

# Radical Decentralization, Radical Empowerment, and Dynamicland

Bret Victor / September 2022

We believe that true decentralization is grounded in the distribution of ideas and abilities, not products and services. A network of communities who build their own homes, grow their own food, and cook their own meals is decentralized. People living in hotel rooms, with meals delivered to the door, are not.

For most of human history, communities have built their own homes, grown their own food, and cooked their own meals. This is not an outrageous proposition.

However, for true decentralization to be possible, the ideas and abilities must be *learnable*. Many modern technologies are too complex to be learned and practiced by communities, and are instead bound to industrial modes of production, creating a class divide between “developers” and “consumers”. These complex technologies will never be decentralizable, and any attempts to decentralize them will fail.

This is the case for the technology of computing, and here the situation is particularly unacceptable because computing is also a *medium*, the most important medium of the present time and perhaps eventually of all time. A society’s dominant medium structures how people see and understand the world. In the medium of computing, almost all people are *illiterate*, a disenfranchised underclass which cannot participate in the shaping of their own world.

Computing cannot be “decentralized” while maintaining its industrial-level complexity and preserving the class divide between developers and consumers. This would be a contradiction in terms.

Computing must be reinvented in a form whose inherent complexity is so radically reduced, communities can build their own computing environments, for their own needs, with minimal dependence on vendors, specialists, and centralized production. It must be distributed through ideas and abilities, not products and services.

For there to be any hope of achieving this, we must radically reduce the *amount* of computing that is necessary in the first place.

**Dynamicland** is a research project to invent a new form of computing in which people participate in the physical world instead of navigating simulated virtual worlds.

One of our discoveries is that leveraging the physical world radically reduces complexity. Tasks that might conventionally require “apps” and “codebases” can be done with a few pages of simple, readable programs. Computational activities make heavy use of physical and social mechanisms, so the parts that require actual computation can be small and high-leverage.

Because the amount of programming is radically reduced, it can be made radically visible. Dynamicland may be the most “open-source” computing environment ever made, because running a program means holding its source literally in your hand. Because programs are small and visible, people pick up the language and become authors while doing other tasks, the way natural languages are learned. There is no barrier to designing UIs because there are no UIs. You just move stuff around. Every community learns to be designers of their own computational worlds.

Concerns around security and privacy are radically reduced when access to one’s data is tied to access to one’s physical objects. People put their objects out on a shelf to make them public, or in their backpack to keep them private. Data stays on site, because data stays with physical objects. Most personal data never enters the computing system in the first place.

Each iteration of the project has made great advances in reducing its dependence on complex industrially-produced software. It is a long road to a world where both software and hardware can be community-produced, but our process suggests a vision for how to get there.

Dynamicland looks radically different than what we think of as “the web”, but any real solution to decentralization will *have* to look radically different, because the problems originate with the foundational assumptions of personal computing.

The long-term solution will probably also look very different than Dynamicland is now. This is a research project. But it is a very rare example of a genuinely novel direction for computing, built from the ground up around a deep and novel interpretation of decentralization and empowerment, and has exhibited startling results even at such an early stage.