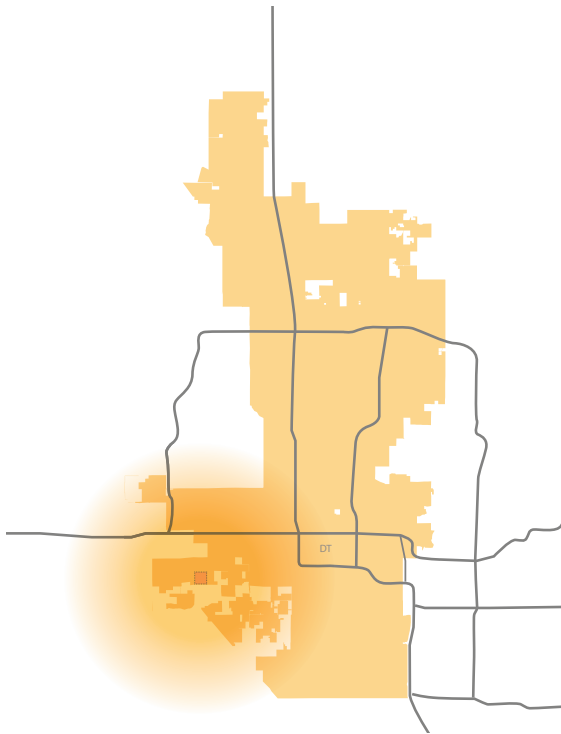


*Hacking the grid to stabilize communities in the housing crisis aftermath*

Aaron G. Frazier



**Housing Virus**

The housing market crash in 2007 left many scars on the American way of life. In addition to leaving millions of people in foreclosure or underwater and in financial distress, it left an unprecedented amount of vacant homes and partly developed infrastructure. Foreclosures, leading to vacancy, abandonment and blight, have become a contagious virus, infecting communities and spreading degradation.

The stock of vacant single-family homes and infrastructure provides an opportunity to be better utilized by communities. What if this stock could be transformed into an asset for the community, rather than the viscous infection of degradation it brings? What if the partially built subdivision developments could be utilized right now for a completely different purpose,

rather than waiting for the possible development of yet more similar housing sometime in the future?

In the wake of an unprecedented recession, how can architecture help stabilize and improve the fabric of communities impacted by the recent housing crisis, specifically, by rehabilitating vacant housing, by proposing new ways of utilizing vacant infrastructure, and by designing an alternative future development model?

An architectural antidote to this virus can provide a framework to build community. I intend to explore ways of breaking traditional suburban development by hacking systems of housing and infrastructure. By hacking into these infected systems which lead to degradation and community instability, a new stream of code can be supplanted into these systems that will warden off the virus.

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Housing virus



**Site**

The Phoenix metro area was one of the hardest hit areas in the country due to foreclosures. With 12.8% vacant housing units as of 2010, Phoenix epitomizes the effects of the housing crisis. The Tuscano neighborhood, located in the Estrella community 9 miles southwest of downtown Phoenix, portrays many of the typical housing and demographic median conditions widespread throughout Phoenix and the metro. This site acts as a testing ground to narrate scenarios of alternative development models.

“At least 1 in 10 houses was vacant in 50% of the country’s 10 largest cities in 2010. Of the ten most populous cities in 2010, five had gross vacancy rates above 10.0%. Phoenix had the highest gross vacancy rate at 12.8%.”

-U.S. Census Bureau

**Land Use: Program and Zoning**

An ability to use land wisely and responsibly through all stages of development is called for. The ability to do so effectively will negate the idea of vacancy, as land and the built environment will be occupied for some purpose. This purpose may extend to non-traditional programs, providing flexibility into land use. Flex-

ibility in zoning would allow for a greater ability for a community to respond to the demand of program needed at any point in its lifetime.

**Hacking the Grid**

There are many layers in the built environment that can be defined in terms of a grid. They are generally accepted systems that are waiting to be connected to in new ways. Systems that act on existing infrastructure and development, program, bioclimatic, demographic and socio-economic groups provides the scaffolding for an architectural response—speculative and developed responses which will provide one or more designs, frameworks or policies that leads to potential community stability.

X Grid; [X: Street, City, Utility, Energy, Transit]  
X:\Design>\_ [insert hacking command here]

Operations on X to facilitate community stabilization:

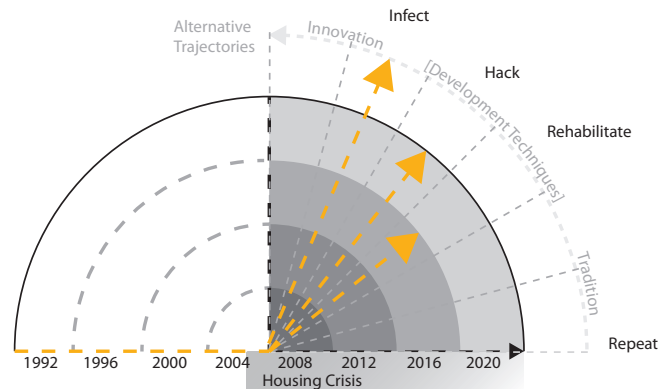
I. Reprogram: convert the homogeneous (consistent/ identical) elements of the grid to heterogeneous (diverse/ varied) elements.

Left: Tuscano - Vacant, bank-owned home.  
Right (spread): Tuscano - development phase with infrastructure built.

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Development trajectory changed

Incremental / responsive / diverse change



2. Append: graft on a new type of grid to mutate existing grids.

3. Overwrite: deconstruct existing grids and replace with more appropriate systems.

## Design Inquiry

Investigation is framed in dialogues of site, land use (program and zoning) and the grid. Based on supply and demand of habitat, I am looking at three types of intervention. Explorations utilize principles of urban design to infect suburbia (e.g. New Urbanism, Intelligent Urbanism, Smart Growth/Decline, and Transit-oriented development, etc.).

## Concurrent Methods

[X1] Empty subdivision (or part of) that has infrastructure in place, including streets, curbs, sewer, electric, gas, and communications. At this large scale, approaching one square-mile, the existing infrastructure is either a burden or opportunity. Taking an opportunistic approach, I am exploring how this infrastructure can be utilized now, and respond to local and current programmatic demand. In a vastly horizontal and sprawling landscape, I question the traditional approach to density and spatial organi-

zation of program. This may better suit communities that can be more self-sufficient, relying less on distant resources and more on the resources and infrastructure locally.

[X2] For the existing neighborhoods of a homogeneous building type, what else could be? In communities that have become unstable due to increased foreclosures, the idea of a homogeneous development plan is not sustainable (e.g. the typical subdivision developer plan). There is great potential for building in resiliency into these neighborhoods by reusing/rehabilitating vacant structures or lots for a different purpose that responds to programmatic and community demand.

[X3] The built environment is meaningless without the interaction of the community inhabiting it. Occupant input will output future mutations of this environment to suit the demands of the community. Finding a way to record layers of information of a community to help stabilize it is needed. There must be an interface that occupants interact with, to both input [invest] into and extract [exploit] information out of, feeding a resonating cycle of development that lends to community resiliency. This interface can potentially occur on a very small scale but aggregate to a whole. Each can be a node within a larger



network. This is potentially a new form of infrastructure, with a purpose of building community.

## Trajectory

Ultimately, a combination of these design inquiries at multiple scales should produce a feasible speculative model(s) for future development.

$(X1 + X2 + X3) = \text{Sustainable Development Model}$

### Trajectory I.1

Overlaying a network of walls as a means to extend infrastructure in the third dimension. The spatial relationships among the walls and their individual characteristics have direct associations to developing or rehabilitating a community. The wall acts as an armature of existing grids, but redistributing them to organize spaces with hierarchy and varied programmatic use.

The wall can be used as a connective element as much as it is used to separate. The wall is a physical framework for many programs. It provides the backbone for different programs to graft onto it and is amenable to change in program over time. It is an organizing element of public and private space, circulation and destination. The wall overwrites the existing zoning of individual lot with property lines. Rather, it introduces a model for development based on ownership of a lineal length and of the associated services, amenities, infrastructure and support it provides to the program.

*Top: Tuscano - street entry barricade.  
Bottom: Tuscano - view into wall-divided backyards.*