

Open Source Software Toolkits for the Arts (#OSSTA)

**Report on a Convening of OSSTA
Contributors • June 2018**

**A Project of The Frank-Ratchye
STUDIO for Creative Inquiry
Carnegie Mellon University**

Report on a convening on Open-Source Software Toolkits for the Arts (OSSTA), Minneapolis, June 2–3, 2018. This event was organized by Golan Levin (Frank-Ratchye STUDIO for Creative Inquiry, Carnegie Mellon University) and Lauren Lee McCarthy (p5.js & UCLA Design Media Arts), with support from The John S. and James L. Knight Foundation.

Abstract

This report documents a convening on Open Source Software Toolkits for the Arts (OSSTA) held in June 2018. This event was a one-day conversation populated by founders, maintainers, and contributors of open-source arts-engineering toolkits. During this convening, participants discussed the challenges facing the development, maintenance, funding, sustainability, and community management of open-source arts toolkits, as well as their values and goals for the future. The goal of this Report is to help generate new opportunities for understanding, recognizing, and supporting work in this field.

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i. Preface



Image description: A group of seven people sit around a square table, having a conversation and making notes. Five of their faces are visible to the camera.

We are pleased to share this report documenting a convening on Open Source Software Toolkits for the Arts (OSSTA), organized by Golan Levin and Lauren Lee McCarthy in Minneapolis on June 2–3, 2018. This event was a one-day conversation and ‘unconference’, populated by a variety of founders, maintainers, and contributors of significant open-source arts-engineering tools. Grants officers from The Knight Foundation and the National Endowment for the Arts (NEA) also took part in the discussions, as well as a handful of volunteers and support staff.

We hope that this report can function as an examination and a call to action, shining a light on the hard work and labor of contributing artists, designers, engineers, and community members. The organizers’ goal for this report is to generate new opportunities for understanding, recognizing, and supporting work in this field. At the same time, we recognize that there are many more toolkits, contributors, and perspectives than those represented by this one convening. We see this as a conversation that can hopefully spark others and contribute to an ongoing dialogue.

We offer our deepest gratitude to the participants of the convening, and the many, many other contributors to these toolkits, without whom the field of art and technology would not exist. We would also like to thank Tom Hughes and the staff of the Frank-Ratchye STUDIO for Creative Inquiry at CMU for realizing this gathering, and Taeyoon Choi who assisted in its facilitation. Finally, we would like to express our sincere gratitude to the organizations that sponsored this gathering, most especially The Knight Foundation, and the many others listed at the end of this document.

—Golan Levin and Lauren Lee McCarthy (Co-Organizers)

ii. Overview

On June 2nd and 3rd, 2018, Golan Levin and Lauren Lee McCarthy, professors of media arts, with support from The John S. and James L. Knight Foundation, organized a convening on Open Source Software Toolkits for the Arts (“OSSTA”) in Minneapolis, Minnesota. This event was a one-day conversation and ‘unconference’, populated by founders, maintainers, and contributors of open-source arts-engineering tools such as Processing, p5.js, Cinder, openFrameworks, three.js, and more. Grants officers from The Knight Foundation and the National Endowment for the Arts (NEA) also took part in the discussions, as well as a handful of volunteers and support staff. The convening took place on the weekend before the 2018 Eyeo Festival, an annual media arts conference in Minneapolis.

The purpose of the convening, and this report, was to generate a first step towards defining the field of OSSTA initiatives, including an articulation of their impact as well as the challenges they face, for a wider audience. To this end, our gathering brought together leaders in the open-source arts community to have an in-depth conversation around the challenges and opportunities facing these platforms—specifically, regarding sustainability, funding, growth, management, diversity, and community building. The labor and impact of these tools, some of which are entering their third decade of existence, has remained under-recognized and under-resourced, putting the ecosystem of artists working with these tools at risk.

Because Open Source Software Toolkits for the Arts are primarily developed online by contributors distributed around the world, it’s rare to get so many project leaders and contributors in one room together. One primary goal of the convening was to foster inter-project dialogue and knowledge sharing that could benefit individual projects as well as the field as a whole.

The organizers’ goal for this report is to generate new opportunities for understanding, recognizing, and supporting work in this field.

The convening was organized around a set of six central questions, which are discussed in these six sections:

Challenges — What are the biggest challenges in OSSTA?

Developer Operations — How do we handle growth and management?

Community — How can we cultivate diverse and inclusive contributor communities?

Funding and Sustainability — How can we sustain this work?

Values — How do we describe what we do, and its value?

Futures — What are the futures we want to see?

Within the topics above, we have identified the key themes that emerged from each of the discussions as well as the challenges and opportunities presented by Convening participants.

iii. Takeaways

There were seven key takeaways from the OSSTA convening.

1. Maintenance is essential, wide-ranging, and often undervalued.

Maintenance includes tasks such as updating a codebase to deal with updates to browsers, web specifications, operating systems, and hardware; publishing new releases; editing and improving documentation and examples; updating the project's website; guiding contributors; managing discussion on GitHub; and running social media accounts. Maintenance requires consistent effort and work which is often both undervalued by contributors (compared to adding new features) and not visible to users. For the long-term success of OSSTAs, maintenance and management structures, as well as the funding to support them, are needed.

2. Funding is necessary to create a sustainable and inclusive toolkit, and it is the largest challenge for most OSSTAs.

OSSTAs often have a difficult time making their case to funding organizations because they fall into the in-between space of technology and art, and the value of creating a tool to help others make art is not recognized. Few funders possess the “dual expertise” necessary to understand and appreciate both creative art practices and open-source software development. One of the participants, who contributes to a toolkit widely used among generative artists, said: “We make things that help people make things that make things.” This concept is abstract and encompasses a broad spectrum of values both monetary and non-monetary.

Most OSSTA projects are largely supported by volunteers, and such energy can dissipate over time. Additionally, relying solely on volunteer labor excludes those without the financial and/or class privilege to donate their time and knowledge. In addition to being open-source, most OSSTAs are also (purposefully) free, which further limits options for income. Currently, funding sources for OSSTA projects range from community donations and grants, to educational institution support, corporate sponsorships, and licensing fees. However, none of the OSSTAs felt that they had achieved a sustainable business model. OSSTA leadership needs help identifying and cultivating funding sources, as well as developing infrastructure to manage resources.

3. A focus on access, diversity, and inclusion is needed.

The field of OSSTA development is predominantly white and male, though this has been shifting in recent years, led by efforts from some projects that have explicitly centered values of diversity, inclusion, and access as core values for their community and tool. Community members recognize the need for contributors of more diverse backgrounds, identities, and skill sets. Given the centralized nature of the tools, creating pathways for newcomers to feel welcome and start to participate in the community is an ongoing challenge. Other common barriers include lack of resources (time to participate, access to equipment or high-speed internet), lack of accessibility (little or no consideration of disabled users, reliance on single modality documentation or outputs), limited documentation and/or English-only materials, and opaque leadership and community structures. Strategies for addressing these issues include establishing a clear code of conduct and set of community values, inviting new people into the project and creating leadership opportunities, being intentional with communication, using development and communication tools that require less technical expertise, and improving documentation.

4. Documentation is critical but often lacking.

Documentation is critical for OSSTAs to support users and continue to grow. It is also recognized as one way of making projects more inclusive and lowering barriers to entry for new users. Additionally, improving documentation is often an entry point for new tool contributors. Documentation takes significant time to develop and maintain, and is often lacking, especially for intermediate users. Nearly all documentation is in English, and there's a large need for translation of documentation materials.

5. Community is just as important as code for many OSSTAs.

OSSTAs are known as much for the community that uses a given toolkit, as the toolkit itself. Many participants mentioned learning to use the tool because of the personal introduction they received into the community. There are many different types of people that interact with OSSTAs, including contributors, students, educators, and artists. Participants emphasized the need to give attention to areas other than code. Creating a tool involves the management of contributors, volunteers, and other members of the community. Not every creator of a tool is interested in the creation of a community and the management of it, but this community seems to develop naturally as the user base grows. There is a need for the creation of guidelines for interaction and a code of conduct that guides best practices for community members to interact with each other. As people approach these tools from different backgrounds, it is also necessary to create paths that welcome newcomers into the space so they feel welcomed and invited.

6. Intentional communication needs to consider content, language, and tools used.

Communication is an area with many opportunities for improvement. Internal and external communications could be streamlined. Onboarding new members and making them feel welcome and respected is essential for the community. There is a need for an intentional and thoughtful approach to communication. This includes recognizing different communication styles, experience levels, native languages, and disabilities. The participants acknowledged that often they find themselves working against exclusionary communication patterns that are prevalent in open-source.

It is important to carefully consider the communication tools being used. One of the participants said, "How do you signal to people that they have a seat at the table, that the table is big, and that there are seats available? How do we get that message out there?" One of the most common communication channels used is GitHub, which offers distributed version control and source code management as well as collaborative communication tools. However, a significant amount of technical experience is required to use GitHub and this is a barrier for new people. Projects that centralize all communication on GitHub, even those related to non-coding aspects of the project, may severely limit participation and prevent growth. It is important to deploy approachable ways in which newcomers and people interested in contributing can be introduced to GitHub. Other channels used by the OSSTA community are email, social media, Slack, Discord, Gitter, Discourse, Stack Overflow, online forums, and IRC channels.

7. Clarifying leadership structures could offer a path toward long-term sustainability.

OSSTAs have various leadership models. Many of the projects effectively use a "do-ocracy" model (where those that do the most work make decisions) or a "founder-leader" or "benevolent dictator" model (where the founder(s) of the project oversee decision making and community leadership). These leadership models often rely on implicit knowledge, and it is sometimes unclear how to make a decision or arrive at consensus when contributors are very distributed. The idea that anyone can theoretically participate in decision making does not always mean that it is

accessible for everyone or that it is equal. Decision-making processes may be centralized in the leadership and with primary contributors, and it can be difficult to find a way in for those who are new to the project. Further, when volunteer-based projects function on a “do-ocracy” model, it privileges those who can afford to donate their time.

As decisions and responsibility continue to be centralized in a small group while the project scales, there is a point where the leaders and main contributors cannot keep up with the pace of requests. Leadership transition offers a way to lift the burden off project founders and also open more space for new and diverse voices. However, OSSTAs need to budget and plan the time, space, and resources necessary to develop opportunities for mentorship and transition. They must also address questions about how the new leader is chosen, and what their responsibilities are. One recent example of a leadership transition occurred with the p5.js project, which moved to an annually rotating leadership model in 2020.

iv. Participants



Participants were selected for this convening based on a variety of factors including: historical relationships to the tools; unique, under-represented, and/or valuable perspectives and background experience; industry perspectives; pedagogic perspectives; and the constraints of our budget for travel support. This group was convened to develop and express deep and broad conversations around OSSTA, but in no way was meant to be exclusive of the thousands of other contributors, creators, and toolkits that actively contribute to and maintain these vibrant communities.

This convening was designed to gather a representative sample of the voices, perspectives, and toolkits that comprised the landscape of open-source software tools for the arts in mid-2018. It is important to recognize the limitations of the two organizers and their ability to know all of the diverse contributors and toolkits out there. The number of participants was limited to 30 based on the resources available and the limits of facilitating and thoroughly documenting multiple conversations taking place within a single day. In this way, the viewpoints expressed here are a snapshot, rather than a comprehensive survey. We see this as one conversation that may hopefully spark others to expand on the perspectives and toolkits represented.

In this convening and report, we use the term “contributor” rather than “developer” to refer to people that work on OSSTAs, acknowledging the huge diversity of contributions including, but not limited to: documentation, teaching, graphic design, illustration, writing, organizing, curating, and software development.

Image description: 36 casually dressed people standing outdoors on a sunny day around noon, posing for a group photo. L-R: Chris Barr, Arturo Castro, Taeyoon Choi, Aaron Montoya-Moraga, Theo Watson, Jax Deluca, Sinan Asciglu, Tega Brain, Faith Kim, Zach Lieberman, Dorothy R. Santos, Tatyana Mustakos, Peter Sheehan, Mathura Govindarajan, Kate Hollenbach, Sarah Metz, Lauren Lee McCarthy, Golan Levin, Dan Shiffman, Kyle McDonald, David Lublin, Ricardo Cabello, R. Luke DuBois, Sharon De La Cruz, Omayeli Arenyeka, Andrés Colubri, Carlos 'LO5' García, Kate Compton, Ari Melenciano, Irene Alvarado, Chris Coleman, Adelle Lin, Rebecca Fiebrink, Chris Baker, Chloé Desautles, Tom Hughes.

Biographies for convening participants can be found in Appendix A. Affiliations listed below were current as of June 2018.

Co-Organizers:

Golan Levin (Frank-Ratchye STUDIO for Creative Inquiry at CMU)

Lauren Lee McCarthy (UCLA Design Media Arts; Processing Foundation)

Sponsors:

Chris Barr (The Knight Foundation)

Jax Deluca (National Endowment for the Arts)

Sarah Metz (National Endowment for the Arts)

Event Staff:

Tom Hughes (Frank-Ratchye STUDIO for Creative Inquiry at CMU)

Student assistants: Chloé Desaulles, Faith Kim, Tatyana Mustakos, Peter Sheehan

Claire Hentschker (Frank-Ratchye STUDIO for Creative Inquiry at CMU)

Participants:

Aarón Montoya-Moraga (NYU ITP)

Adelle Lin (Code Liberation; Intel)

Andrés Colubri (Processing; Broad Institute)

Andrew Bell (Cinder)

Ari Melenciano (NYU ITP)

Arturo Castro (openFrameworks)

Carlos 'L05' Garcia (Complex Movements; UCLA)

Christopher Baker (School of the Art Institute of Chicago)

Chris Coleman (University of Denver EDP)

Dan Shiffman (Processing Foundation; NYU ITP)

David Lublin (HAP Codec; Vidvox VDMX)

Dorothy R. Santos (Processing Foundation; REFRESH)

Irene Alvarado (Tensorflow.js; Google Creative Lab)

Kate Compton (Tracery)

Kate Hollenbach (p5.js; independent artist)

Kyle McDonald (Independent artist)

R. Luke DuBois (NYU Integrated Digital Media)

Mathura Govindarajan (NYU ITP)

Omayeli Arenyeka (Recurse Center)

Rebecca Fiebrink (Wekinator; Goldsmiths College of London)

Ricardo Cabello (Three.js)

Sharon De La Cruz (Princeton StudioLab)

Sinan Asciglu (OpenProcessing)

Taeyoon Choi (School for Poetic Computation; Processing Foundation)

Tega Brain (NYU Integrated Digital Media)

Theo Watson (openFrameworks; DesignIO)

Zach Lieberman (openFrameworks; School for Poetic Computation)

v. Field Definition

More than ever, today's media artists create their work using a suite of free programming toolkits made for artists, by artists. These open-source software tools for the arts, or OSSTAs — such as Processing, p5.js, and openFrameworks—are created by small, self-organized collectives of artists, designers, and educators in order to fulfill needs that are unmet (and probably unmeetable) by the marketplace. Generally, these toolkits take the form of software libraries: bundles of code, associated documentation, and work examples that are free and accessible. Because they are made by artists for artists, they reflect and respond to the specific needs and vision of artists and designers. This ground-up approach allows for a community to unlock creative potential by defining its own tools, rather than be subject to the whims of major corporations.

Many of these toolkits, in addition to being open-source software (OSS), are also free/libre (altogether, FLOSS). There are many open-source software tools that cost money, and it's notable that many of these can be downloaded without payment. It's also one reason they are difficult to maintain.

Although these toolkits are developed and maintained by a relatively small number of people, they have become one of the primary means by which hundreds of thousands of artists, designers, and researchers all over the world create their work. Along the way, these toolkits have promoted software literacy within the arts, and arts literacy within technology—with the result that they are now one of the essential set of tools for making media art today. However, OSSTAs are not only used in the arts; they are also used by designers, educators, data visualization experts, scientists, and engineers. They are especially prevalent in education, providing the starting point for millions of students in arts, open-source, and technology fields.

Despite their widespread use, however, the development of these important toolkits has remained a labor of love: they are often intermittently maintained by widely dispersed individuals, often without pay, in their spare time. This is difficult to sustain, and creates barriers to access for those without the means to volunteer their time. Suffering jointly from the underfunding that affects the arts as well as the underfunding that affects open-source software projects, the future of these initiatives is precarious. We seek to address this by creating contexts to strengthen these tools and to support the vibrant artist communities that have grown from them. Because these tools are created by few but used by many, we are confident that every “dollar in” is returned to the public many times over.

The first set of beneficiaries for this gathering are the 30 media artists invited to represent their toolkits. These individuals are true hybrids: artists who do their own, highly competent software engineering. Presently, they develop and improve these toolkits, both for themselves and for others, with little or no financial support. Our project benefits these individuals by providing direct support for this activity. By gathering them together for face-to-face collaboration, it also serves to strengthen their communities. The second set of beneficiaries are the (literally) thousands of artists, designers, musicians, students, and researchers who depend on these specific tools to create interactive installations, performances, visualizations, and online experiences. For these communities, the expected benefit is a set of tools to create their work that is more robust, more fully-featured, better-documented, and created by and representative of a wider diversity of perspectives.

1. Challenges



What are the biggest challenges in OSSTA?

Key themes that emerged in our discussions included:

- Maintenance
- Funding
- Communication
- Community and Interaction
- Access, Diversity, and Inclusion
- Documentation
- Leadership Transition

Image description: Six people are sitting at one end of a large table, with other persons out of view. A woman with glasses, bleached hair, and a black hoodie is speaking and gesturing, while the others are listening to her.

Maintenance

Maintenance is necessary for the tools to remain compatible with new operating systems and platforms. Maintenance includes tasks such as updating the codebase to deal with updates to browsers, web specifications, operating systems, and hardware. It includes publishing new releases, editing and improving documentation and examples, updating the project website, guiding contributors, managing discussion on GitHub and other source-code repositories, and running social media accounts. Maintenance requires consistent effort and work which is often underrecognized compared to adding new features.

Participants at the convening reported a disconnect between the labor going into these projects and the user's perception. As the tools improve in quality and professionalism, there is a tendency to see them as similar to commercial tools like Adobe Creative Suite, rather than tools made for artists by artists. The large amount of time and labor required to maintain and develop OSSTAs is often not directly visible to users. Many of the users do not know that people leading the project might be working in their free time without receiving remuneration. For long-term success of OSSTAs, maintenance and management structures, as well as the funding to support them, are needed. Maintenance is discussed further in *Development and Maintenance: Management*.

Funding

Funding is one of the largest challenges many OSSTAs encounter. Many of these tools begin as a personal or small group project, but as they start to grow, funding is required for the continuation and maintenance of the tool. Small or small-scope OSSTAs can operate without funding if the creator remains committed, but as an OSSTA grows, it becomes unsustainable without funding. The challenge of sustainability is twofold. One, the internal infrastructure and leadership need to be supported to set up for long-term success instead of short-term gains. Two, funding sources have to be feasible and provide resources for longer periods of time. Funding is discussed further in *Funding and Sustainability*.

Communication

Communication is an area with many opportunities for improvement. Onboarding new members and making them feel welcome and respected is essential for the community. It is important to carefully consider the communication tools being used. There is also a need for an intentional and thoughtful approach to communication within these channels. One of the participants said, "How do you signal to people that they have a seat at the table, that the table is big and that there are seats available, and just how do we get that message out there?" Communication is discussed further in *Development and Maintenance: Communication*.

Community and Interaction

Participants emphasized the need to give attention to areas other than code. Creating a tool involves the management of contributors, volunteers, and other members of the community. Not every creator of a tool is interested in the creation of a community and the management of it, but this community seems to develop naturally as the number of people using the software grows. There is a need for the creation of guidelines for interaction and a code of conduct that guides best practices in which community members interact with each other. As people approach these tools from different backgrounds, it is also necessary to create paths to welcome newcomers into the space so that they feel accepted and invited. This topic is discussed further in the *Community* section.

Access, Diversity, and Inclusion

Access was mentioned as a challenge by several members. The contributors and community members for this Convening are clustered geographically in New York City and Los Angeles. Moreover, the field is predominantly white and male, though this has been shifting in recent years, led by efforts from projects like p5.js who have centered values of diversity, inclusion, and access as core values for the community and tool. It is important to note that there are no official statistics about the demographic composition of the OSSTA community, but several participants voiced their concern about the aforementioned situations.

There is a need for contributors of more diverse backgrounds, identities, and skills. The overarching goal is to make the tools more culturally relevant for all people, particularly artists, no matter their coding or technical experience with the tools. One identified barrier is communicating to people outside the community the essential values of the open-source community. There is a desire to make the tools inclusive and accessible for a larger public, but given the centralized nature of the tools, creating pathways for newcomers to feel welcome and to start to participate in the community is a challenge. Access, diversity, and inclusion is discussed further in *Community*.

Documentation

Documentation is critical for OSSTAs to support users and continue to grow. As the tools become more elaborate and able to execute different tasks, the documentation of their functions is crucial. One participant said, “[A problem] no toolkit has solved well is developing a way in which documentation could be crowdsourced.” Another challenge arises in dealing with internationalization and supporting multiple languages in the documentation. Streamlining the contribution and documentation process is a goal that various participants voiced. Documentation is discussed further in *Development and Maintenance: Documentation* and *Community: Training and Mentorship for Users and Contributors*.

Leadership Transition

OSSTAs have various leadership models, but one common model adopted from open-source software outside of the arts is the “benevolent dictator.” This means that while the community may contribute and take on leadership roles, one or a few individuals have final say over all decisions. This model is considered to be both the reason for the initial success of many projects but also a barrier to further growth and scalability. As the decisions and responsibility continue to be centralized in a person or a small group while the community around the software grows, there is a point where the leaders and main contributors cannot keep up with the pace of requests. Leadership transition is discussed further in *Development and Maintenance: Leadership Transition*.

2. Development and Maintenance



How do we handle growth and management?

Key themes that emerged in discussion included:

- Version Support
- Preservation
- Communication
- Automation
- Management
- Recognizing Individual Contribution
- Leadership Transition
- Documentation and Education

Image description: Seven people are sitting around a square table, having a conversation. The faces of all but one or two are visible to the camera.

Version Support

A key issue when it comes to development and operations is versioning. Most OSSTAs create regular releases of new versions of the tool with updated features. Some OSSTAs put out new releases on specific dates to create a regularity of schedule. Others work on a milestone basis, waiting until particular features and bug fixes are complete before putting out a new release. The second approach generally works better with the volunteer nature of these projects; contributors can work when they are able, without worrying about a deadline. This can result in releases becoming delayed because of one or two features. To address this, some OSSTAs support two versions at a time, one “stable” version for the large user base, and a beta version that contains all the latest code for users to test an upcoming release.

OSSTAs are software that runs on browsers, operating systems, and hardware created by others, so there is a constant need to respond to changes in those platforms. This may conflict with the timeline of releases, requiring quick patch releases to address functionality that has broken due to changes to the underlying platforms OSSTAs are running on.

The experience for users dealing with changes to versions, browsers, and operating systems, and hardware is a concern for OSSTAs. As new versions are created, it becomes difficult for OSSTAs to maintain support for all of the past versions, even though users may continue to use them. Various user projects rely on external libraries written by community members rather than the core project maintainers, and if those libraries are not well maintained the project may stop working. This raises questions around preservation of individual artworks, which is beyond the scope of this report, but of concern to OSSTA contributors and users.

Preservation

The preservation of the OSSTA tools themselves is a separate but related issue to artwork preservation. It can be difficult to document OSSTAs due to the distributed nature of development, and the limited time contributors have available. However, without documentation, the history of OSSTA and media arts is in danger of losing relevant content that is both educational and of artistic value. It is important to document and preserve not only the code and artistic outputs, but also the history of the communities and collaborative working models around them, which are extremely unique in the space of OSS.

Communication

There are many different types of people that interact with OSSTAs, including contributors, students, educators, and artists. As the size of the community grows, the time and resources required to manage communication also increases. How can OSSTAs ensure that this diversity of knowledge and learning is understood by the leadership? How can strategies of communication bridge different experiences and contexts? Having regular discussions that allow community members to share their different perspectives is essential. It is also necessary to be intentional with the design of communication structures and guidelines, such as a code of conduct, to ensure they support inclusive and accessible discussions.

The OSSTA community uses a multiplicity of channels, applications, and modes of communication to interact internally and externally. One of the most common channels used is GitHub, which offers distributed version control and source code management as well as collaborative communication tools. However, a significant amount of technical experience is required to use GitHub and this is identified as a barrier for new people. Projects that centralize all communication on GitHub, even those related to non-coding aspects of the project, may

severely limit participation and prevent growth. One participant said, “If we only communicate through something like GitHub, then our communication is going to be purely centered around development and lines of code.” It is important to deploy approachable ways in which newcomers and people interested in contributing can be introduced to GitHub. This may include introductory tutorials or 1-on-1 mentoring. It is also necessary to teach and recognize less technically difficult modes of contribution such as documenting issues, labeling issues, and editing the wiki.

Other channels used by the OSSTA community are email, social media, Slack, Discord, Gitter, Discourse, Stack Overflow, online forums, and IRC channels. Some of these channels offer the possibility of real-time conversation, but not everyone who is part of the community is equipped to engage in a real-time conversation or debate. This is a result of the range of technical expertise or familiarity with the project. It is important for OSSTA’s leadership to keep in mind the multiplicity of participants and their backgrounds when engaging in communication and involving the members into the decision-making process.

For some OSSTAs, having many different channels creates different access points. However, this might inundate or confuse new community members. Additionally, as the number of communication tools increases, communication and project organization can become isolated and scattered into various channels. The welcoming and introductory steps may not be clear depending on the entry channel.

There is also a need for an intentional and thoughtful approach to communication within these channels. This includes recognizing different communication styles, experience levels, native languages, and disabilities. The participants acknowledged that often they find themselves working against exclusionary communication patterns that are prevalent in open-source.

Even though OSSTAs exist in a digital environment, OSSTA contributors find in-person interaction a central element to advancing these tools. One of the participants said, “Having those personal connections is really important.” Participants find meetings to advance the tools, projects, and communities extremely valuable. Gatherings, convenings, and conferences are places where energy is aggregated and large amounts of work and maintenance are achieved, but as the participants go back to their regular schedules, it is difficult to maintain this energy. There have been previous efforts to establish regular meeting schedules but this is difficult to sustain over time, and hard to figure out equitable approaches when contributors live all around the world.

Automation

Automated tools can facilitate welcoming new contributors and reduce the time involved in management. GitHub features such as welcoming bots, issue templates, pull request templates, and issue labels are helpful tools. However, there’s a concern that automated processes can feel cold, and participants note the value of human interaction during the onboarding process.

Management

Management of development and community is a key concern among OSSTA contributors. Currently, some of the OSSTAs have no clear guidelines and run primarily on implicit knowledge and workflows. A lack of written documentation can cause disconnects between the primary contributors and other members of the community. Someone may solve an issue or create an addition to the tool in a way that does not align with the expectations of the primary contributors, causing their contribution to be denied.

There is a need for documentation in two main areas. First, in documenting the core values of the tool and community in forms such as a contributor covenant, mission statement, community statement, or code of conduct. Second, a set of guidelines for leadership, contribution, communication, documentation, and pull requests enables project leaders and contributors to have shared expectations and know how to work together.

OSSTAs host these documents in different places, including Google Drive, GitHub, Dropbox, and Etherpads. This creates some risk as OSSTAs rely on other platforms to store and host the projects. Often knowledge is distributed across different locations, and it can be difficult to piece the full picture together.

Every community has its own dynamics and management strategies. Many of the projects effectively use a “do-ocracy” model, where those that do the most work make decisions, or a “founder-leader” or “benevolent dictator” model, where the founder(s) of the project oversee decision making and community leadership. Many of these models emerged organically as the projects grew. A robust community is defined by a participant as a community able to self-organize and manage themselves. Thus, the community needs little permission from the leadership to manage specific areas of the tool.

One of the participants commented, “When you are building these projects, you put your own politics behind them, and the open-source ethos sometimes is: We don’t care about having decentralized management systems, we are going to let it be free form.”

However, decision making is fundamental to promote space for growth in any project. It is sometimes unclear how to make a decision or arrive at consensus when contributors are distributed. The idea that anyone can theoretically participate in decision making does not always mean that it is accessible for everyone or that it is equal. Decision-making processes may be centralized within the leadership and primary contributors, and it can be difficult to find a way in. When volunteer-based projects function on a “do-ocracy” model, it privileges those that can afford to donate their time. To address management issues, one of the participants emphasized the need for contributors with specific management skills to participate in leadership.

Recognizing Individual Contributions

There is a need for understanding maintenance (both code development and non-code tasks such as documentation) as necessary, and to acknowledge that the people doing these tasks are an essential part of the growth and development of the tool. Recognition is a key way in which OSSTA leadership can engage people in the process of maintaining and documenting the tools. Some participants noted that recognition isn’t always enough, and that some contributors need monetary compensation to be able to allocate time.

Many OSSTA contributors are also artists, designers, academics, or sole proprietors whose career success depends on individual recognition. Ownership is a controversial topic. The intrinsic ethos of open-source relies on collaboration, thus in most projects there is no individual ownership in the sense of a sole inventor that exists in more traditional, proprietary models. Rather than ownership, participants feel public and private recognition of their contributions and that their involvement with the project is essential. The concept of ownership concerns not only who is acknowledged when a new tool or a version for a tool is released, but it is also connected to how the community perceives a tool. As a tool becomes more relevant to a group of people, they will take care of it and contribute in different ways.

Leadership Transition

As OSSTAs become multi-year projects, many project leaders start to experience burnout. The community grows older, as there is less energy put into maintaining pathways to welcome and involve newcomers.

Processing and openFrameworks are defined as relatively mature tools that have gone through the process of transitioning from single authorship to a community of contributors, and are widely used within the community. But these projects still struggle to organize and manage contributors, volunteers, and cultivate potential young leadership.

Leadership transition offers a way to lift the burden off project founders and also open more space for new and diverse voices. However, OSSTAs need to budget and plan the time, space, and resources necessary to develop opportunities for mentorship and transition. They must also address questions about how the new leader is chosen and what their responsibilities are.

Documentation and Education

Several of the participants articulated that documentation is essential to the growth of the tools. One of the participants said, “The main reason I open-sourced stuff I made is because it is about saying it is more valuable to people than if I keep it closed, it is more valuable if somebody can fork it, if they want to do something different with it, if they want to look to how I built something and take that and incorporate that somewhere else, that is valuable.” Documentation is central to the ethos of OSSTAs, making them accessible and encouraging learning and experimentation.

While documentation is recognized as necessary, there are often gaps in coverage, especially when users get beyond the beginner level. There is a constant need for more tutorials, resources, and documentation, clearer guidelines for documentation, and support for translating these materials into other languages.

One prevalent idea is to approach documentation as a wiki that many people can edit, sharing the work and allowing more people to contribute. Quality control and editorial control are issues with this method. Other projects place the documentation directly into the source code, and require documentation updates to be paired with code submissions to keep the code and documentation tightly linked. However, this raises the barrier for contributors by adding more work for a single pull request.

There has been some success involving students in documentation creation, which contributes to available materials as well as serving to recruit and onboard new community members. This type of education is discussed in depth in the section Community: Training and Mentorship for Users and Contributors.

3. Community



Image description: Six people are sitting around a square table covered in yellow note papers. A woman with curly brown hair and glasses is speaking and gesturing with her hands. The others are listening to her. One person is facing away from the camera.

How can we cultivate diverse and inclusive contributor communities?

Carlos “LO5” Garcia opened a conversation about community, drawing on his experiences working with artist collective Complex Movements and the Allied Media Conference. He emphasized that “learning is a multidimensional process” and the importance of unlearning the ways that we internalize patriarchy and white supremacy. Carlos asked:

- How can we build sustainable leadership by thinking about passing the baton?
- How can we have iterative learning cycles, that with each year build and cultivate leadership?
- What are areas where we find challenges?
- What are areas where we can make space?
- Can we acknowledge that everyone is an expert of their own experience?

Key themes that emerged in discussion included:

- Representation
- Barriers
- Opportunities
- Training and Mentorship for Users and Contributors
- Visibility
- Promoting Interaction

Representation

A lack of diverse representation is a concern to the OSSTA community. In order to be a more inclusive community, the participants mentioned the imperative to be intentional and create pipelines so that people feel included when they approach the tools. For instance, there have been examples of volunteers willing to contribute to a tool by translating it, which enables others to gain access to the tool as a result of the translation and to become users and potential contributors.

Participants agreed on the value of a diverse user base, in terms of gender, sexual identity, race, nationality, disability, and background. But given the digital and distributed nature of OSSTA communities, it can be difficult to get an accurate sense of the makeup of these communities. However, representation is also an issue in the leadership of the OSSTAs. Currently, most of the leaders of these projects identify as white men.

Barriers

A lack of funding is a large barrier to diversity, inclusion, and access in OSSTAs. Often the development of these tools must rely on volunteer labor to survive, which immediately creates barriers for people who aren't able to work for free. It would be ideal if there was a way to compensate the participation of contributors that would not otherwise be able to be part of the community. Additionally, funding could support efforts to expand access by creating educational materials and outreach efforts for a broader public. p5.js is an example of a tool being used in schools, which enables children to connect and learn to code with no cost barrier. K12 teachers are showing interest in using p5.js to teach their students physics or math through the lens of coding.

Language is another barrier in terms of access and diversity. Language is central, as it describes the roles of participating and the guidelines of the community. There are OSSTA projects with little to no translated versions of the software and/or documentation for other languages besides English. As a result, people who do not speak English are unable to access the tool. One of the participants said, "I have struggled with the language barrier." By adding language support the OSSTAs become a more accessible tool. However, language support adds to the time and resources required for maintenance, so these efforts have to be well planned for sustainability.

There are also technical and equipment barriers to participation. To use most of these tools, a high-speed internet connection and computer is required. To contribute to many of these tools, specialized technical expertise such as a familiarity with GitHub or a background in programming is required. Some projects have addressed this by expanding possibilities of contributing to include different skills such as design, illustration, writing, and organizing. Online editors offer a more lightweight way to interact with some of these tools.

Opportunities

Several participants mentioned the importance of clearly defining a set of values related to the project. These model values should be expressed through actions, as a way to set the tone for the community. One of the examples of values and goals for tools is the Beloved Community License by the Douglas Foundation and another is the p5.js Community Statement. Being intentional about a project's values and the way they are carried through is necessary for a diverse and inclusive community to grow.

There are also methodologies from other disciplines that can be used to cultivate diversity and inclusion. For example, creating spaces for intergenerational conversations, and creating

awareness by publicly recognizing contributors' roles and work, which in turn inspires others. One participant raised the idea of creating a paid position for a contributor to focus on showcasing diverse projects and community members. One participant stated about one of the OSSTAs, "It was really the change in the leadership that brought more people, having female teachers or people of color as teachers inspire people to say 'I see myself there' not only as a student but potentially as a teacher." One challenge with this is that power structures and decision-making processes are often decentralized and poorly defined, so it's not always clear how new people can enter into leadership.

Several participants emphasized how inclusion and access could be addressed through tasks that are often overlooked, such as maintaining and creating documentation. One participant stated, "A lot of the things that seem like busy work, maintenance, boring documentation, whether it is adding unit tests to a project or writing up exactly how it works and who looks at a pull request [that are not] necessarily a priority, is actually a thing that might seem very technical but can make a project seem more welcoming." Additionally, open-call efforts should include language and messaging that are inclusive, and showcased work should be culturally representative.

Teaching was identified as one way to expand access. Often OSSTA contributors are often invited to teach workshops at festivals, makerspaces, and public events where students come from a wide array of backgrounds. This offers a way to expand access beyond traditional educational institutions.

Training and Mentorship

Mentorship programs are crucial to foster the growth of the tools, as well as mitigate structural inequities by supporting new users and contributors. The key tasks in building a mentorship program are recruiting people who could become mentors, and finding funding for honoraria for mentors and stipends for participants. It's important to note that mentoring within OSSTA projects is largely about building the community; the financial support enables more people to do this.

Several participants stated, "It is so hard to find the information you need as a beginner." It would be beneficial for the OSSTAs to develop a better understanding of new users' pathways of entry. In particular, it would be helpful to look at how new contributors establish trust within a project and build connections with different levels of contributors.

One of the main identified pathways of entry is education. One participant said, "Teaching makes more users, which makes more people rely on the thing, which hopefully makes it survive." Documentation is also crucial to supplement 1-on-1 teaching. The bridging of users into contributors was a recurring topic. For example, some of the platforms have participated in the Google Summer Code program and they have found it is a successful way to cultivate contributors and engage with them at different levels. It is also common for previously mentored students and contributors to become mentors themselves later, helping these programs sustain over time. One participant said, "If I teach ten students [to use a tool] one of them might want to help out." Additionally, another participant said: "You can code not only by creating things but [also] by help[ing with] fixing things."

Another participant said, "Presenting my students with the opportunity to contribute to something is a really important part of what I believe should be a formative experience in teaching creative coding, engaging the community and things like that... I would love to present these things more regularly." One of the more successful strategies involves students in the processes of documentation, maintenance, and coding as a part of their educational experience tied to a syllabus.

Education provides a means not only to sustain a tool, but to enact a larger shift in community. If students are introduced in a thoughtful way to open-source contribution, they have a first experience with open-source software that is welcoming and inclusive, in contrast to what many newcomers to OSS on the web experience. Regardless of whether they continue with that particular project, they are grounded in this ethos. In this way, more inclusive values propagate beyond individual projects, working against a lack of diversity and inclusion in open-source software, and art and technology fields.

However, it should be noted that because many of the students are beginners in many domains, the engagement often requires more time and energy from contributors, rather than being an instant strategy for self-sustaining projects. Much of the “output” or “value” from the interactions is in the form of learning, not necessarily code or written documentation, for example.

It is important to highlight that the interaction within a community was an important and recurring topic during the convening. Different tables identified the importance of being welcoming with newcomers, as one participant said, “If I have a choice between one community where I feel supported and another where I am going to be dismissed all the time, I am going to contribute to the one where I feel supported.”

Visibility

There is a need for more visibility for OSSTAs as a way of increasing accessibility, diversity, and inclusion. OSSTA contributor communities can often feel like closed groups or silos. More effort should be put into direct outreach, and information sharing. Only through commitment to inclusion and diversity can projects reach and engage with broader audiences in genuine and meaningful ways. It’s important to be accessible to the community through various lines of communication such as social media, newsletters, meet-ups, and events so people can find different entry points.

Promoting Interaction

OSSTA projects vary in regard to community building, engagement, and interaction. As a result, there is no set standard across projects as to how this is done. Therefore, the leadership is responsible for creating guidelines for users and managing interactions. Clear guidelines can empower and support users, while a lack of clarity around this can make a community less welcoming. It’s important to recognize creating guidance in this area as work that requires focused time and energy.

There are various strategies to promote positive interaction. Setting a clear tone and educating people around communication is important. One participant said, “Respecting each other and being kind, while you offer constructive solutions. Not assuming that the person who wrote it doesn’t know what they are doing. It is something you need to teach people how to do.” As another participant said, “You want to create communities which... attract warm, kind, and generous people because it is all about generosity. These projects are built upon generosity.”

Another strategy is creating places for sharing and supporting work. It is empowering to see others’ work, to have conversations around it, and to see it being valued. For example, codenewbie.org is a website for people at early stages of coding, providing support and education to better engage in the task of learning how to code. The open-source nature of OSSTAs carries through to the sharing and creation of new work, with many users building on code that was written by others, then sharing back to the community.

4. Funding and Sustainability

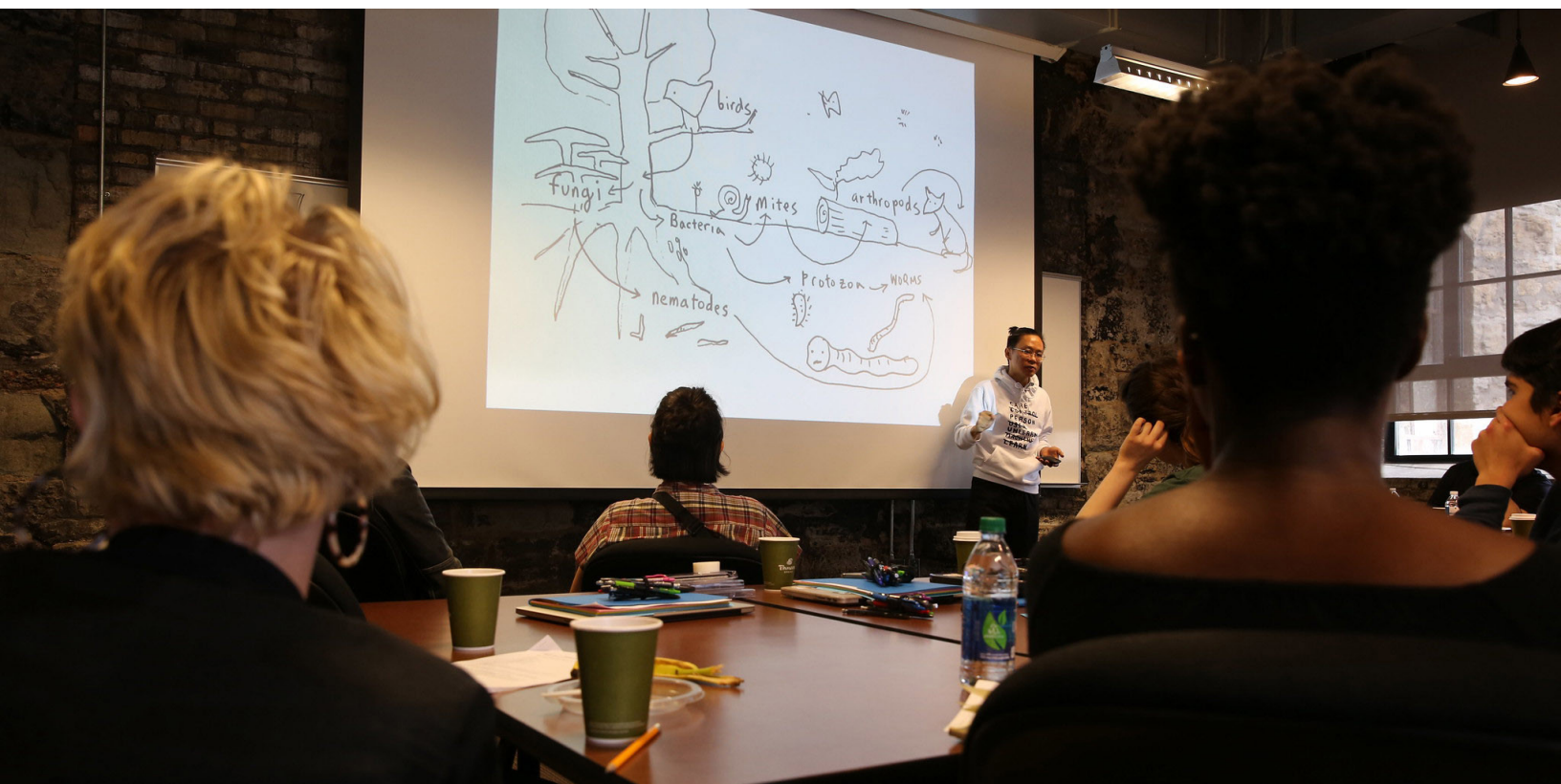


Image description: A man wearing a white hoodie and glasses is standing and speaking next to a video projection screen. The screen shows a hand-drawn diagram of an ecosystem featuring worms, fungi, birds, etc. An audience of at least six other persons is seated, listening to him.

How can we sustain this work?

The subject of sustainability was discussed as a significant challenge for OSSTAs. Given that most OSSTA projects are largely supported by volunteers, energy and intention tend to dissipate over time as project leaders must carry the challenge of managing the project as well as supporting their own careers. Even if energy around the project grows, it results in the project scaling in complexity and community size, further increasing the burden on maintainers. Additionally, relying solely on volunteer labor excludes those without the financial and/or class privilege to donate their time and knowledge. One question that arises is, “How can the OSSTA community better foster spaces in which the tools are documented and maintained in a sustainable way?” OSSTAs utilize a variety of sources for funding and support. Participants stressed that most OSSTAs are committed to offering their tools for free and do not have a business model or source of reliable income; they are often dependent on donations, gifts, and grants.

Key funding sources and themes that emerged in discussion included:

- Community Donations
- Grants
- Corporate Sponsorships and Partnerships
- Educational Institution Support
- Establishing a Business Model
- Infrastructure

Community Donations

OSSTAs have tried a variety of community fundraising strategies including adding donation buttons to websites, running Patreons, and year-end fundraising campaigns offering rewards like stickers, t-shirts, or artwork. While these methods can provide some support for projects, they are not continuous or significant enough to be a sustainable solution on their own.

Grants

OSSTAs have applied for a range of grants spanning the areas of technology, art, media art, education, and social justice. However, OSSTAs often have a difficult time making the case to funding organizations because they fall into an in-between space of different fields, specifically between tech and art. Creating a tool to produce art is often seen as different than producing art, and many arts grants require an end result of an artwork or exhibition. Additionally, connecting the concepts of art and open source can be difficult for many funders without experience in the area to understand. One of the participants said, “We make things that help people make things that make things.” This concept is abstract and encompasses a broad spectrum of values both monetary and non-monetary. There has been some success, though: Examples of granting organizations that have recognized the potential of OSSTAs in the arts now include the National Endowment for the Arts and the Knight Foundation.

Some of the participants recognize that they do not know how to demonstrate the importance of the tools to potential funders. This is often a result of project leaders being focused on creating and maintaining tools, and not having time or awareness of the importance of demonstrating and measuring value created. Project leaders need education around how to create and collect metrics to demonstrate the impact of these tools. Grant writing and fundraising involve a different skill set than developing code, and it’s necessary to have people involved in the projects that have experience in this area.

Corporate Sponsorships and Partnerships

Collaborating with companies is one possible source of support, but it requires the mutual interest of tool leaders and the company. Use of the tools in commercial contexts occasionally results in a company making a donation to the makers of the tool to help sustain its development. This usually happens when a developer working at the company has a previous connection to the toolmakers and thus understands the need for funding and can write it into the project budget. However, these cases are rare, and it is often difficult or impossible to convince a company to pay for something that is free. One participant said, “Occasionally, a friendly agency, if they are using my add-ons or something, will say [...] here is a check. It doesn’t happen very often, it is more like a surprise. It is not sustainable, but it does encourage.”

Granting programs through corporations have provided another source of support. Examples of this include the Google Summer of Code program, Google Faculty Research Grants, the Mozilla Open Source Support Program, and GitHub sponsorships.

In corporate partnerships, alignment of values is fundamental. Corporations might approach a tool but, if their values or business model are not aligned, project leaders and the community will not accept resources.

Educational Institution Support

Educational institutions can be another source of support for OSSTAs. Tools like Processing, p5.js, and openFrameworks have widespread use in the classroom and seem to be a natural fit to provide support. However, there is often a lack of awareness around the need for support. Even when there is a desire to donate toward tool development, there is no infrastructural way for an educational institution to make a donation. On the other hand, they can and do pay commercial license fees and Edtech subscription fees.

Many contributors to OSSTAs have full-time jobs working at universities, enabling them to have semi-funded time to dedicate to the projects. Some universities have dedicated labs that provide support to tool contributors through grants and residencies, such as Carnegie Mellon University's Frank-Ratchye STUDIO for Creative Inquiry, and University of Denver's Clinic for Open Source Arts.

Some OSSTAs like p5.js are used extensively in K12 education, and the project has pursued funding and partnerships with K12 organizations like the NYC Department of Education. These partnerships can be fruitful, but also require navigating large amounts of bureaucracy and multiple stakeholders.

Establishing a Business Model

Participants identified establishing business models that generate income as a path toward sustainability. There are many commercial entities using OSSTAs to produce work and products but because the tools are free, revenue isn't generated from this commercial use. One way to address this may be to establish a dual-licensing model that keeps the library free for artists, educators, and hobbyists, but requires a license fee for commercial users. Another possibility is to create a "freemium" model in support tools like OSSTA code editors where core functionality is free for all, but users can pay for additional features or technical support.

Infrastructure

Participants made the point that to be sustainable, OSSTAs not only need revenue streams, but also an infrastructure to accept financial contributions and direct the distribution of resources. Many OSSTAs lack a basic organizational structure that would enable them to financially compensate contributors. Some OSSTAs have approached this by establishing nonprofit organizations such as a 501(c)(3) in the United States. However, doing so adds additional management structure and staffing resources necessary to run the organization.

Collaboration between OSSTAs is one potentially beneficial strategy. Knowledge sharing and strategizing happens informally between projects, but it could be formalized. Projects could aggregate some of their needs and address them collectively. Infrastructure could be shared between projects, reducing individual costs and enhancing the general capacity of the OSSTAs. One example in the OSS world outside of the arts is the Apache Software Foundation, an umbrella non-profit organization that claims over 350 OSS projects.

5. Values



Image description: A group of seven people is sitting around a table, having a conversation. Four faces are visible to the camera.

How do we describe what we do, and its value?

The participants describe value from two points of view. First, the idea of value creation for different stakeholders. Second, the set of values embedded in the tools, which guide the development and growth of the tools and the communities around them. As one participant said: “The value that you create to the world really stems out of the values you use to run the project.” Different stakeholders—artists, teachers, students, contributors, and companies—value these tools in different ways. One challenge is articulating the intricate network of values to each stakeholder.

Key themes that emerged in discussion included:

- Education and Pedagogy (Creating Access to Art and Technology Fields)
- Community
- Creativity

Education and Pedagogy: Creating Access

The initial stage at which most of the participants recognize the value of OSSTA is within education. These tools lower the entry barrier to coding. Several of the participants use these tools in a pedagogical context as teachers or students. While OSSTAs are commonly used in arts education, it should be noted they are also commonly used for teaching in the engineering and science fields, including mathematics, physics, and computer science. OSSTAs are used at all levels, from K12 to university, and for independent learning outside of institutions.

The use of the OSSTAs in teaching empowers students by demonstrating that they can learn by creating. OSSTAs are helpful in demystifying hardware, software, and technology. Students feel coding is accessible to those who are not computer scientists. One of the participants said: “Increasing inclusion is a really important aspect in what I do. Part of that is making machine learning usable by people who are not machine-learning researchers, who are not computer scientists, who may or may not be coders.”

Working with OSSTAs also teaches communication as students work together, or share code with a broader community online. Creators learn not only how to code, but how to communicate around the sharing of that code, and the language of technology and programming. This is a skill that is becoming increasingly necessary as more fields come to rely on coding.

Community

These tools build an online community that later becomes networks and relationships between people. Because of the transparency behind open source and how it celebrates community, OSSTAs have the characteristic of gathering people around them. These communities provide spaces for imagination, freedom, expression, and collaboration.

Open-source software is inherently about knowledge sharing. The tools communicate key values of sharing knowledge by being inclusive, supportive, and approachable. Contributors find value in seeing others using their tools to create art. As one participant commented, “There is value that comes from being part of this community, as well as giving back to it.”

Creativity

These tools provide the means for expression in a field that is at the forefront of technology. One of the participants said, “Artists need to have a seat at the table in defining technological futures. We need to be articulating what is ethical, what is interesting, what is beautiful, and what is important about technologies.” Another commented, “Artists are not just people that paint pictures and make sculptures, they are people who are actually showing everyone else how can they rearrange the world to make it closer to the vision that they imagine.” These tools enable creators to explore possibilities and be creative in a powerful way. As one participant put it, these tools “facilitate and give people the ability to say what they need to say through technology or media.”

OSSTAs also generate culture outside of corporations’ commercial interests. Creators are able to find an audience and build community around creative expression through code. Compared to using commercial tools, creators feel they are better able to maintain ownership and preserve their own cultural artifacts, rather than relying on particular proprietary platforms and file formats to access them.

6. Futures



What are the futures we want to see?

The final full group conversation centered on the future of OSSTAs that participants would like to see. Sharon Lee De La Cruz opened the discussion with some questions and prompts:

Image description: Eight people are seated in a row in a room with large windows. A woman with curly hair, a white shirt and glasses is speaking while looking at some notes in her hand. The others are listening to her intently.

- What is the future we want to see?
- Take reality out of it as a limitation.
- What do we need to do to get there?
- What is the potential impact?
- Think about aliens.
- Think about how when we look at the stars we see the past.
- Think about the feeling of the first time your code worked.
- Think about yourself as larger than your physical self.
- Think about someone that is not yourself.
- Think about implicit bias.
- Think about building community using justice.
- Don't be overwhelmed.
- You are the future you've been waiting for.

Participants voiced these wishes for the future:

I want to see a future where open source is so attractive that it is the most obvious option.

I want work on open source to be recognized as a valuable use of our time.

I want to see a future that abolishes departments and universities and instead focuses on solving problems in which we are not so unique or strange to be hybrids.

Open source is acceptable in all societies.

I'd like to not hear about people being excluded so often and if I do, I'd like to feel we have more solutions.

I'm interested in a future where a lot of the things we laid out here in these creative-based open-source communities can cascade out to many different open-source cultures.

Exploring a new economy around open source so that contributors and creators don't feel burned out, and can devote time to this.

Open-source principles honor diverse histories, Indigenous peoples, and non-numerical data.

I'd like to see a future where more computer languages aren't in English.

Where we're not looking at single GitHub repos as the entire project, but rather a distributed network of people that have taken projects, adapted them, made them their own, and made things that may not involve producing code in any way. And consider them all as owners and authors and contributors.

When we talk to contributors we are not just implying those who write code, but also sharing ideas and moving the vision of the community forward.

I want to see a future where it's easier to know our history. I see generations of work being lost because it no longer runs.

A way for different open-source communities and projects to come together in a way that can address some of the long-term problems through things like open standards.

Where the art we make is not subject to restrictions of technology like the Twitter API.

Where open source doesn't imply uncompensated or unrecognized.

Where the distinction between user and contributor is not meaningful. I want to see this idea propagate to the world. That the users of technologies feel like they can also be contributors and makers.

Where there are lots of different tools and companies and open-source platforms that don't get monopolized by big players.

Where accessibility doesn't have to be a conversation, it's just understood.

Where people look to open source as having answers. There's a lot of embedded bias in science and I want open source to be a place where that's dismantled.



Image description: Nine people are seated around a table having a conversation. Four of their faces are visible to the camera. A woman with glasses and a black hoodie is speaking, and the others are listening to her.

Where we can continue to learn from each other and avoid making the same mistakes every time we start a new project.

Where people often make new open-source projects and when you ask them about it they say, “Well that was actually pretty straightforward and I knew what was going on.”

More tools and frameworks that help us build these tools. For people to feel there’s a lot of space in the world to make new tools.

Where as you’re building something there’s a tool that’s documenting what you’re doing and allows people to help you. A future where it’s easier to help.

Where more people are artists.

I want people to stop asking, “Is that art?”

I’d like to see our community better understand when to let things go, and how to pass the torch.

Where more funders in the arts and cultural sphere understand this community as well, and view it as an integral part of contemporary arts.

It’s equally acceptable to work for-profit and not-for-profit, and have time to do both.

Carlos Garcia: Where the culture around coding and other technical practices feels safer and acknowledges the biases that go into coding.

Where not everything comes from the same three schools.

Where the lines between artist, engineer, designer get so blurred that no one has to make the choice between what they want to be when they grow up.

Where we see a lot more people in this room who we don't see right now because we're not even aware of the tools they're building, because their communities have never talked to ours.

Where universities teach you how to run communities.

Open data and training models being more accessible.

More affordable and accessible options for education outside of our corporate US education system.

Where the street is our canvas and you don't need a commission to make public art.

In addition to more people making art, I just want to see more people making things.

The technologies that we're developing are matched by society wisdom.

Where students aren't afraid of the kinds of jobs they'll be able to get when they graduate.

Where there are a huge number of people from very diverse backgrounds starting their own practices and finding a way to exist outside of getting acquired by one of five big companies. More funding and more of a pathway for small studios to exist.

Kids have more of a voice in what they learn.

Where there is a smaller learning curve. A future where open source upends the education system so college becomes unnecessary.

A future where we can overcome communication that makes us misunderstand each other.

A future where open source is fashionable.

Technology was less shaped by big companies.

More tools that are well-made that lower barriers of entry to accessing the newly possible.

Where it feels just as good to stop working on these projects as it does to start.

What other questions should we be asking?

What should be in a code of conduct?

What are the unintended effects of our projects, good and bad?

What might a replacement to GitHub look like that supports the kind of collaboration that we'd benefit from? What are the types of social structures we could use for healthy open-source projects?

A conversation about ethics in open source.

Credits

The 2018 OSSTA Convening was a project of The Frank-Ratchye STUDIO for Creative Inquiry at Carnegie Mellon University. Please direct questions or comments to studio-info@andrew.cmu.edu.

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Image description: A collection of logos for the listed sponsors.



UCLA Design Media Arts



Participant Biographies



Image description: Approximately 30 people sitting in a wide circle, some 25 feet across, having a group conversation.

Biographies are current as of June 2018.

Aarón Montoya-Moraga (NYU ITP) co-founded Coded Escuela, a media arts school based in Santiago de Chile, where they teach introduction to programming for arts using open-source software. They contribute to the Processing Foundation and the open-source project p5.js, and released both their website and introduction to programming book in spanish. They are a contributor to the open-source project kinectron and a new media arts curator at the New Latin Wave Festival. They run the record label bandurria and co-organize frequency sweep, a sporadic experimental audiovisual performance festival.

Adelle Lin (Code Liberation; Intel) is a Creative Technologist that has lived in Asia and Australia before moving to New York. With a background in math and architectural design, she is completing her MS at NYU, focusing on the multimodal interaction problem space. She enjoys creating experiences that integrate the digital and physical in playful ways. Currently she is an Innovation Engineering Intern at Intel, working on developing applications for new technologies in wearables, machine learning and virtual/mixed realities. Combined with her personal practice, she has worked on projects for Paris Fashion Week, Intel Keynotes, Times Square, AR World Expo, Burning Man, and Maker Faire. A member of Code Liberation and NYC Resistor, she likes to use games, maker tech, and unicorns to build communities.

Andrés Colubri (Processing; Broad Institute) is a computational scientist in the Sabeti Lab at the Broad Institute, and a contributor to Processing and other open-source projects.

Andrew Bell (Cinder) is a co-founder of the design+technology studio Rare Volume. He's also the creator of Cinder, a C++ creative coding framework. Previously he worked for the ad agency The Barbarian Group, and on visual effects and interactive graphics for Adobe, Method Studios, and The Mill.

Ari Melenciano (NYU ITP) is a Brooklyn-based interdisciplinary artist, designer, creative technologist, researcher, educator, and activist, who is passionate about exploring the relationships between various forms of design and the human experience. Her research lies at the intersections of aesthetics, technology, art/design, psycho-geography, experiential design, pedagogy, geo-political activism, culture/humanities, speculative design, and imaginative uses of human-computer interaction technologies. She is currently a research resident at NYU's Interactive Telecommunications Program (ITP). She recently received her master's from NYU's ITP, where she explored the possibilities when merging art, design, technology, and engineering through creative computation, physical computing and experiential design. Her passion projects include being the founder of the creative house, bgoti; lifestyle movement, Be Gold On The Inside; building a line of experimental "neo-retro" digital analog cameras, Ojo Oro; founder and producer of the New Media Arts, Culture and Technology Festival, Afrotectopia; founder and director of Publics.School, a platform exploring experimental methods to disseminate social justice issues; founder of Justice Factory, an interactive data visualization tool for activists that was recently awarded the Processing.org Fellowship (2018) to build a data visualization platform using Processing; founder of AricianoTV, an online video tutorial channel on creative coding; and a VJ/DJ (in the duo, GVÖ), with a residency in Brooklyn, NYC.

Arturo Castro (openFrameworks) is an artist, educator, and engineer currently based in Berlin. He is one of the core developers of the open-source toolkit for artists and designers openFrameworks. Currently he works on his own and collaborates with other artists and technologists on projects usually in the field of interactive installations. His main interests are related with open-source culture in the context of artistic practices and technology literacy and his work has been exhibited in museums like Maison d'Ailleurs in Switzerland, the London Design Museum, and Moscow's Multimedia Art Museum, among others.

Carlos 'L05' Garcia (Complex Movements; UCLA) is an artist, performer, designer, and engineer. He has performed and exhibited work individually and as part of award-winning Detroit-based artist collective Complex Movements. L05 is a vocalist and producer in hip hop/electronic duo Celsius Electronics and a co-founder of the Branch Out Collective. He led creative research and design at the University of Michigan's Duderstadt Center from 2012 to 2017, where he managed the GroundWorks Media Lab. L05 is a member of UCLA's Design | Media Arts MFA class of 2019. L05 is a 2019 United States Artists Fellow, 2019 Eyeo Festival Curatorial Fellow, 2016 Kresge Artist Fellow, and 2013 Creative Capital Grantee.

Christopher Baker (School of the Art Institute of Chicago) is an artist whose work engages the rich collection of social, technological, and ideological networks present in the urban landscape. He creates artifacts and situations that reveal and generate relationships within and between these networks. Christopher's work has been presented in festivals, galleries and museums in the US including The Soap Factory (Minneapolis), the Plains Art Museum (Fargo, ND), the Center for Book Art (New York, NY), and the Visual Studies Workshop (Rochester, NY), and internationally in venues including Laboral (Gijón, Spain), Museum of Communication (Bern, Switzerland), Casino Luxembourg – Forum d'art contemporain (Luxembourg), Centro di Cultura Contemporanea Strozzina (Florence, Italy), as well as venues in France, Finland, Hungary, Denmark, Australia, the UK, and Canada. Christopher's work has recently been seen in ID Magazine, Sculpture Magazine,

Exposure, MAS CONTEXT, and the critically acclaimed Data Flow: Visualising Information in Graphic Design series. Since completing a Master of Fine Arts in Experimental and Media Arts at the University of Minnesota, Baker has held visiting artist positions at Kitchen Budapest, an experimental media lab in Hungary, and Minneapolis College of Art and Design. He is currently an Assistant Professor in the Art and Technology Studies department at the School of the Art Institute of Chicago.

Chris Barr (The Knight Foundation) joined Knight Foundation in July 2012. He manages the Prototype Fund, a program dedicated to research and development for early-stage media and information projects. With a background in design and new media, Barr previously served as an assistant professor of graphic design at West Virginia University. He has worked as a designer for a variety of organizations to combine technology development and design thinking. Barr holds a Master of Fine Arts in media study from the State University of New York at Buffalo and a bachelor's degree in fine art from West Virginia University.

Chris Coleman (University of Denver EDP) has research interests that include control systems, chaos and order, digital interaction, physical interaction, borders, animation, appropriation, technological decay, art as activism, audio/video manipulation, systems in nature, and object creation. He received his B.F.A. in sculpture at West Virginia University where he also spent a number of years studying Mechanical Engineering. His M.F.A. was earned at SUNY Buffalo specializing in Interactivity and Real-Space Electronics. He teaches interactive programming in Processing and OpenFrameworks, tangible and mobile interface experimentation, and motion design. More may be found at Chris's personal website (www.digitalcoleman.com) and his course website (professor.digitalcoleman.com).

Dan Shiffman (Processing Foundation; NYU ITP) works as an Associate Arts Professor at the Interactive Telecommunications Program at NYU's Tisch School of the Arts. Originally from Baltimore, Daniel received a BA in Mathematics and Philosophy from Yale University and a Master's Degree from the ITP. He is a director of The Processing Foundation and develops tutorials, examples, and libraries for Processing and p5.js. He is the author of *Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction* and *The Nature of Code* (self-published via Kickstarter), an open source book about simulating natural phenomenon in Processing. He can be found talking incessantly on YouTube about programming.

David Lublin (HAP Codec; Vidvox VDMX) is a co-owner and developer at VIDVOX, a leader in show design, real-time visuals software and open source specifications. As the managing partner of the company he oversees product development for apps and technologies such as VDMX, HAP and ISF. David is also the lead project manager for the recently launched VIDVOX Labs, a new division of the company dedicated to consulting, collaborations and strategic partnerships with other companies.

Dorothy R. Santos (Processing Foundation; REFRESH) is a Filipina American writer, curator, and researcher whose academic interests include digital art, computational media, and biotechnology. Born and raised in San Francisco, California, she holds Bachelor's degrees in Philosophy and Psychology from the University of San Francisco and received her Master's degree in Visual and Critical Studies at the California College of the Arts. She is currently a Ph.D. student in Film and Digital Media at the University of California, Santa Cruz as a Eugene V. Cota-Robles fellow. Her work appears in art21, Art Practical, Rhizome, Hyperallergic, Ars Technica, Vice Motherboard, and SF MOMA's Open Space. Her essay "Materiality to Machines: Manufacturing the Organic and Hypotheses for Future Imaginings," was published in *The Routledge Companion to Biology in Art and Architecture*. She serves as a co-curator for REFRESH, a curatorial collective in partnership with Eyebeam, the program manager for the Processing Foundation, and host for the podcast PRNT SCRIN produced by Art Practical.

Golan Levin (Frank-Ratchye STUDIO for Creative Inquiry at CMU) is an artist, engineer, and educator interested in the exploration of new modes of reactive expression. His work focuses on the design of systems for the creation, manipulation, and performance of simultaneous image and sound, as part of a more general inquiry into formal languages of interactivity, and of nonverbal communications protocols in cybernetic systems. Through performances, digital artifacts, and virtual environments, Levin applies creative twists to digital technologies that highlight our relationship with machines, make visible our ways of interacting with each other, and explore the intersection of abstract communication and interactivity. Presently he is Professor of Electronic Art and, since 2009, Director of the Frank-Ratchye STUDIO for Creative Inquiry at Carnegie Mellon University, Pittsburgh.

Irene Alvarado (Tensorflow.js; Google Creative Lab) is a UX designer and creative technologist based in NYC. She investigates spaces where design, visualization, storytelling, and computation overlap, and uses a combination of design thinking and technical expertise to create interactive experiences and data visualization projects. She recently completed a master in Human Computer Interaction and Emerging Media at Carnegie Mellon University and is now a Creative Technologist at Google Creative Lab.

Jax Deluca (National Endowment for the Arts) was appointed to the position of Media Arts Director at the National Endowment for the Arts (NEA) in January 2016. In this position, she oversees the NEA's grant portfolio and field-building resources for arts organizations across the country working in film, video, audio, immersive technology, and other emerging media forms. Her field experience includes twelve years working at the intersection of arts and community-building as an artist, non-profit administrator, and educator. Prior to joining the NEA, she was the executive director of Squeaky Wheel Film & Media Art Center (Buffalo, NY), an adjunct media arts professor at Buffalo State College, State University of New York, and a supporter of the Western New York arts and cultural sector as a board member of the Arts Services Initiative of Western New York and the Greater Buffalo Cultural Alliance.

Kate Compton (Tracery). PhD student in expressive AI, creating tools for casual users to create expressive AIs (created tools: tracery, bottery and more)

Kate Hollenbach (p5.js; independent artist) is an artist, programmer, and educator based in Chicago, Illinois, and Los Angeles, California. She develops and examines interactive systems and new technologies relating body, gesture, and physical space. Her recent work includes *phonelovesyoutoo*, an Android application that lovingly watches its user's activities by capturing video from the phone's front camera, back camera, and screen. Through the application, Kate generates video works to understand what mobile devices see when they observe human bodies and how human presence is split between physical and virtual planes. Her art practice is informed by years of professional experience and as an interface designer and product developer. Formerly Director of Design and Computation at Oblong Industries, she led an interdisciplinary team of designers and programmers to develop cutting-edge user experiences for collaborative environments and new interaction models for gestural devices. She oversaw the design of *Mezzanine*, the company's flagship product. *Mezzanine* is in use today by clients including IBM, Accenture, CBRE, and Sonos. Kate holds an MFA from UCLA Design Media Arts and a B.Sc. in Computer Science and Engineering from MIT. Kate is currently teaching interactive media design and programming courses at DePaul University School of Design in the College of Computing and Digital Media.

Kyle McDonald (Independent artist) is an artist working with code. He is a contributor to open-source arts-engineering toolkits like *openFrameworks*, and builds tools that allow artists to use new algorithms in creative ways. He has a habit of sharing ideas and projects in public before they're completed. He creatively subverts networked communication and computation, explores glitch and systemic bias, and extends these concepts to reversal of everything from

identity to relationships. Kyle has been an adjunct professor at NYU's ITP, and a member of F.A.T. Lab, community manager for openFrameworks, and artist in residence at STUDIO for Creative Inquiry at Carnegie Mellon, as well as YCAM in Japan. His work is commissioned by and shown at exhibitions and festivals around the world, including: NTT ICC, Ars Electronica, Sonar/OFFF, Eyebeam, Anyang Public Art Project, Cinekid, CLICK Festival, NODE Festival, and many others. He frequently leads workshops exploring computer vision and interaction.

Lauren Lee McCarthy (p5.js, Processing Foundation, UCLA) is an LA-based artist examining social relationships in the midst of surveillance, automation, and algorithmic living. She is the creator of p5.js, an open-source programming language with over 1.5 million users, for learning creative expression through code online. She is Co-Director of the Processing Foundation, a non-profit whose mission is to promote software literacy within the visual arts, and visual literacy within technology-related fields—and to make these fields accessible to diverse communities. She is an Assistant Professor at UCLA Design Media Arts. Lauren's work has been exhibited internationally, at places such as Ars Electronica, Barbican Centre, Fotomuseum Winterthur, SIGGRAPH, Onassis Cultural Center, IDFA DocLab, Science Gallery Dublin, Seoul Mediacity Biennale at the Seoul Museum of Art, and the Japan Media Arts Festival, and she has worked on installations for the London Eye, the US Holocaust Memorial Museum, and the Lincoln Center for Performing Arts. She is a 2019 Creative Capital Grantee, ZERO1 Arts Incubator Resident, was a Sundance Institute Fellow, Eyebeam Resident, and has been in residency at CMU STUDIO for Creative Inquiry, Autodesk, NYU ITP, and Ars Electronica / QUT TRANSMIT³. She is the recipient of grants from the Knight Foundation, the Online News Association, Mozilla Foundation, Google AMI, Sundance Institute New Frontiers Labs, Turner Broadcasting, and Rhizome. She holds an MFA from UCLA and a BS Computer Science and BS Art and Design from MIT.

R. Luke DuBois (NYU Integrated Digital Media) is a composer, artist, and performer who explores the temporal, verbal, and visual structures of cultural and personal ephemera. He holds a doctorate in music composition from Columbia University, and has lectured and taught worldwide on interactive sound and video performance. He has collaborated on interactive performance, installation, and music production work with many artists and organizations including Toni Dove, Todd Reynolds, Jamie Jewett, Bora Yoon, Michael Joaquin Grey, Matthew Ritchie, Elliott Sharp, Michael Gordon, Maya Lin, Bang on a Can, Engine 27, Harvestworks, and LEMUR, and was the director of the Princeton Laptop Orchestra for its 2007 season. Stemming from his investigations of "time-lapse phonography," his work is a sonic and encyclopedic relative to time-lapse photography. Just as a long camera exposure fuses motion into a single image, his projects reveal the average sonority, visual language, and vocabulary in music, film, text, or cultural information. DuBois' work and writing has appeared in print and online in the New York Times, National Geographic, and Esquire Magazine, and he was an invited speaker at the 2016 TED Conference. A major survey of his work, NOW, received its premiere at the Ringling Museum of Art in 2014, with a catalogue published by Scala Art & Heritage Publishers. An active visual and musical collaborator, DuBois is the co-author of Jitter, a software suite for the real-time manipulation of matrix data developed by San Francisco-based software company Cycling'74. DuBois has lived for the last 22 years in New York City. He is the director of the Brooklyn Experimental Media Center at the NYU Tandon School of Engineering, and is on the Board of Directors of the ISSUE Project Room. His records are available on Caipirinha/Sire, Liquid Sky, C74, and Cantaloupe Music. His artwork is represented by bitforms gallery in New York City.

Mathura Govindarajan (NYU ITP) is currently a creative technologist in Bangalore, India. "Creative Technologist? What is that?" Mathura likes to look at ways we can use technology creatively in the fields of art and, more importantly, education. She was a fellow and graduate student at New York University, in the Interactive telecommunication Program. She completed her undergraduate studies from National Institute of Technology, Surathkal, India in Electronics and Communication Engineering. Her interests in the four years there took her from working on signal

processing to theatre productions. Her current interests revolve around education, developing accessible software, fabrication, coffee, and messing around with physical computing. Overall, she is very enthusiastic when it comes to learning new things. More so, she's always looking out for things that help me bridge the gap between art, science and technology.

Omayeli Arenyeka (Recurse Center) is an artist and technologist from Nigeria currently working at LinkedIn as a Software Engineer. She graduated from New York University in 2017 with an individualized degree in Computer Science, Art and Design. She has previously worked at Siberia, and Control Group / Intersection. She is an alum of Recurse Center, School of Poetic Computation, Tech@NYU, Code2040, and data.4.change.

Dr. Rebecca Fiebrink (Wekinator; Goldsmiths College of London) is a Reader at the UAL Creative Computing Institute, where she designs new ways for humans to interact with computers in creative practice. Fiebrink is the developer of the Wekinator, open-source software for real-time machine, and she is the creator of a MOOC titled "Machine Learning for Artists and Musicians." Much of her work is driven by a belief in the importance of inclusion, participation, and accessibility: she works frequently with human-centred and participatory design processes. Current and recent projects include creating new accessible technologies with people with disabilities, designing inclusive machine learning curricula and tools, and applying participatory design methodologies in the digital humanities.

Ricardo Cabello (Three.js) is a self-taught computer-graphics programmer. Originally from Barcelona, he began his professional career alternating between roles as a designer and developer. In his spare time, his involvement in the demoscene set him on the path to learning graphics programming. Combining his background as a designer and expertise in development, his work ranges from simple interactive digital toys — Google Gravity, Ball Pool and Harmony — to full featured experiences — The Johnny Cash Project, The Wilderness Downtown and ROME. Nowadays, Ricardo spends most of his time developing open source libraries and tools — three.js, frame.js and stats.js — with the aim of making design and development simpler for everyone.

Sarah Metz (National Endowment for the Arts) is Division Coordinator, Visual Arts Division at the National Endowment for the Arts.

Sharon De La Cruz (Princeton StudioLab) is a multi-disciplinary artist and activist from New York City. Her thought-provoking pieces address a range of issues related to tech, social justice, sexuality, and race. De La Cruz's work ranges from comics, graffiti, and public-art murals to more recent explorations in interactive sculptures, animation, and coding. She graduated with a BFA from Cooper Union and a MPS from NYU-ITP. She is the recipient of a Fulbright Fellowship, Processing Foundation Fellowship, and a Tin House Summer Workshop participant.

Sinan Ascioğlu (OpenProcessing) is a UX and product designer, specializing in startups and brands with dynamic products and data visualization. Sinan is the creator of OpenProcessing.org, a site that lets students code, share work, and submit assignments in one, collaborative environment, and gives everyone, including teachers, a home to showcase their projects.

Taeyoon Choi (School for Poetic Computation; Processing Foundation) is an artist and a co-founder of School for Poetic Computation. In 2019, Taeyoon is working on Distributed Web of Care and ongoing research with a critical perspective towards technology, ethics, justice and sensitivity to the concept of personhood.

Tega Brain (NYU Integrated Digital Media) is an Australian-born artist and environmental engineer, making eccentric engineering. Her work explores the politics of data and how environments are abstracted, represented, and managed. It takes the form of online interventions,

site-specific public works, experimental infrastructures, and poetic information systems. She has recently exhibited at the Guangzhou Triennial, the Haus der Kulturen der Welt in Berlin, the New Museum, NYC and the Science Gallery in Dublin. Her work has been widely discussed in the press including in the New York Times, Art in America, The Atlantic, NPR, Al Jazeera, and The Guardian, and in art and technology blogs like the Creators Project and Creative Applications. She has given talks and workshops at museums and festivals like EYEO, TedxSydney, and the Haus der Kulturen der Welt. Tega is an Assistant Professor of Integrated Digital Media, New York University. She works with the Processing Foundation on the Learning to Teach conference series and the p5.js project. She has been awarded residencies and fellowships at Data & Society, Eyebeam, GASP Public Art Park, the Environmental Health Clinic, and the Australia Council for the Arts.

Theo Watson (openFrameworks; DesignIO) is an artist, designer, and experimenter whose work is born out of the curiosity and excitement of designing experiences that come alive and invite people to play. Theodore's work ranges from creating new tools for artistic expression, experimental musical systems, to immersive, interactive environments with full-body interaction. His recent work includes the Eyewriter, an eye-controlled drawing tool, Graffiti Research Lab's Laser Tag laser graffiti system, and Funky Forest, an immersive interactive ecosystem for young children. Theodore works together with Zachary Lieberman and Arturo Castro on openFrameworks, which is an open-source library for writing creative code in C++. Theodore Watson's work has been shown at MoMA, Tate Modern, Ars Electronica, The Sundance Film Festival, Res Fest, REMF, Cinekid, Montevideo, OFFF, SHIFT, ICHIM, The Creators Series, Deitch Projects, Eyebeam, Pixel Gallery, Museum N8 Amsterdam. In 2010 the Eyewriter project won the Future Everything award and the Design of The Year award for the interactive category. Theodore Watson is founder of two interactive studios Design I/O LLC and YesYesNo LLC.

Zach Lieberman (openFrameworks; School for Poetic Computation) is an artist, researcher, hacker dedicated to exploring new modes of expression and play. He loves to make things. He develops and is one of the co-founders of openframeworks, a c++ library for creative coding. He is working on the eyewriter project, a low-cost, open-source hardware and software toolkit that helps people draw with their eyes. This semester he is teaching a course about the eyewriter at Parsons School of Design. A few performances / installations with buildings created by yesyesno, a company he co-founded: Night Lights and Lights On I've worked with a great magician, Marco Tempest, developing new tricks: AR Magic 1.0 and Magic Projection 1.0. A few years back he also worked with Mago Julian, making opensourcery, a performance that mixed software and close magic. Zach also worked on the IQ font, a project where a stunt driver drives a typeface. He's one of the developers of rhonda, a 3d drawing tool that helps people sketch ideas simply in 3d. See also sonic wire sculptor, it's musical cousin. He's also helping with the development of Jigazo, a reconfigurable jigsaw puzzle.

Supporting Organizations

The John S. and James L. Knight Foundation

The Knight Foundation is a national foundation with strong local roots. We invest in journalism, in the arts, and in the success of cities where brothers John S. and James L. Knight once published newspapers. Our goal is to foster informed and engaged communities, which we believe are essential for a healthy democracy. <https://knightfoundation.org/>

The National Endowment for the Arts | Media Arts

Established by Congress in 1965, the NEA is the independent federal agency whose funding and support gives Americans the opportunity to participate in the arts, exercise their imaginations, and develop their creative capacities. Through partnerships with state arts agencies, local leaders, other federal agencies, and the philanthropic sector, the NEA supports arts learning, affirms and celebrates America's rich and diverse cultural heritage, and extends its work to promote equal access to the arts in every community across America. At the National Endowment for the Arts, media arts includes screen-based projects presented via film, television, radio, audio, video, the Internet, interactive and mobile technologies, video games, transmedia storytelling, and satellite as well as media-related printed books, catalogues, and journals. <https://www.arts.gov/>

The Frank-Ratchye STUDIO for Creative Inquiry at Carnegie Mellon University

The Frank-Ratchye STUDIO for Creative Inquiry at Carnegie Mellon University is a laboratory for atypical, anti-disciplinary, and inter-institutional research at the intersections of arts, science, technology and culture. Founded in 1989 within the College of Fine Arts at Carnegie Mellon University (CMU), the STUDIO serves as a locus for hybrid enterprises on the CMU campus, the Pittsburgh region, and internationally. Our current emphasis on new-media arts builds on more than two decades of experience hosting interdisciplinary artists in an environment enriched by world-class science and engineering departments. Through our residencies and outreach programs, the STUDIO provides opportunities for learning, dialogue and research that lead to innovative breakthroughs, new policies, and the redefinition of the role of artists in a quickly changing world. <https://studioforcreativeinquiry.org/>

UCLA Department of Design | Media Arts

The UCLA Department of Design Media Arts (DMA) offers a comprehensive, multidisciplinary approach to media creation that fosters individual exploration and innovative thinking. Within the context of the department, design is a process and way of thinking, and media arts foreground experimental media creation. The results emerge in and on books, galleries, game consoles, installations, films, magazines, performances, public spaces, televisions, and websites. We strive to create socially and culturally relevant objects, experiences, and spaces. <http://dma.ucla.edu/>

NYU Tandon School of Engineering, Integrated Digital Media

The Integrated Digital Media (IDM) Program is a place that fosters creative practice, design research and multidisciplinary experimentation with emerging media technologies. As a research-active program within NYU Tandon School of Engineering, IDM faculty collaborate in research that integrates digital media and society. Our projects range from using motion capture technology to reimagine theatrical performance, to developing novel uses of virtual/augmented reality for health and wellness, to the integration of STEAM learning into special needs education, to the development of citizen science tools to empower NYC residents to monitor and report on noise pollution in their communities, to helping NASA JPL develop next-generation user interfaces for space exploration, to assisting with the search and visualization of the historical record of New York City. Our faculty include leading artists, designers, developers and performers who

passionately engage in professional work and research at the intersection of engineering and creative practice. <http://idm.engineering.nyu.edu/>

NYU Tisch School of the Arts, Interactive Telecommunications Program

ITP is a two-year graduate program located in the Tisch School of the Arts whose mission is to explore the imaginative use of communications technologies — how they might augment, improve, and bring delight and art into people’s lives. Perhaps the best way to describe us is as a Center for the Recently Possible. <https://tisch.nyu.edu/itp>

University of Denver Emergent Digital Practices

The Emergent Digital Practices program brings together art, design, media, culture and technology studies in a hands-on, collaborative environment. Technology links academic disciplines with professional fields and joins shared communities with our personal lives in many new and exciting ways. To understand and explore this landscape, we infuse the digital practices of making and writing with contemporary critical approaches to cultural technologies, media philosophy, the critique and investigation of electronic and new media arts, and studies in science fiction, trans-global politics and science. <https://www.du.edu/ahss/edp/>

Princeton University StudioLab

The StudioLab is a versatile, welcoming, and engaging space for collaboration and creation across the disciplines. The CST developed the StudioLab to bring together students, faculty, and staff, independent of area of concentration, to explore the intersections and shared creativity across STEM, the arts, humanities, and social sciences, contributing to CST’s efforts to broaden intellectual experiences and perspectives, inspire new synergies, and cultivate creativity. The space features motion capture, virtual reality, theater lighting, sound system, dance flooring, robots, 3D printing, conductive fabric and sewing, laser cutting, CNC milling, electronics, computers, building, and more. Programmatic initiatives include courses, labs, studios, student projects, student-led and staff-led activities and workshops, open creative hours, and thematic “hackathons” on social justice topics. These initiatives advance engagement and diversify participation within and across the disciplines, and offer new opportunities to create community. <https://cst.princeton.edu/studiolab>

Google Creative Lab

Google Creative Lab is a group of interdisciplinary thinkers and doers. We are designers, writers, business leaders, filmmakers, animators, producers, creative technologists, and much more. We are a small team that pushes for an impact that outweighs our footprint.

Processing Foundation

Our mission is to promote software literacy within the visual arts, and visual literacy within technology-related fields — and to make these fields accessible to diverse communities. Our goal is to empower people of all interests and backgrounds to learn how to program and make creative work with code, especially those who might not otherwise have access to these tools and resources. We do this by developing and distributing a group of related software projects, which includes Processing (Java), p5.js (JavaScript), and Processing.py (Python), and facilitating partnerships and collaborations with allied organizations and individuals, to build a more diverse community around software and the arts. <https://processingfoundation.org/>

Eyeo Festival

The Eyeo Festival brings together a rich intersection of people doing fascinating things with technology. Artists, data designers, creative coders, AI explorers, storytellers, researchers, technology & platform developers all cross paths and share inspiration. <http://eyeofestival.com/>

Convening Information Packet

This appendix contains the information packet that was given to convening participants.

Open-Source Software Tools for the Arts (#OSSTA)
Convening Information Packet • June 2-3, 2018 • Minneapolis

Contents
Key Contacts
Overview
Venue, Dates and Times
Agenda / Schedule
Code of Conduct
Other Policies for the #OSSTA Convening

Key Contacts

Tom Hughes is the Associate Director of the Frank-Ratchye STUDIO for Creative Inquiry at CMU, and is the Production Manager for the #OSSTA Convening. Please speak with Tom if you have a question about logistics.

Linda Hager is the Business Manager of the Frank-Ratchye STUDIO for Creative Inquiry at CMU. Contact Linda if you have a question about finances. Linda will not be present in Minneapolis.

Golan Levin & Lauren Lee McCarthy. Golan (Professor of Art, and Director of the Frank-Ratchye STUDIO for Creative Inquiry, CMU) and Lauren (Assistant Professor of Design / Media Arts, UCLA, and founder, p5.js) are the Principal Investigators of the #OSSTA Convening. Please speak with Golan and/or Lauren if you have a question about the program content.

Overview

You have been invited to participate in a unique event: a Convening on Open-Source Software Toolkits for the Arts (#OSSTA), which will take place in Minneapolis on the weekend before the 2018 Eyeo Festival. The purpose of this event is to bring together leaders in the open-source arts community who are interested in having an in-depth conversation around the challenges and opportunities facing these platforms—specifically regarding sustainability, funding, growth, management, diversity, and community building. This gathering has been organized by Golan Levin and Lauren McCarthy, and is made possible by a grant from The Knight Foundation.

What is this exactly?

This is a one-day ‘unconference’, populated by fellow founders, maintainers, and contributors of open-source arts-engineering tools such as Processing, p5.js, openFrameworks, Cinder, three.js, and more. Officers from The Knight Foundation and the National Endowment for the Arts (NEA) will also be in the room, as well as a handful of other volunteers and support staff. Experts in the management of arts organizations and open-source communities will help direct group discussions and breakout sessions, in order to make the absolute most of your time.

We (the organizers) will work to synthesize findings from this convening into a report of key insights. This report will be published to a wide network, with the goal of generating new opportunities for recognizing and supporting your work in this field. We hope that this report will be a document that you can use to help explain the value of what you do.

What will I be expected to contribute?

We invite you to be a part of an open conversation and to freely express your opinions. The organizers will take on the task of documenting the conversation, and producing a final report.

What's the point of this report?

For those not familiar, these types of convenings are common for national funders. It's how big foundations stay up-to-date on what elements are pushing a field forward. It gives them a direct understanding of social needs, and helps guide their funding priorities. The point of the report we will produce is to amplify the message (generated during this event) about the value and impact of open-source, artist-generated tools—and to make a case for future funding opportunities, resources, and/or modes of support. The report we produce will not be the end of this conversation.

What will I get out of participating?

You'll get to share questions, ideas, solutions, and best practices with your peers. You'll have the ear of major stakeholders who are interested in understanding your challenges. You'll have the opportunity to contribute key insights to a smartly-written report (amplified by two important national funders) that articulates the value of what you're doing.

Venue, Dates, and Times

The #OSSTA Convening takes place just prior to the 2018 Eyeo Festival: from 6pm-9pm on the evening of Saturday, June 2, 2018, and from 9am-6pm on Sunday, June 3, 2018

We will provide dinner on Saturday, and breakfast and lunch on Sunday. Vegetarian and vegan options will be available.

Our convening takes place at Mill City Museum, located in downtown Minneapolis on the west bank of the Mississippi River, near the corner of Park Avenue and South 2nd Street.

By light rail, Mill City Museum is accessible from the Blue and Green Lines via the U.S. Bank Stadium Station: walk west 1/2 block to Park Avenue, then north on Park Avenue for 4 short blocks. By bus, Mill City Museum is serviced by Metro Transit bus #22, which runs on Washington Avenue, one block southwest of the museum. Mill City Museum does not have its own parking lot, but nearby parking options include Mill Quarter Ramp (711 South 2nd St.), and Riverfront Municipal Ramp (212 9th Ave S).

Agenda / Schedule

Saturday June 2 • Mill City Museum, Minneapolis

6:00-6:30pm	Introductions
6:30-9:00pm	Welcome Dinner
9:00pm+	Homework

Sunday June 3 • Mill City Museum, Minneapolis

9:00-9:30	Arrival & Breakfast
9:30-9:45	Welcome (Golan Levin; Lauren McCarthy)
9:45-10:00	Refresher introductions (speed round)
10:00-10:15 [15m]	Opening thoughts (Taeyoon Choi)
10:15-11:15 [60m]	Conversation 1: What are the biggest challenges in #OSSTA?
11:15-12:15 [60m]	Conversation 2: FLOSS growth + management (devops, planning) Topic introduction by Lauren McCarthy [3m]; Discussion (see Notices)

12:15-1:30 [60m]	Lunch Break and sticker exchange
1:30-2:30 [60m]	Conversation 3: Community building, diversity, and inclusion Topic introduction by Carlos Garcia [5m]; Discussion (see Notices) How can we better scaffold users to become contributors?

2:30-3:30 [60m]	Conversation 4: Funding + sustainability Topic introduction by Tom Hughes [5m]; Discussion (see Notices)
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3:30-3:50 [20m]	Coffee Break and group photo
3:50-4:30 [40m]	Conversation 5: How do we describe what we do, and its value? Topic introduction by Golan Levin [3m]

Discussion: What is the mission statement for your software toolkit? Why is our work important? What is the current impact of what we do? What are the risks if these challenges aren't addressed? What is the potential impact or loss if your user communities are not supported?

4:30-5:30 [60m]	Conversation 6: What is the future we want to see? (Discussion: Take reality out as a limitation. Then, what do we need to do to get there? What is the potential impact if our limitations are removed?)
5:30-6:00 [30m]	Closing thoughts (Dorothy Santos; Jax Deluca)
6:00pm+	We have no formal plans for dinner and/or drinks on Sunday evening.

Notes:

Discussions for Conversations #2, #3, and #4 are structured around a common set of questions—which boil down to: what are you good at, what are you bad at, what do you need, what are you worried about, and what are you excited about?

We recommend that breakout groups discussing Conversations #2, #3, and #4 adhere to the following structure:

- What are the vulnerabilities or deficits within your #OSSTA community?
- What skills, knowledge, or resources would help address these challenges?
- What are some tactics that are already being employed within a particular #OSSTA community that could be adopted by others? Share what has worked and what hasn't, and try to define some best practices.
- Where is there untapped potential? Thinking about your strengths, is there some aspect of your toolkit or your network of users/developers that could be leveraged to improve this issue? What would you need to make this happen?

Code of Conduct

We ask that you kindly read and agree to the following Code of Conduct:

We are committed to providing an inclusive experience that is free of harassment and intimidation for all participants—regardless of gender identity and expression, age, sexual orientation, disability, physical appearance, body size, race, ethnicity, nationality, religion (or lack thereof), or technology choices. We will not tolerate any form of harassment and/or discriminatory, oppressive, suppressive, or violent behavior. Harassment may include, but is not limited to, offensive verbal comments, deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption, inappropriate or non-consensual physical contact, unwelcome sexual attention, and/or refusing to accept the limits or boundaries set by another participant. We further define suppressive behavior as any sort of communication that stifles or belittles another. Participants asked to stop any behavior are expected to comply immediately. This code applies to everyone. If you have any concerns, we encourage you to speak up, say something, and/or contact a member of the organization staff immediately.

Other Policies for the OSSTA Convening

In addition to the Code of Conduct above, we ask you to please review and comply with the following policies that are specific to the #OSSTA Convening:

Using Devices During Discussion Sessions

The purpose of this Convening is to have a conversation! We ask you to please avoid using your phones and/or computers during meeting sessions, unless the use of these devices is specifically required for a group task.

Tweeting Things You’ve Overheard

This is a small community. We are gathering, privately, to discuss common challenges. Your peers may choose to express things here, which they might not feel comfortable saying in more public contexts. For this reason, if you must tweet during this event, we ask you to please exercise good judgement. If you post something you have overheard, we ask you to please not attribute the remark to that speaker without their permission. We expressly ask you to refrain from “subtweeting” (tweeting about an individual without naming them).

Discussing this Event with Others

This Convening is a private meeting, organized in a compressed timeframe without a public call, with participation by invitation only. We have done our best, within the limits of time, logistics, available funds, and our own abilities, to gather an amazing group of participants whom we feel could productively contribute to our conversation and the forthcoming #OSSTA report. But we can all imagine how someone, somewhere, might become upset that they weren’t invited. We ask you to please be particularly conscientious in mentioning this event publicly, especially to persons who might feel (deservedly or not) that they really ought to have been invited. We recognize that there are many more toolkits, contributors, and perspectives than those represented by this one convening. We see this as a conversation that can hopefully spark many others and contribute to an ongoing dialogue.

The Frank-Ratchye
STUDIO
for Creative Inquiry

