

TTI/V talk

Luke Iannini / March 4, 2019

Part One

What is Dynamicland?

We are all here together today inside something we call a communal computer.

A communal computer means that, rather than being designed for individuals, like most of the **personal computing** of the past 50 years, this is a computer that is designed for **whole communities** to gather together like we are now, and a computer that gives us the tools to then communicate with each other in ways that haven't been possible before.

To contrast this with what computing **looks like today** outside of these walls, **here are some scenes** that are probably familiar to you.

We're **all carrying cell phones**.

There's a principle built **deep into their design** that we should **each have our own**. So it's an extremely **personal, private** device with all of our **personal details** inside of it. It feels **deeply strange** to even hand your phone or laptop to someone else, like **handing someone your handkerchief**.

Even though these kids are at the same table, their laptops put them in completely **different worlds**.

They're **not interacting** with each other at all.

They're looking at apps that someone **far away** made for them, with very little understanding how **how the thing works** or **how its made**, let alone feeling it's something they could **make for themselves**.

And **most of us adults** are in the same boat!

These are **black boxes**.

And as we stare into these devices, they're staring back at us, watching everything we do and providing an **individualized view** of reality.

We're increasingly looking at the world **through the screens** of these devices, and each of us is getting a **different view of what's real**.

We're getting ever more **isolated** from one another.

And the logical conclusion to this is we **stop looking at the outside world** entirely; we just put the screens directly on our faces and **never look at each other again**.

We wanted to design a computer around a **very different set of principles**.

A computer that's for **people actually together in space**.

A kind of computing that feels more like **group crafting**, or **group cooking**.

These deeply **human, communal experiences**.

A kind of computing that gives you **agency** over the building blocks, one you can take all the way apart to see how it works, rather than one sealed in a black box with pre-made apps.

A kind of computing that's designed to be **continuously co-created** by the community using it, **co-evolving** with your needs rather than forcing you to conform to someone else's system.

And a computer that's designed to use the **whole human body**.

Here, computation isn't something you poke at through a tiny rectangle, but something you can **walk through**, build with your hands, **spread around the space**, and **hand to one another** in conversation.

So the principles are:

A communal computer,

designed for **agency**, not apps,

that uses the **whole human body**.

The reason we're building this type of computing is to try to find **tools that are actually needed** for us to come together and solve the **biggest problems facing our societies**.

To solve problems that might otherwise feel overwhelming: problems like **climate change**, problems like **mass inequality**, and problems like ensuring we have a **functioning democracy**.

History of Media

Humans have a **long history** of doing this. Of **using tools and media** to help us reach **new levels of thinking**, and **overcome problems** that were completely mystifying before.

So I want to give a kind of **birds eye view** of some of that history to put us in the **right frame of mind**. **50,000 years ago, we developed language**.

This is also when we find some of the earliest **cave paintings**, some of the earliest **musical instruments**. So we could think of this as maybe the **beginning of media**, and the **beginning of using the world to communicate ideas**. **5000 years ago**, we developed on one of the most important of these technologies ever invented: **written language**. Writing came from very **humble beginnings** — used to mark down quantities of goods and trade. For thousands of years, it was only available to a **elite slice** of the population — if you wanted something written or read you'd go find a **scribe** to do it for you. It's a lot like **computer code** is today. But even in that limited form, writing **fundamentally changed** the way we **organized society**: you can't have a stable **code of law** for example without the ability to **write it down** and pass it from generation to generation. Suddenly, we were able to use this tool speak across time.

And over time, we developed the tools to make writing **accessible to all humans**. Technologies like the **public library**, the **printing press**, **disposable paper** and **pens**. We built all kinds of **new knowledge on top of writing**: **poetry, mathematics, physics, science**. And bit by bit many of the problems that were previously **completely intractable**, like explaining the **seasons** and the **night sky**, **evolution** and **infectious disease**, became **obvious** to us.

So came to realize that reading and writing were **so important** that they were something like a **human right**, and aimed for **universal literacy**. It's only in the past **200 years** or so that we've made significant progress towards that goal, and we still have a ways to go!

So **writing** is one of the technologies we take really **deep inspiration** from when we think about **what computing should be**.

History of Computing

Computing emerged much more recently: around **150 years ago**.

Like writing, computing also had **humble beginnings**: it was originally used to calculate **artillery trajectories**. But in the **1940s**, some visionary thinkers began to think of computing as a new kind of **tool for thought**. Maybe there was more to computing than just a **really big calculator**.

JCR Licklider, the legendary director of **ARPA**, wrote about "**Man Computer Symbiosis**", He realized that humans and computers have **deeply complementary abilities**; — humans are good at creativity and insight, whereas computers can follow instructions with incredible speed, for example — and that we should find a way to **partner** and **live together** with them, in **deep cooperation**. In **1963** he kicked off the **Intergalactic Computer Network**, imagining the **Computer as a Communication Device**, which led to the **Internet** thanks in part to mathematical modeling of networks by **Leonard Kleinrock** who's here with us today.

Another of his contemporaries, **Douglas Engelbart**, with **funding** from **Licklider**, took these ideas and ran. He was deeply affected by the increasingly **complex problems facing humankind** and realized that we would need completely **new ways of thinking and working** to solve them. In **1968** he demonstrated the first cohesive vision of a **complete computer system** designed to make those ideas a reality, showing **realtime collaborative computing, videoconferencing, hyperlinks, the mouse, and much more**, at an event called "**The Mother of All Demos**".

Our cofounder **Alan Kay**, in turn taking inspiration from **Engelbart**, articulated computing as a new kind of "**Dynamic Medium**" at **Xerox PARC**, developing a **computer for children** with the goal of achieving **universal computational literacy**.

That computer was so revolutionary that **Steve Jobs** at **Apple** based the Macintosh on it, giving us the personal computing we're all familiar with today.

In the late **2000's**, also at Apple, our other cofounder **Bret Victor** was inventing some of the technologies that become the **iPad**. But just as I showed you the **children around the table** at the beginning of this talk, he had begun to **question** whether computing was on the right track at all; and if it was really **living up** to the visions articulated by **Engelbart and his community**.

Intro to Dynamicland

5 years ago, **Alan Kay and Bret Victor** founded a new lab, with a 50 year research agenda to resume the goals of elevating computing to the level of a **medium**, suitable for **universal computational literacy**.

And that's where you are today.

It's important to note that we're a **non-profit research lab**. So what we're developing here is **not a product** that's going to ship next year.

In that history of computing I just presented from **1940 to 1985**, when personal computing really began to take off, that was a **45 year period of incubation**.

So we view what you're going to see here today as just **small steps in uncharted territory**, towards the **grand visions** I was talking about. But I hope we'll give you a **glimpse** of what we think computing will **one day become**, and help you **prepare for that future**.

So we're going to give you a chance to **look around** now, and after that we'll gather back here and I'll close by telling you about **future of our work**, and how to **fund that future**.

Part Two

A Dynamicland in Every City

I hope you enjoyed your time exploring the lab. This is the first Dynamicland: a prototype of a new kind of community space. We're currently in the process of taking **everything we learned** building this system and designing an even more radical **Version 2**, which we'll begin building in **2020**.

Over the next decade or so, we hope to take inspiration from the **public library**.
Maybe there will be a Dynamicland in **every major city**, that can serve as a new kind of **town hall**.

Rather than being a device, we imagine technology like this becoming **part of the infrastructure**,
built into **all human spaces**.

A good analogy is electric light —
something we consider so beneficial to humanity
that we've built it into places like schools, museums,
universities, workplaces, gathering spaces and homes —
everywhere humans are.

Every City A Dynamicland

What if instead of there being a **Dynamicland in every city**,
what if the **city itself becomes like Dynamicland**?

One way to ask this is:

What would our cities look like if they were designed around **knowledge** rather than **commerce**?

What if we could see the systems governing our daily lives?

Where the water and electricity comes from, what roads are used for what,
where our taxes are being spent, who represents us, how healthcare and wealth are distributed?

Solving Wicked Problems

Going beyond improving cities, how do we improve the whole world?

And what kinds of tools do we need to solve the problems that feel **unsolvable**?

I mentioned a few at the beginning:

How do ensure we have a **functioning democracy**?

How do we address **rampant inequality**?

How do we prevent **catastrophic climate change**?

Any of these on their own is an unprecedented task,
but these aren't independent problems!

These are all sort of facets of something we don't quite have a name for;
they're all deeply interconnected!

Inequality leads to education gap,
education gap leads to misinformation,
misinformation contributes to failure of democracy,
failure of democracy causes failure to stop climate change,
climate change has disproportionate impact on the poorest members of society.

And that's just **one set of connections**.

These are problems that are **so big**

they might seem **terrifying** to even think about solving.

And they're going to **continue** to seem terrifying
until we **invent the tools to make them tractable**.

Funding Long-Term Thinking

If we want to build tools like that,
we need to **FUND** environments
who have that **explicit goal**.

And this shouldn't be hard to justify!

I mentioned a couple **long-term research projects** like **ARPA** and **Xerox PARC**,
and I'd add **Bell Labs** to that list who brought us the **transistor** for example.

There's a slide Alan likes to show about Xerox PARC:

25 researchers funded by about **12M** a year brought us
8.5 major inventions that completely **revolutionized our society**.
The **laser printer alone** paid for the PARC project **5 times over**,

and the **total wealth** generated by **personal computing**
and the **internet** is nearly **unquantifiable**;
ranging into the **tens of trillions**
and forming the foundation for **all of Silicon Valley**.
Nearly **every single company** in a **50 mile radius**
is **built on the inventions** of these labs.

Our **entire global economy** runs on top of the internet.

So you'd think it would be a **no brainer** to invest in projects like ours.
It costs a **tiny sliver** of the yearly revenue of any major corporation.
It costs less than a typical startup company.

But that hasn't been our experience.

We've had to fight **tooth and nail** to survive —
it's thanks to a handful of **visionary executives**
at a few major corporations that **we're still alive**.

If you'd like to **become** one of those visionary executives
and **partner with us** to move us meaningfully towards
our funding goals, please **get in touch**.
You can email me directly at **luke@dynamicland.org**.

Thank you all so much for coming and I hope you have a fantastic rest of your conference.