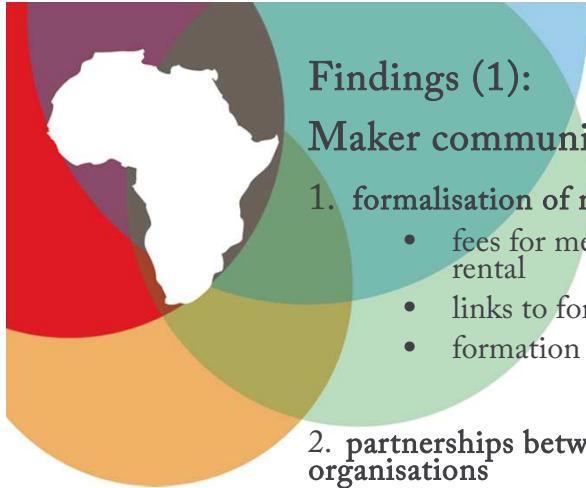
city/town; locality(ies); premises, layout

innovation, openness, collaboration, sharing of skills and knowledge, knowledge appropriation

outreach, networking, partnerships, institutionalisation, scaling, sustainability

links to grassroots innovators, links to informal sectors, gender empowerment

conceptual and analytical elements



Findings (1):

Maker communities' institutionalisation

1. formalisation of maker communities' practices

- fees for membership, use, training, and space rental
- links to formalised market opportunities
- formation of a national association

2. partnerships between maker communities and formal organisations

- partnerships with South African government entities
- partnerships with schools, technical colleges
- partnerships with foreign government entities, international organisations
- partnerships with private-sector bodies
- partnerships with the non-profit sector
- the South African Maker Collective's openness to partnerships
- collaboration between South African Maker Collective and Open AIR network
- collaboration between TMG Makerspace and Open AIR

3. embedding of maker communities in formal organisations

embedded, or partially embedded, in:

- a government entity
- a government-funded entity
- a tertiary education entity
- a university-linked technology hub
- a non-profit foundation entity
- a private-sector entity



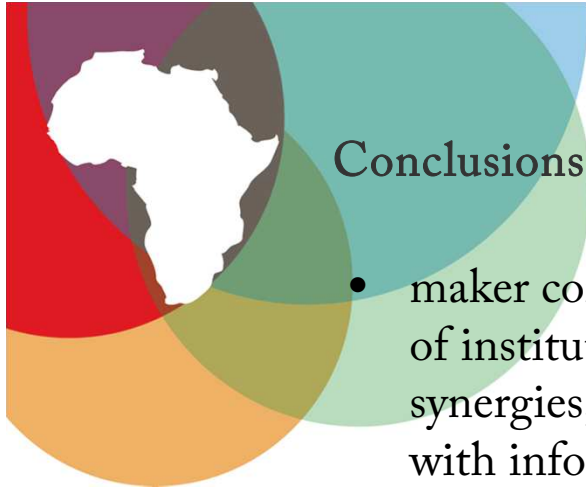


Findings (2):

Maker communities' orientations towards informal innovation

1. **constraint-based innovation**
 - “true innovation happens [...] out of necessity”
 - e.g., low-cost, open source “rep rap” Morgan 3D printer
 - e.g., “smart pavement” bricks to address security needs
2. **incremental innovation**
 - re-purposing, recycling: “To a real maker, something broken isn't broken, it's just parts for a new project”
3. **collaborative innovation**
 - “I don't mind helping you with something [...] Because for me, learning [...] is the goal”
 - skill-sharing, knowledge-sharing
4. **informal approaches to knowledge appropriation**
 - very little interest in formalised knowledge appropriation via formalised IP rights
 - e.g., SkateHack installation of tracking devices in skateboards: “an open idea, so everybody who's willing [...] can actually build it as well”
5. **innovation in informal networks/communities in informal settings**
 - maker communities' linkages with grassroots innovators in low-income, informal-sector settings





Conclusions from national scan:

- maker communities' elements of institutionalisation offering synergies, more than tensions, with informal-innovation modalities
- maker communities emerging as intermediaries between actors in the informal and formal parts of the innovation ecosystem
- maker communities serving as semi-formal, bridging actors

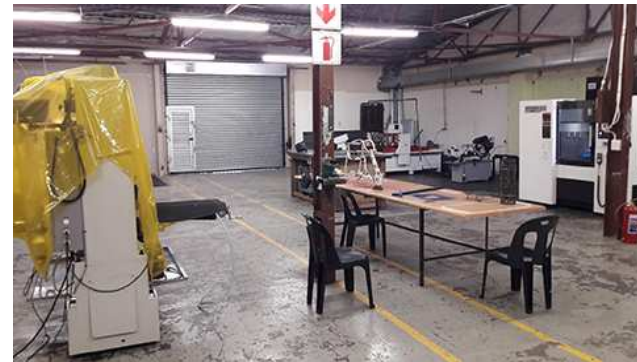




Next set of findings:

Maker communities and socio-economic inclusion

- outreach, networking, partnerships
- collaboration, skill-sharing, skills development, knowledge-sharing
- income generation, livelihood development, enterprise development
- inclusion and empowerment of impoverished individuals; socially-isolated individuals; women and girls; immigrants and refugees; youth; students
- developing “communities of practice”





Resources:

- Open African Innovation Research (Open AIR),
<http://openair.africa>
- South African Maker Collective,
<https://www.facebook.com/groups/SAmakercollective>
- Africa Makerspace Gathering,
<https://www.facebook.com/AMGathering/>
- Armstrong, C., De Beer, J., Kraemer-Mbula, E., & Ellis, M. (2018). Institutionalisation and informal innovation in South African maker communities. *Journal of Peer Production (JoPP)*, 12, 14–42. http://peerproduction.net/wp-content/uploads/2018/07/jopp_issue12_vol1of3.pdf
- De Beer, J., Armstrong, C., Ellis, M., & Kraemer-Mbula, E. (2017). *A scan of South Africa's maker movement*. Open AIR Working Paper 9. <https://openair.africa/a-scan-of-south-africas-maker-movement>
- ElHoussamy, N., & Rizk, N. (2020). Innovation practices at makerspaces in Egypt, Tunisia and Morocco. *The African Journal of Information and Communication (AJIC)*, 26, 1–25. <https://doi.org/10.23962/10539/30357>
- Kraemer-Mbula, E., & Armstrong, C. (2017). *The maker movement in Gauteng Province, South Africa*. Open AIR Working Paper 6. <https://openair.africa/the-maker-movement-in-gauteng-province-south-africa/>
- Schonwetter, T., & Van Wiele, B. (2020). Social entrepreneurs' use of fab labs and 3D printing in South Africa and Kenya. *The African Journal of Information and Communication (AJIC)*, 26, 1–24. <https://doi.org/10.23962/10539/30356>





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