Technical Report 15-006

"Who do you know?" Developing and Analyzing Entrepreneur Networks: Data Collection in the Tech Entrepreneurial Environment of Six African Cities

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This paper describes and summarizes the data collection efforts for this pilot project. Additionally, the team has documented each of the six data collection visits in more depth in separate trip reports. These individual reports are appended to this summary. The data analysis methodology and descriptive metrics analysis are presented in subsequent papers.

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Background

Our project introductory paper describes our team's research goal of quantifying an influence network in this case, a local entrepreneurial ecosystem, in such a way that the analysis empowers decision-makers with the requisite knowledge to develop specific policy recommendations. Our previous paper, "'Who do you know?' A Methodology to Develop Entrepreneurial Networks: The Tech Ecosystem of Six African Cities" describes the Position Generator methodology (Van der Gaag et al 2008) that we have modified in greater detail. This methodology enables us to accurately measure social capital and circumvents the massive effort of mapping an individual's social network before locating the social resources in it. By approaching the entrepreneur's network through the analysis of his connections to prominent structural roles in the community or society, we are able to construct models that can determine the influence of each role in specific entrepreneurial environments.

This paper describes and summarizes the data collection efforts for this pilot project. Additionally, the team has documented each of the six data collection visits in more depth in separate trip reports. These individual reports are appended to this summary. The data analysis methodology and descriptive metrics analysis are presented in subsequent papers.

At the initiation of this project, the team conducted a test data collection effort during a visit to Addis Ababa, Ethiopia during the summer of 2012, this work is detailed in detailed in a previous paper published in the Defense Technical Information Center entitled, "Network Science Center Research Team's Visit to Addis Ababa, Ethiopia."This paper introduces the development of the survey instrument described in detail in our

previous methodology paper. Based on the lessons learned from that visit, we modified our initial survey methodology and then initiated the next round of data collection.

In order to swiftly and effectively collect data and then, develop and test our methodology, the team realized that it would have to focus on a fairly narrow sub-set of influence networks and entrepreneurship. Based on relationships we have fostered as a result of our previous research work, the team decided to focus on the Information and Communications Technology (ICT-hereafter referred to as "Tech") sector in Sub-Saharan Africa. We selected this sector as well as our data collection sites based on these previous relationships. Two of the most important include:

1. Jon Gosier: a software developer and designer working at the intersection of open data, human rights, and African development. Jon is the founder or co-founder of several organizations and initiatives, one of which include AfriLabs, a pan-African group of technology and innovation hubs promoting the growth and development of the African technology sector. The AfriLabs network is comprised of 26 hubs and labs across the African continent. Jon agreed to cooperate on the project and the members of the Afrilabs community have been gracious and hospitable hosts.

2. Ben White: Co-Founder & Community Evangelist for VC4Africa. VC4Africa is a web-based platform for startup funding and is the largest online community of entrepreneurs and investors dedicated to building game changing companies on the continent. Ben has been working in the African technology and media space since 2003. Ben is also a founding member of AfriLabs and is on the board of advisors to ActivSpaces, an open collaboration space for the technology and entrepreneurial community in Cameroon. The staff for VC4Africa has been invaluable facilitating introductions and cooperation across the continent.

After modifying our methodology and focusing our analysis space, we then visited the following cities and immersed ourselves into the local tech scene: Kampala, Uganda; Addis Ababa, Ethiopia; Lusaka, Zambia; Monrovia, Liberia; Accra, Ghana; and Dar es Salaam, Tanzania.

Data Collection Sites

Kampala, Uganda (March 2013)

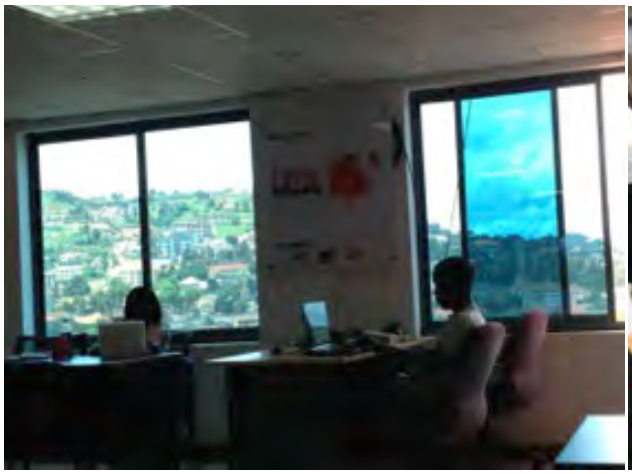
Kampala is a hot-bed of young African tech entrepreneurs. The current government has set the conditions for economic growth and has encouraged the growth of small businesses. There are four active business incubators/technology hubs in Kampala. Additionally, Kampala is the home of Makerere University, one of the leading universities in Sub-Saharan Africa. The student body is energetic and tech savvy.

We started our visit with a meeting at US Embassy where we met with the Deputy Chief of the Office of Security Cooperation and the Commercial Officer from the Political and Economics Section. During this meeting we presented a synopsis of our research project, our data collection plan for the week, and presented several network visualizations of open source data that we had previously collected that were relevant to the political and economic environment in Uganda. The presentation generated a fruitful discussion and we agreed that we would share our data set with appropriate members of the Embassy staff in order to further refine the model in the near future.

We then drove across Kampala to meet with Teddy Ruge, a co-founder of Hive CoLab and a noted Ugandan Social Entrepreneur, and Brian Ndyaguma, the operations manager of Hive CoLab. Hive CoLab is located in the Kanjokya House in the Kamwokya neighborhood of Kampala. The Kanjokya House is a new 4-story building on a quiet street that houses numerous businesses and Non-Governmental Organizations.

Inside of Hive CoLab

Hive CoLab is the first tech-focused business incubator in Uganda. It was founded in 2010 through the efforts of Jon Gosier and Teddy. Hive CoLab is a large open space with a reliable Internet connection, a back-up power source, and a conference space for one-on-one meetings. It is a community-owned, collaborative, co-working space for the Uganda's Technology community. Membership is open to all and free. Hive currently has a rentals dedicated workspace for the firms that are operating out of the incubator.




Interviews at Hive CoLab

During our Kampala visit, we also visited the Outbox hub. Outbox was founded in 2012 and is the newest incubator in Kampala. Outbox is financially supported by Google, Deloitte, and Samsung. Outbox markets itself not just as an incubator, but also as a place for the tech community to meet with potential mentors and access professional services. It is also involved in facilitating innovation competitions and industry workshops. Outbox also has a quality Internet connection and a back-up power supply.

Outbox and View from Solzi House, Outbox's location

Later during our visit, we visited another tech hub with an interesting moniker. @TheHub Kampala is located in two renovated Kampala City Council flats on a quiet street and has a different membership focus than Hive CoLab and Outbox and their members have a much more diverse background. In addition to tech-focused entrepreneurs, there are a number of graphics artists, journalists, and local small businesses operating at this co-working space. @TheHub also has a quaint garden cafe

that serves excellent food, coffee, and a wide selection of fresh juices. It's a natural gathering place for Kampala's creative set.

@TheHub Kampala

Finally, we visited the Mara LaunchPad. LaunchPad was founded in 2010 by the Mara Foundation which was established by the founder and Director of Mara Group, Ashish J. Thakkar. Ashish is a Ugandan-born entrepreneur who grew a small computer trading operation into a diversified conglomerate with approximately $100 million in revenues. Mara LaunchPad has an open-plan layout with modern furniture. Members are able to take advantage of the fast Wi-Fi Internet connection, lounge area, and conference room. The businesses under incubation at Mara LaunchPad are more diverse than those at the other incubators that we visited. Their start-ups include manufacturing companies, call center operations, and agriculture in addition to tech start-ups. LaunchPad typically seeds approximately $2,000- $4,000 per company and takes an equity stake with a three to five year time frame. Additionally, each firm pays rent ranging from $35-$125 per month depending on the size of their space. Mara can house up to 40 businesses at one time and additionally, their Innovation Center has room for another 50-60 individuals.

Mara LaunchPad

Addis Ababa, Ethiopia (June 2013)

As stated previously, the team initially conducted a test data collection in Addis Ababa during July of 2012. The lessons learned were incorporated during subsequent visits in order to make our data collection effort more effective and efficient. We returned to Addis Ababa in June of 2013 for a second data collection effort. This collection was a great success because of the strong relationship established during the previous visit. The team spent the majority of our time with the iceaddis team. During our visit, it was the only technology hub in Addis Ababa although another has been established since 2013.

Markos Lemma of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, a German government enterprise focusing on international cooperation for sustainable development and international education, was instrumental in assisting with this visit. Markos is also the Community Manager of iceaddis, Ethiopia's first high tech innovation hub. iceaddis is located on the beautiful campus of the Ethiopian Institute of Architecture, Building Construction and City Development (EiABC).

Markos introduced us to two local entrepreneurs and university students, Abiy Hailu and Alem Assefa, who arranged and coordinated our interviews with the local entrepreneurial community. These two young men are not only students but are members of a team know as mirtanimations, a group of local tech entrepreneurs who are involved in everything from animation and 3D graphics to tech tutorials to photography and ringtones.

iceaddis, Ethiopia's First High Tech Innovation Hub

iceaddis, Ethiopia's First High Tech Innovation Hub

On our previous visit to Addis Ababa, we had been introduced to Steadman Harrison from the Center for Creative Leadership, a top-ranked, global provider of executive education headquartered in North Carolina and led by Admiral (Retired) John Ryan, a former Superintendent of the US Naval Academy. They are involved in a mentoring program that focuses on developing women leaders in Ethiopia. His staff was

instrumental in conducting additional interview sessions with other local entrepreneurs in their extensive network.

Lusaka, Zambia (August 2013)

Tayo Akinyemi, AfriLabs director, introduced our team to Lukonga Lindunda, the Co-Founder and Director of BongoHive, Lusaka's first Technology and Innovation Hub. The local tech community in Lusaka was similar to Addis Ababa; BongoHive is the only major technology hub and the team spent the majority of its time with members of that community.

Lukonga and others interested in the technology sector envisioned a place where curious and ambitious minds could collaborate and create something new through teaching and mentorship. Their initial aim, which started in a small room at the Zambian Ministry of Education, was to simply understand the environment in which they would be operating. The level of tech literacy within their community was low, so they made it a priority to spread tech education. Since Lukonga was also working with a tech-focused Non-Governmental Organization (NGO) that distributed computers, they found traction quickly.

By September of 2011, they had gained enough attention to be approached for assistance on a Zambian election project by Ushahidi. Ushahidi is non-profit software company founded in Nairobi, Kenya that develops free and open-source software for information collection, visualization, and interactive mapping. The organization uses the concept of crowdsourcing for social activism and public accountability, serving as an initial model for what has been coined as "activist mapping"—the combination of social activism, citizen journalism and geospatial information. From here Bongohive rapidly found their stride, focusing more on mentorship as opposed to tech education.

This upward trajectory continued into 2012. BongoHive hosted the Women in Tech and partnered with the Mobile Monday initiative, an open community platform of mobile industry visionaries and developers. They then joined the AfriLabs group and Google Development Group respectively. These partnerships helped raise the profile of BongoHive as its members worked on projects as diverse as a Draft Constitution App or a tracking system based on Ushahidi software. They continue to serve as a hub of information and expertise for local tech entrepreneurs and are now trying to make more partnerships with the local Colleges and Universities to increase the "tech capacity" within Lusaka.

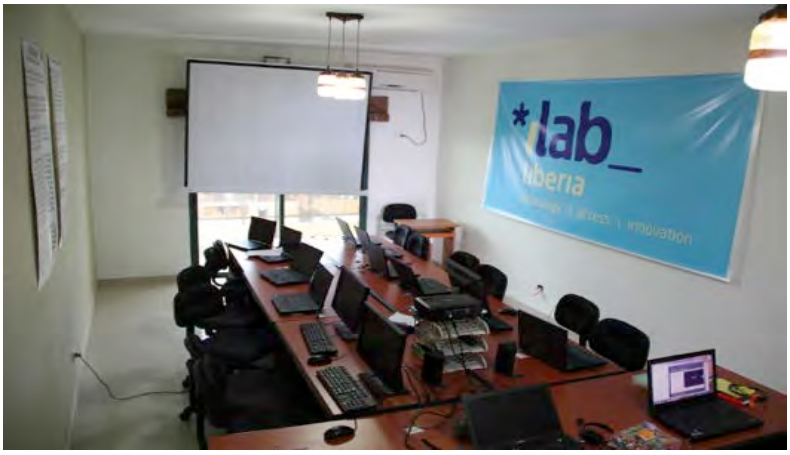
BongoHive, Zambia's First High Tech Innovation Hub

Monrovia, Liberia (November 2014)

Through the AfriLabs network we were introduced to iLab Liberia. The iLab team hosted us during our stay in Monrovia and facilitated introductions to the other main incubators and hubs in Monrovia including The Marketplace and the Business Start-up Centre located on the campus of the University of Liberia.

iLab was launched in May 2011 by Kate Cummings and John Etherton and was originally created as a resource center for the Ushahidi Liberia team. At that time, with the exception of some costly satellite connections, Liberia's Internet connections were so poor that most websites took minutes to load. The Ushahidi software required a bandwidth-heavy mapping platform so the poor connection made for a less than ideal experience for the Liberia partners. Additionally, Liberia has an unreliable power supply so iLab's founders felt the need to create better conditions for Liberians to use information technology. To make these technologies more accessible, the Ushahidi Liberia team sought additional funds from Humanity United for an office with a dedicated satellite Internet connection. With this seed funding, the team moved into a two-bedroom apartment. The dining room became the tech lab, one of the bedrooms Ushahidi Liberia's office, and the second bedroom became the conference room.

The iLab Facility



A meeting/training space inside of iLab

The Marketplace was also founded through the assistance of Humanity United. This organization is modeled upon a more traditional incubator model. They incubate 10 to 20 companies at a time on a rolling basis. Companies can be incubated for a minimum of three months, and for a maximum of two years, depending on the service objectives set at the beginning of the company's incubation period. They filter the incubator applicants in order to ensure that the businesses that they are incubating are in sectors that have the potential to employ a large number of Liberians.

The Marketplace Building in historic Snapper Hill District of Monrovia

The team also visited the Business Start-Up Centre (BSC) located on the campus of the University of Liberia. The BSC is sponsored and by a Dutch-NGO called Spark. Spark was founded in 1993 and is an independent international development organization with about 80 staff members in offices in Southeast Europe, the Middle East and Africa.

One of Spark's main efforts is the development of Business Start-Up Centres, Startup Finance and Faculty Enrichment. Spark focuses on these BSCs in order to support young and ambitious people in post-conflict societies and assist them to grow their companies through the early stages of their business plan. The BSCs offer business skills training and workshops, Business Plan Competitions, assist with access to business financing, and coach and mentor entrepreneurs.

The Business Start-up Centre at the University of Liberia

Accra, Ghana (May 2014)

Through the AfriLabs network we were introduced to the Meltwater Entrepreneurial School of Technology (MEST) staff. The staff of MEST generously offered to host the team during a visit to Accra. Comparatively, Accra has a vibrant entrepreneurial environment and the team visited not other with the MEST community, but with another hub called HubAccra. A newer workspace called iSpace had recently been established, but unfortunately, we were not able to coordinate a visit.

On our first morning in Accra, we drove to MEST, which is located in the upscale East Legon section of Accra and were warmly welcomed by Emmanuel Quartey, a Marketing and Communications Fellow at MEST. Emmanuel is a native Ghanaian, who graduated Yale, worked at a start-up in the US for a while, and then returned to Ghana to work at MEST.

MEST was founded in Accra by Jorn Lyseggen in 2008. Lyseggen, a Norwegian, established an internet consultancy company in 1995, which has grown into the Meltwater Group, a software as a service (SaaS) company, providing cloud-based computing solutions to more than 16,000 global clients.

The Meltwater School House in the East Legon area of Accra

MEST is drastically different than any other incubator or hub that we have visited. There is a rigorous application process and accepted students participate in a two-year, full-time, fully sponsored training program in which the students – known as Entrepreneurs-in-Training (EITs) – learn about software development and entrepreneurship from Senior Faculty. This two-year program includes a full scholarship, three meals a day, free housing, and a monthly stipend. We have not seen such a lengthy, thorough, or rigorous program at any of the other incubators or accelerators I have visited over the past two years.

At the end of the two-year training period, the EITs have the opportunity to pitch a business idea with the goal of being accepted to the Incubator Program. The Incubator Program does not simply accelerate the portfolio companies, but provides a hands-on support system to the selected companies. These companies typically remain at the Incubator between 12-24 months.

A traditional Ghanaian lunch with the MEST EITs

The MEST Incubator has more than a dozen full-time staff in Ghana as well as members in the Silicon Valley. MEST provides the following resources to the portfolio companies:

- Seed Financing- Typically $50K to $200K for a minority equity interest in the business.
- Office space, conference rooms, and high-speed internet connectivity in a 5,000 sq ft. building in the East Legon area of Accra, adjacent to MEST's main campus.
- Full-time, on-site staff of business advisors and cross-functional experts who work day-to-day with the portfolio companies to support application development, marketing, sales and distribution.
- Centralized suite of resources and shared databases to assist companies in accelerating sales, marketing, finance, and legal issues.

The team was also was hosted by John-Paul Parmigiani the Chief Executive Officer of Hub Accra another influential incubator in Accra located in the booming and trendy Osu District of Accra.

Hub Accra in the Osu District of Accra

Hub Accra is a not-for-profit organization; they charge members modest fees for membership and also rent event space. John-Paul describes the hub as a "startup ecosystem." The hub evolved out of a Certificate in Entrepreneurship Program offered by the Open University of West Africa (OUWA). The Entrepreneurship Program attracted

students from across Accra to study at OUWA's Internet café campus, which is also located in Osu. These students met at the campus to access online lectures, and organically-formed teams to work on numerous group projects. Members of this community identified an opportunity and established Hub Accra.

Hub Accra has grown to host over 20 startups and quickly moved from normal operational hours to become Ghana's first 24 hours, 7 days a week co-working space. John-Paul explained that many of the local entrepreneurs tend to come to the hub after school or after work, the staff noticed the night crowd, and decided to extend operating hours. Hub Accra is now housed in a separate building adjacent to OUWA, and features collaborative workspaces, internet access, and conference rooms. The second floor hosts space dedicated to the rapidly growing startups. Additionally, they recently opened a digital innovation lab sponsored by the US Government's Broadcasting Board of Governors.

Dar es Salaam, Tanzania (August 2014)

The team was fortunate to have been previously introduced to Mr. George Mulamula, the Chief Executive Officer of the Dar Teknohama Business Incubator (DTBi). He is also the Senior Government Advisor on Information and Communications Technologies (ICT) Entrepreneurship & Innovation. Previously, Mr. Mulamula served as an economic development adviser to the government of Rwanda. He has vast experience with economic development as well as intellectual property and has also been involved in education, policy formulation, and entrepreneurship. Based on our initial discussion, he graciously agreed to support our data collection effort in Tanzania. Unfortunately, he was out of the country on official business during our visit but his staff provided amazing hospitality and assistance. During our Dar es Salaam visit, the team spent time with entrepreneurs working with DTBi, their partner organization, Buni, and the KINU incubator.

On our first day in Dar es Salaam, we made an introductory visit to DTBi. DTBi is housed in the Tanzanian Commission for Science and Technology (COSTECH) office building, which is located on Mwinyi/Bagamoyo Road in the Kijitonyama section of Dar es Salaam.

We were hosted by Collin Gumbu, DTBi's, Business Development Manager. During our introductory briefing, we were also introduced to Richard Miles, an American who serves as an Entrepreneur in Residence.

The COSTECH Building in the Kijitonyama section of Dar es Salaam.

DTBi also serves as a meeting place and hub for technology start-ups. Like many incubators/accelerators, they "assist early stage IT companies by lowering the cost of business and increasing the chances of business survival by providing access to shared resources, facilitating access to finance and markets, providing guidance and business management, and networking for technical trends and opportunities to access markets."

DTBi's business model involves an application process for aspiring entrepreneurs and then the DTBi staff accepts the best business plans, concepts and teams into the program. The entrepreneurs sign a 4-year agreement for incubation and in return, the companies get office space, power, high-speed internet access and conference rooms.

DTBi provides mentoring, guidance and access to contacts in business and government agencies. Additionally, DTBi earns a percentage of their annual gross turn-over. DTBi received their initial funding from The World Bank, COSTECH, and Vodacom in May 2011 and their first cohort of incubatees was accepted in August of 2011.

We also visited Buni Innovation Space, which is also located in the COSTECH Building. Buni is sponsored by TANZICT, *The Information Society and ICT Sector Development Project*. It is a bilateral collaboration project between the Tanzanian Ministry

of Communications, Science and Technology of Tanzania (MCST) and the Ministry for Foreign Affairs of Finland. The project's overall objective is "a strengthened Tanzanian information society with enhanced capacities to contribute to the achievement of the Government's socio-economic development goals." Buni is a collaboration hub/tech meet-up space similar to the iHub in Nairobi. It is a facility that allows people interested in tech and entrepreneurship to meet and provides wireless internet for its members and has a back-up power system.

During our visit to Dar es Salaam, we also visited the KINU incubator. KINU is located in Conservation House on the booming Mwinyi/Bagamoyo Road corridor in Dar es Salaam. We were graciously hosted by CatherineRose and JohnPaul Baretto, a sister-brother duo who are part of the founding team. Both attended university in California and have both impressive academic and business backgrounds.

KINU is a Swahili word that means mortar, as in the tool that is used to grind ingredients in a pestle. The analogy is that KINU aims to be the space where different skills are combined to create locally built solutions for community problems.

KINU was established in June 2011 when the founders and leadership core of KINU held an event called a "hackathon" that focused social issues and accountability. This event was attended by approximately 250 people and included IT experts and local stakeholders such as the government representatives who showcased their work. A second event was held in August of 2011. This event was hosted by Apps4Africa with a focus on social, health and sanitation issues. After these two events, the organization was firmly rooted in the local ecosystem.

The KINU staff describes the incubator as "a Social Enterprise with the mission of concentrating, growing, and accelerating the Tanzanian tech and social landscape." Their emphasis is on community and they described their organization as a family. This was readily apparent as soon as we entered the modern collaborative space. The atmosphere

is upbeat, positive, and collegial. KINU was initially funded by Google and the Indigo Trust. KINU has since formed additional partnerships with Smile Internet, Raha Broadband, and Samsung.

Research Team Member, Jake Moffatt interviewing at KINU

The KINU Hub offers the following capabilities to its members: high-speed internet access, data storage and backup, desks, collaborative meeting spaces, a conference room, exhibition space, industry meet-ups & events, a mobile app testing environment, multiple training events and workshops, and refreshments.

In contrast to DTBi, KINU is not a government-sponsored organization so it must depend more on its sponsors and focus on becoming profitable through its business plan. This forces the staff to be entrepreneurial and consequently, there is a high-energy atmosphere in the KINU space. Membership is currently free and open-KINU does not have a tier membership system like many other incubators; however, they might consider it for future sustainability. Currently, KINU rents desk space to both start-ups as well as more established small businesses. The six co-founders also offer consulting services to businesses and government organizations in Tanzania. Additionally, KINU charges fees for some specialized training events.

The Collaboration Space in the KINU Incubator

Conclusion

This report clearly illustrates the diversity of incubators and technology hubs across a range of African countries. Some of the details that this report does not address are the numerous bureaucratic and logistical challenges required to coordinate for each data collection trip. For US Government-sponsored research, approvals have to be granted from West Point, US Army Africa, US Africa Command, and the US Embassy in the visited country. Additionally, visas and other travel documents have to be procured, and in some cases, approvals were required from the government of the country that we visited.

Administering the surveys was challenging at times as well. The team had hoped for a larger number of interviews in each location but the realities of operating in dense and congested urban environments presented many challenges and operational friction ranging from traffic issues to communication challenges to confusion in the description of meeting locations. Addresses are not commonly used in many African cities, so giving directions to drivers became major exercises.

After our first two data collection visits, we attempted to administer the survey remotely several time through web-based surveys. We quickly found that in order to get the required responses that we needed face to face interactions. We surmise that potential respondents while well meaning, put off responding to even simple surveys.

Additionally, our team did not have access to incentives to spur the required number of responses. Not all of this can be attributed to a lack of desire to respond by local entrepreneurs. Some of the issues were due to limited Internet connectivity away from the tech hubs and, in some cases, at the hubs themselves. Additionally, we had hoped for a larger number of interviews in each location but the realities of operating in dense and congested urban environments presented many challenges and operational friction ranging from traffic issues to communication challenges and meeting locations confusion.

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