

Workshop Report

Defining the Scholarly Commons - Reimagining Research Communication. Report of Force11 SCWG Workshop, Madrid, Spain, February 25-27, 2016

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Abstract

Background

'Today's dominant modes and models of scholarly communication stem from 350 years of tradition around scholarly and scientific dissemination through printed materials. As has been often noted, current forms of electronic communications recapitulate these practices

and perpetuate the reward systems built around them. Too often, scholars are unaware of the origins of current practices and accept the status quo because "that's how it's done". But what if we could start over? What if we had computers, an internet, search engines and social media, but no legacy of journals, articles, books, review systems etc.? How would we be acting as scholars to communicate our research and put it to maximum use? What would consumers of this scholarship expect? To what extent is the promise of new modes of communication enabled by 21st century technology fostered or held back by these traditions?

New information

The first workshop of the Force11 Scholarly Commons Working Group, held in Madrid on February 26-27, 2016, aimed to answer these questions. The workshop brought together experts and new voices across disciplines and countries in a lively format to rethink scholarly communication from scratch. Through this exercise, we began defining principles that should govern the production, dissemination and flow of scholarly objects within what we are calling the 'Scholarly Commons'. Here, we report on both the workshop process, with emphasis on the role of facilitation and visualization, the workshop outcomes and the future plans of the Scholarly Commons Working Group.

Keywords

scholarly communication, research communication, scholarly commons, workshop, visualization, principles

Date and place

The workshop was held at the Hotel Emperador, Madrid, Spain, February 25-27 2016.

List of participants

For this workshop we brought together 50 people from across the globe (Table 1). In inviting attendees, we aimed for balance between experts, early career researchers and new voices across disciplines and countries. We believe that in order to be relevant and impactful, multiple communities and perspectives must inform the vision we'll be presenting. Fig. 1 shows the distribution of current invitees across various demographic characteristics.

Table 1.

Workshop attendees (name and organization)

NAME	ORGANIZATION
Adam Ferguson	University of California San Francisco (UCSF)
Alexander Garcia Castro	Universidad Polytechnica Madrid
April Clyburne-Sherin	Hospital for Sick Children Toronto
Bastian Greshake	University of Frankfurt am Main, OpenSNP
Bethany Nowviskie	Digital Library Federation
Bianca Kramer	Utrecht University
Brooke Rosenzweig	Helmsley Foundation
Carole Goble	University of Manchester
Célya Gruson-Daniel	Centre Virchow-Villermé Paris-Berlin, HackYourPhD
Chris Chapman	Pentandra
Daniel Huerlimann	Universität Zürich
Daniel O'Donnell	University of Lethbridge
Fiona Murphy	independent
Genevieve Gebhart	University of Washington
Heather Joseph	Scholarly Publishing and Academic Resources Coalition (SPARC)
Herbert van de Sompel	Los Alamos National Library
Ian Bruno	Cambridge Crystallographic Data Centre (CCDC)
Iara Vidal	Instituto Brasileiro de Informação em Ciência e Tecnologia
Jan Velterop	ScienceOpen, JONAS, Elixir
Jennifer Lin	Crossref
Jenny Molloy	ContentMine
Jeroen Bosman	Utrecht University
Josh Nicholson	The Winnower
Katherine Skinner	Educopia Institute
Larry Hunter	University of Colorado School of Medicine.
Leslie Chan	University of Toronto
Liz Allen	F1000
Lorraine Chuen	Studio [Y], MaRS Discovery District; OOO Canada Research District

Martin Paul Eve	Birkbeck, University of London
Maryann Martone	University of California San Diego (UCSD); Hypothesis
Michelle Willmers	University of Cape Town
Neil Christensen	Collabra; University of California Press
Olga Giraldo	Universidad Polytechnica de Madrid
Osman Aldirdiri	International Federation of Medical Students' Associations (IMFSA)
Phil Bourne	National Institutes of Health
Renata Aquino Ribeiro	Federal University of Ceará
Robin Champieux	Oregon Health & Science University (OHSU)
Roshan Karn	Tribhuvan University; Open Access Nepal
Sarah Callaghan	Science and Technology Facilities Council (STFC)
Slobodan Radicev	University of Rome "Tor Vergata"; University of Novi Sad
Stefan Tanaka	University of California San Diego (UCSD)
Stephanie Hagstrom	University of California San Diego (UCSD)
Suhrob Niyozov	Institute of Entrepreneurship & Service of Tadjikistan; ICT4D
Thomas Hervé Mboa Nkoudou	Université de Yaounde
Veronique Kiermer	Public Library of Science (PLOS)
Yantisa Akhadi	Humanitarian Open Streetmap Team

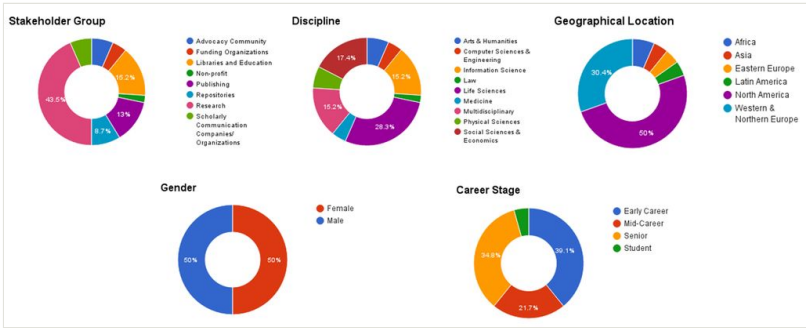


Figure 1.
Demographic breakdown of workshop attendees

We acknowledge a high representation of participants from North America and Western Europe. This partly reflects the size of research communities in these regions, but also the fact that this project has a US funder and a largely North American/Western European organizing committee, with the accompanying bias in our networks, and the difficulty in

reaching people from some countries/regions. Many workshop participants do, however, have an explicit focus on, and network in, non-Western countries.

Introduction

On Feb 26-27, 2016, 50 individuals from across academic disciplines, career stages and continents gathered in Madrid to [re-imagine scholarly communication](#). The workshop was hosted by [FORCE11](#): the grass-roots community that started in 2011 as 'Beyond the PDF' and aims to be a place where all different stakeholders who want to move scholarly communications beyond the paper-based system can come together to work towards common goals.

FORCE11 provides online space for groups of members who want to come together around a specific aspect of scholarly communication (JDDCP, RRID, FAIR data principle citations). At the last annual meeting, [Force2015](#) in Oxford UK, a common thread expressed across many talks, conversations and tweets, was that with all the innovation that is taking place, we keep butting our heads against the current system and trying to re-tool it for modern information networks. We've got bits and pieces and we're all charging forward, but are we moving towards something? When we say we want to transform scholarly communication, are we all saying the same thing?

After Force2015, a group of forward-thinking individuals with a variety of viewpoints and priorities got together in what became the [Scholarly Commons working group](#) to further explore this idea: Are we ready to define the Scholarly Commons? That is, when we look across the principles, tools, successful and unsuccessful efforts, standards that have been issued and developed around the world, are we together defining and crafting a new platform for Scholarly Communications that embodies and supports the spirit of 21st Century network-enabled communications?

Force11 was fortunate to secure support from [The Leona M. and Harry S. Helmsley Charitable Trust](#) to pursue these ideas and try to define the Scholarly Commons. This program has 3 main goals: 1) Determine whether we have a convergence of ideas and tools that defines the Scholarly Commons, defined here as a governance structure and tools for how scholarly objects should be produced and disseminated in a networked world; 2) Map the current landscape of tools, standards, principles and best practices with respect to this shared governance; 3) Articulate the principles of the Commons, and provide easy to understand materials that explain the Commons and the tools and strategies available to individuals or organizations who want to implement them within their own domain.

Our first goal - finding out whether we are ready to define the scholarly commons - is being explored by two workshops and an exercise to collect and collate all of the principles and recommendations that have been issued around the world that inform aspects of the commons. The first workshop, held in Madrid, centered around: 'What if we could start all over?' and is described here. The second workshop, devoted to: 'Putting the pieces together', will be held later this year.

Workshop outline

The workshop lasted one and a half day and was organized in 12 sessions. It was devoid of regular academic presentations, and participants were not required to prepare themselves or read any material beforehand. All that was asked of them was to leave negativity at the door. They were made aware that things mentioned during the workshop could be made public through the live visualization.

The general idea behind the program was to first diverge and then converge, also to have thoughts run as freely as possible on the first day. Only in a late stage on the second day was there some confrontation with reality and practical limitations.

The charge to the participants was simple: Imagine our current system of scholarly communication, based on a paper-based reward system, never existed. Assuming today's technology and the amount of money currently in the system, how would you design a system of scholarly communications ("The Scholarly Commons"), the goal of which, was to maximize the accessibility and impact of scholarly works. By putting us in an alternate reality with a clear charge, we sidestepped issues that often engulf such discussions: why do we publish and who do we publish for.

Specific instructions, however, were kept to a minimum, in order to allow participants to go where their interests and imaginations took them. Over the course of a day and half, individuals formed into groups and considered scholarly communications from multiple angles. At the end, we compared visions and principles that emerged from them as to how a Scholarly Commons should function. The workshop was facilitated by [YKON](#) and a live visualization capturing and organizing the discussion was made by [Marcin Ignac](#).

Communication channels

Because of the interactive nature of the workshop, we did not livestream the event, but we did take live notes, using Google Docs and Trello Boards, that were available for anyone to view and comment on. These notes were progressively synthesized during the workshop into the interactive visualization. We also encouraged live tweeting using the hashtags [#FutureCommons](#) (to talk about the workshop in general) and [#FCviz](#) (to gather ideas people thought should be part of the scholarly commons and wanted to see included in the visualization). The record of the meeting is presented here.

Workshop programme

Thursday February 25, 2016

Opening reception

The opening reception featured a slide show of all participants with personal mottos, and a presentation by Maryann Martone of the Scholarly Commons Working Group (Fig. 2). The opening reception was also used to introduce the facilitators (YKON) and visualizer (Marcin Ignac) to the group, and to explain their role in the workshop.



Figure 2.

[Opening night presentation](#) by Maryann Martone (available as Google Slides)

Friday February 26, 2016

9:05 Welcome words by the organisers

9:15 YKON Facilitation starts

Duration: 15 min

Introducing the Shared Property-rule for the entire workshop:

All the thoughts and ideas expressed during the workshop are for collective use. We are not here to compete but to contribute, learn and build on each other's ideas in the process of creating a new collective vision for scholarly communication.

Introducing the Islands of Possibilities:

The Islands of Possibilities are stationary modules (Fig. 3a) that are in place through Friday and Saturday. Participants can use these spaces to get inspiration, gain new perspectives and generally open their minds.

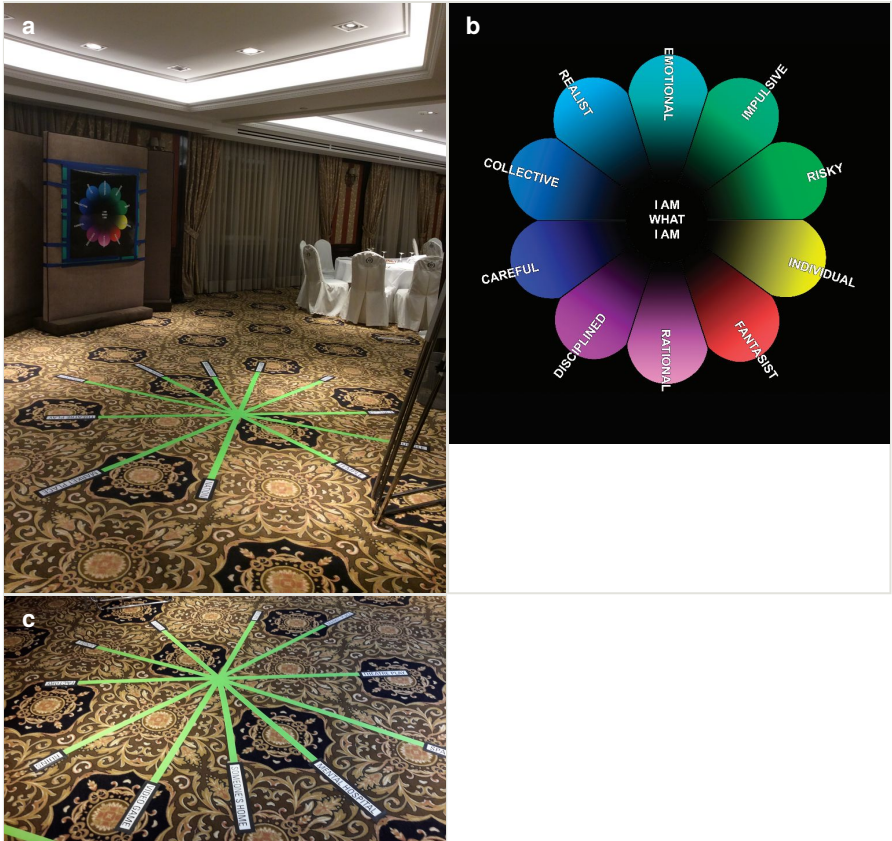


Figure 3.
Islands of possibilities (part of YKON facilitation) at Madrid workshop
a: Islands of possibilities located in workshop room
b: Personality modification island
c: Observation island

Examples:

- The Personality Modification Device (Fig. 3b): a taped area with a dart board and darts. Participants can use it to change their attitude.
- Observation Islands (Fig. 3c): areas taped to the floor where participants can stand in. The areas are marked with suggestions to allow participants to regard the process from new perspectives.

9:30 SESSION 1: The Vanishing

Duration: 15 min

Goals

- Push the mind and imagination beyond "restrictions of reality"
- Produce a creative and playful atmosphere
- Gather ideas and connect to needs and values on an individual basis

Instructions

This text is narrated:

The scholarly system has vanished. The forms of communication that were valid just a moment ago are now part of history. The contracts (international and individual) have ceased to exist. All the universities, publications and job titles are no longer in effect. The good news is that this is not an end: We have gathered this very group here to re-start the whole system, and this is a chance to do it better. You can use the same amount of money and technology that there was available before, but use it better. Another good news is that your intelligence, knowledge and creativity have *not* vanished. We will need those qualities today. We are happy you made it to this emergency meeting. Because of this situation, the scholarly world faces the question: Now that we have to start from a blank slate, how do we want to organize ourselves? How could we create our communication anew?

Now, before the meeting starts, please take 10 minutes to write down what is important to you, the issues you want to raise.

Find a spot where you're comfortable or move around, and write the ideas that are important to you on a piece of paper. You don't have much time so keep it short. One sentence per idea is enough for now. You are knowledgeable about the recent reality in scholarly communication, but you are free to consider totally new avenues.

You can write down your needs, expectations, new models and ideas or anything in between. That's up to you.

9:45 SESSION 2: Speed Dating

Duration: 20 min

Goals:

- Exchanging the ideas from Session 1 and building on and combining them.
- Creativity boost: To surprise and to be surprised about the large variety of point of views.

Instructions:

Now that you have your early ideas, it's time you get to share them.

1. When music plays, walk freely.
2. When it pauses, stop and turn to the person nearest to you.
3. Describe to them one idea you have, and listen to theirs. Make notes when the other one speaks.
4. When the music starts again, start walking, leaving in mid-sentence if you have to.

Note: You can also steal ideas from others and introduce them for the next one as if they would be originally yours.

10:05 SESSION 3: Soap Box

Duration: 40 min

Goals:

- First moment of sharing ideas collectively.
- General awareness of what ideas are present.
- Forming preliminary groups: Organization of ideas into groups, for upcoming group work.

Instructions:

1. Take a moment to choose or re-develop your favorite (or most urgent) idea from the previous session. Write it in a full sentence on a post-it.
2. One participant at a time steps onto the soap box. Say your name and read your sentence out loud ("Hi, my name is... and my idea/thought is...."). Then step down from the box and attach the post-it to the wall. As the wall gradually fills, place your post-it beside those ideas that seem to relate to your statement.

YKON will facilitate the organization of the post-its into groups. Groups are formed by ideas that cluster together. If a group is too large, it can be divided into two groups sharing similar starting ideas. People that are separate can voice their interest of which group they would like to join.

YKON tells which group sits on which table – participants can choose the tables / groups. Recommended amount of people per group: 5-6. The related post-its will be attached to each group's table.

11:15 SESSION 4: Perspective Engine

Duration: 75 min

Goal:

- Generate group discussion and expand on each of the ideas, by discussing them from different perspectives.

Instructions:

1. Everyone in the group is responsible for taking notes.
2. Spend 10-minute session where each sentence from the post-its are read out loud and freely commented.
3. Run your original ideas through the Perspective Engine (Fig. 4).
4. Start with an original idea by placing it in the centre. Run this idea through the engine, using the various perspectives to generate expansions to the original idea. Write down the descriptions of the issues brought up.

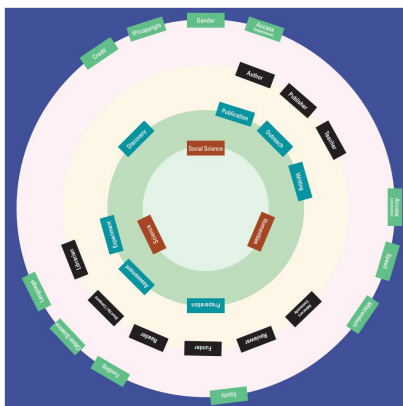


Figure 4.
Perspective Engine

There will be a printed game board on each table containing research phases, issues, disciplines and stakeholders/perspectives—visible to everyone.

12:45 LUNCH

14:00 SESSION 5 - part 1: Formulate (prepare for presentations)

Duration: 15 min

Each group discusses how they want to present their outcomes. They are encouraged to try something else than a conventional academic presentation format.

14:15 SESSION 5 - part 2: Present

Duration: 30 min (3 minutes per group)

Goal:

- To create general awareness of the ideas developed, and offer their inventions for others.

The presentations are timed to maintain the schedule.

14:45 SESSION 6: Fair of the Future of Scholarly Communication

Duration: 35 min (Fair 20 min | Group (Re)Formation 15 min)

Goal:

- To see the material created so far, recombine and build on the chosen ideas.
- (Re)form groups.

Instructions:

Fair of the Future of Scholarly Communication (20min):

Each group table turns into a Fair Booth (Fig. 5) with their ideas and perspectives clearly visible on their table. 2-3 persons of the group should always be present at the table. Others are free to walk around: they should engage the groups and ideas they found interesting, ask more from them.

Important: Make notes while you're at the fair whether you're walking around the floor or representing your table. Seek to engage with many participants and question them about their presentations and perspectives.

Group ReFormation (15min):

The exchange during the fair provides the basis for new groupings.

15:25 SESSION 7 - part 1: Visionary HQ

Duration: 50 min

Goal:

- Using the ingredients they've gathered, groups create and formulate a more complex vision of an alternate system
- The questions of practicality and implementation are introduced to the discussion for the first time, still in a fairly light manner.



Figure 5.

Fair of the Future of Scholarly Communication

Instructions:

Bring the ingredients you have chosen back to the table (not physically) and process them into a vision of a future of scholarly communication. The style of the vision is free. However, consider the following questions while creating it:

- How does it work? (Describe its system and function)
- What's the best way to tell about it? (i.e. it's story)
- What does it enable?
- What are its strengths and weaknesses?
- How should it be built?

Prepare a presentation for the whole group.

16:15 COFFEE BREAK**16:45 SESSION 7 - part 2: Presentations**

Duration: 50 min (6-8 minutes per group)

Goal:

- To present the refined and fleshed out visions of each group

The presentations are timed to maintain the schedule.

17:35 SESSION 7 - part 3: Reflect on variety of visions

Duration: 10 min

Goal:

- Consider how your vision relates to others; which elements of other visions combine well with yours?

Instructions:

Each group at their table, reflecting other groups' visions

17:45 SESSION 7 - part 4: Formulate questions

Duration: 15 min

Goal:

- Formulate questions within the group to further develop their vision

Instructions:

After each group has reflected on the presentations, they will conclude the workshop day by formulating questions:

- What are they still looking for in their own vision?
- What kind of information would help them making their "proposal" still more believable and complete?
- What questions did the other presentations raise, and how would they like to express them?

18:00 WRAP-UP

Saturday February 27, 2016

9:05 Welcome words (about today's session)

9:10 SESSION 8: Question ambassadors

Duration: 20 min

Goals:

- Cross-pollination of processes between the groups
- Enabling the groups to draw on other groups' expertise
- Creating new ties between the groups

Instructions:

First, the groups have five minutes to reconsider their questions from yesterday. Perhaps they already had conversations about them during the dinner or sleeping over them made a trick - or maybe they want to update their questions for other reasons. After revisiting the questions, the groups send one or two of their members as ambassadors to other groups, to hunt answers to the questions. The rest stay, ready to give answers to the ambassadors from the other groups.

9:30 SESSION 9: In broad daylight (detailing and clarifying your scenario)

Duration: 60 min

Goal: Fleshing out the scenarios in groups, confrontation with real world limitations/ stakeholder visions.

The groups can choose their own approach to this process and also have the chance to implement the new answers from the previous session. YKON members will be on the floor to give support if needed.

10:30 SESSION 10: Principle distiller

Duration: 45 min (includes time for coffee)

Goal:

- Create a list of principles that underline your scenario.

Instruction:

The groups start by listing their personal principles, based on the scenario they've been working on, then discuss to agree on a list of common principles for the group.

Note: all principles are written down on a large sheet of paper in such a way it can be cut into strips later.

11:15 SESSION 11: Final presentations

Duration: 50 min

Goal:

- All the scenarios are presented alongside the principles each group agreed upon.

Instructions:

Each group has about 8 minutes of presentation time.

12:05 LUNCH BREAK**14:05 SESSION 12: Towards common principles**

Duration: 55 min

Goals:

- The goal is to find commonalities between the principles of each scenario.
- Identify, graphically, principles of interest.
- Create a shared list of principles.

Instructions:

The principles of each scenario are brought to fore (each principle is on a separate paper). First task for the whole group is to organize them by association (on the window or wall): the ones that are similar should be placed together, strongly associated principles are placed nearby each other.

After this, people gather to those draft principles that interest them, thus forming groups. The task of each group is to polish the chosen draft principles, formulating one overarching principle roughly along the lines of the draft principles.

Finally the polished principles are once again brought together for a final discussion.

As a preliminary selection, all participants get two votes in choosing the principles they like best.

15:00 END OF WORKSHOP

Workshop impressions: Fig. 6 shows participants at work during various workshop activities

Key outcomes and discussions

Trello board

All session outcomes (individual and derived ideas, group visions, group principles and suggested common principles) were captured in Trello by assigned notetakers among participants. Ideas suggested by others via Twitter were captured via the online tool Zapier and automatically added in Trello. During session 3 and 4, two dedicated taggers enriched each Trello card with tags denoting research phase, discipline, stakeholder and/or issue (e.g. equity, infrastructure, credit), where applicable. During and after session 7, cards representing elements of a group's vision were linked by denoting their relationship to other elements as tags, thus creating triples (card 1, card 2, relationship between 1 and 2). In addition, cards were labeled with tags indicating the session and group they were created in, and a checktag #viz to denote the presence of the card in the live visualization (see below). For the purposes of the user interface and faster tagging we introduced concept of tag families e.g. #G* or #s** that would group similar tags together. Cards that were part of a triple were also assigned the checktag #triple.



Figure 6.
Workshop impressions

We used the following structure in Trello:

1. Card title with hash tags (Fig. 7a)
2. Card comments with links to another idea (Fig. 7b)

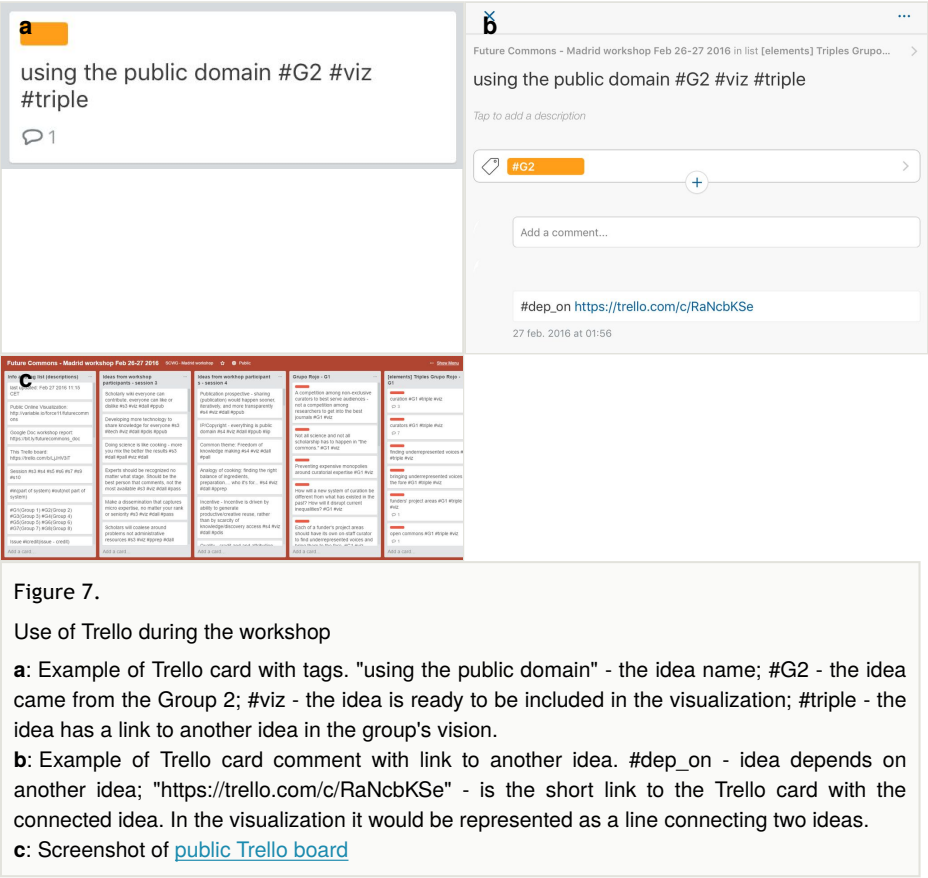


Figure 7.

Use of Trello during the workshop

a: Example of Trello card with tags. "using the public domain" - the idea name; #G2 - the idea came from the Group 2; #viz - the idea is ready to be included in the visualization; #triple - the idea has a link to another idea in the group's vision.

b: Example of Trello card comment with link to another idea. #dep_on - idea depends on another idea; "https://trello.com/c/RaNcbKSe" - is the short link to the Trello card with the connected idea. In the visualization it would be represented as a line connecting two ideas.

c: Screenshot of [public Trello board](#)

During the two days of the workshop, 691 idea cards were added to Trello. We used 88 tags to describe them and a total of 133 relations between the ideas were established. In addition to being used for the visualization (see below), all cards were shared through a [public Trello board](#) (Fig. 7c).

Visualization

The ideas, visions and suggested principles captured in Trello were synthesized into a live, interactive visualization during the workshop. The visualization progressively showed individual and derived ideas (after session 3 and 4), group visions both as groups of ideas and as interconnected elements (after session 7), group principles (after session 10) and suggested common principles (after session 11). During and after the workshop the visualization allowed people, both those present in Madrid and those following online, to explore the width and breadth of generated ideas (Fig. 8a) and see the various group visions as interconnected components, showing overlap between visions (Fig. 8b). The visualization also makes it possible to follow the progression from ideas to connected vision to suggested principles (Fig. 9).

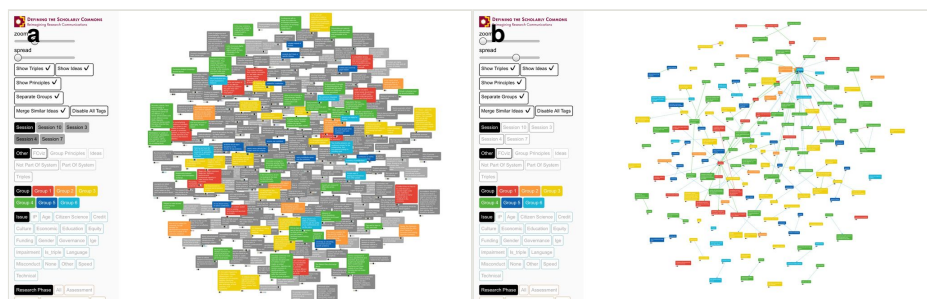


Figure 8.

Workshop visualization - collection of ideas and group visions

a: Visualization showing all ideas generated collectively in the first round (session 3, dark grey) or second round (session 4, light grey), and those generated by the respective groups (solid colors) as part of their vision of scholarly communication.

b: Visualization showing all groups' visions as interconnected elements (triples), with common elements overlapping.



Figure 9.

Visualization showing one example of development of a group's vision and progress to group principles

a: One group's vision as a collection of ideas (session 7)

b: One group's vision as a interconnected elements (triples, derived after session 7)

c: One group's suggested principles (session 11)

The [visualization](#) is available online to fully explore. Some things to keep in mind:

a) the schematics of the group visions as connected elements (using the option 'Show triples') are based on relations defined in the ideas noted by the groups themselves. In formulating these as triples, we tried to be as objective as possible, but the process inevitably included simplification and making assumptions. Thus, these schematics should be viewed as examples of what is possible, rather than as fully fleshed-out representations of each group's vision. b) as mentioned in the section on Trello, cards also (can) have tags indicating the research stage, discipline, stakeholders and issue (e.g. equity, infrastructure, credit) they address. While not fully implemented during the workshop (e.g. cards for group visions and suggested principles have not been tagged in this way due to time constraints), in theory this would provide an additional layer to the visualization. E.g. cards could be grouped based on specific aspects they share (e.g. all cards dealing with a certain issue), and one group's vision could be supplemented with specific elements from other group's visions that deal with a certain aspect, to identify gaps and suggest possible expansion of visions.

Towards principles

During the workshop, two sets of suggested principles were produced:

- 1. Group principles, derived from each group's vision (session 11)
- 2. Common principles, synthesized from the group principles (session 12)

The suggested common principles could be conceived as the most concrete outcome of the workshop. In the last workshop session, participants voted on these to get a feeling for their importance and priority (Table 2). However, while useful in rounding off the workshop, the suggested common principles did less reflect the richness of ideas and the thought process the groups went through during the two days of the workshop than did the group principles. Therefore, the steering committee of the Scholarly Commons Working Group decided to use the group principles, rather than the suggested common principles, as the basis from which to distill the main themes that emerged from the Madrid workshop. This task was commissioned to Fiona Murphy, who was also a participant in the workshop.

Table 2. Suggested common principles from Madrid workshop, including number of votes from participants	
All contributions are attributed in a way that promotes their value and facilitates credit for all forms of labour	18 votes
The Scholarly Commons are a fair place where everyone can play as long as they play fair and their contributions are FAIR	14 votes
The scholarly commons shall provide equitable opportunities for diverse content, voices & disciplines to be discovered & used; it shall serve diverse needs and not re-inscribe existing power structures	11 votes

The commons contains all outputs created over the space of the entire tenure of research (all phases) and what is in the commons remains in there over times (though outputs can be built upon outside its borders)	10 votes
No entity owns content	10 votes
In the commons, shared content must have metadata that is: machine processible, meaning that it can be searched, aggregated, translated, manipulated; standards-based; use-agnostic; ideally rich	5 votes
The sustainability of the commons as an ecosystem is the shared responsibility of all participants. (5 votes) Modifications to the principles of the commons must rely upon participation of the commons	4 votes
Sustaining a healthy commons requires a culture of reciprocity, where those who take from the commons give back to it	2 votes
The commons are not static. They evolve in the hearts and minds of the community as everyone learns together and continuously quests their values	2 votes
Nurturing a meaningful commons brings together reusable resources as well as training and mentoring	2 votes
Team-based research in the open data commons requires team-based research support	1 votes

As a result, the group principles were re-ordered under five subheadings:

- Open and sustainable
- Fair
- Credit for all endeavors
- Technology- and business-enabled, not -led
- Governance and funding

Table 3 Table 3 shows all group principles ordered in this way.

<p>Table 3.</p> <p>Group principles ordered under five subheadings indicating the main themes emerging from the Madrid workshop</p>
Open and sustainable
The commons is an ecosystem
Use of the commons should not devalue the commons
Open
Default to open and reusable. FAIR.
Open platform (free, open source, interoperable)
Nothing monopolistic
Non-extractive principle, ethical harvesting that gives back to the farm and fisheries (metaphor for field & lab)
Ethical expectation that food will go to food hall to be curated and consumed by anyone

Fair
No barrier to entry
Inclusive
Nurturing
Equitable access to the microphone
Diversity of content, audience, voice, discipline
Supports Unicode for multilingual support
Escape the filter bubble /disrupt the matthew effect
Anyone can enter/participate/interact
Credit for all endeavors
Aggregating third-party content - a data and knowledge curation device - annotating and delivering commentary on it
Toolkit approach for knowledge curation "curationism" as new religion
Value all forms of labour that contribute to research
Driven by credit attribution system
All contributions are attributed, no anonymity (e.g. reviews etc)
Mentoring/training is default part of doing research
Individuals must be properly incentivized
Technology- and business-enabled, not -led
Metadata-rich and searchable
Licensing agnostic?
Cost effectiveness
Accelerate discovery
New "business" models
Commercial entities are welcome but cannot privatize content
Stimulating and enabling competition
All links should be bi-directional
Governance and funding
The full lifecycle of content in the commons should be considered and managed
Innovation in the commons should be progressive, not 'me too'
Sustainability of the commons is everyone's obligation

Ownership and control of academic outputs and infrastructure remain within the academic enterprise
Continuous research requires continuous infrastructure and expertise
Team-based research requires team-based research support
In order to drive change focus on external (non researcher, non institution) forces - funders, governments, publishers, public
There is continuous questioning of what the commons should be
Let no crisis be unutilized

Conclusions

The major goal of the Scholarly Commons program at FORCE11 is to distill a set of principles that should govern the production and flow of scholarly objects in a networked world. This workshop was the first in a series of activities to see if such principles are evident, and, if they are, to articulate them and promote them.

As of this writing, we are still digesting what we heard and what was produced at this first workshop. But in post workshop discussions, the organizers shared a few thoughts. We were gratified how hard people worked and were surprised at the turns the conversations took, expecting much more attention to be paid to technology and specific activities like peer review and funding. Instead, the participants stayed at a fairly high level, particularly on the first day, but by the second day, did start drilling into more specific questions.

Not surprisingly, the different individuals brought different perspectives. More senior individuals tended to focus on making the information available and usable; younger participants focused on fair access to the process. But everyone agreed that the Commons was for everyone, both as consumers of information and as participants in its creation. Commercial entities were welcome, but content could not be locked down for sale, only enhanced. A new class of knowledge worker would be essential to the Commons, providing professional services for peer review, creating and enhancing collections and making the content understandable to consumers of all types. While not all issues were fully explored, the participants contributed a rich legacy from which to build.

What are the next steps? Start the process of distilling the principles articulated at this workshop and from the dozens of sets of principles already articulated by groups around the world ([Bosman and Kramer, 2015](#)). These principles will also be placed into a larger framework- a conceptual map of scholarly communications-so that we can understand where we have governing principles, best practices, standards and tools, and where we still have gaps. Our final activity will be a follow up workshop entitled "Putting the pieces together", where we will see how existing tools, standards, principles and best practices can be shaped into a functioning Commons. The map and all materials from the Scholarly Commons program will be made available through FORCE11 so that any individual or

organization that is seeking to effect change within their community can take advantage of all the hard work that has gone on around the globe to transform scholarly communication.

Reflections from YKON

YKON is a collective constituted of artists, scholars and game designers who develop facilitation models aimed to generate meaningful exchange in unexpected ways. Our interaction modules are very suitable for groups of people who don't know each other, but have to process complex issues with strangers in a fast and profound manner. It's facilitation approach/mechanics breaks down hierarchies, allowing the participants to think about situations differently and with courage.

For the Madrid Workshop we designed a customized facilitation tool kit. To create it, we used approaches from not just facilitation, but also from arts practices, and particularly games. While our aim was not to create a game, per se, we wanted to create a generally play-like atmosphere for our interactions.

We consider interaction with a wide perspective. The design can focus on anything, from conversation to movement or atmosphere—any potential influence is worth a consideration. Of course, the existing layout of the workshop space contributed to our spatial set-up as well.

Force11's general mission and the goal of the Madrid Workshop matched well with YKON's principles. However, given the ambitious goal, the short time frame was a definite challenge for the design. One of the areas we emphasized on was the generation of unconventional ideas and unexpected approaches. For idea generation, simply saying that people are "free" to think does not challenge the underlying conventions and practices. From another perspective, saying that you're "free" to think, means: "You're on your own. Use what you already know." To put it in a nutshell: to facilitate unconventional thinking, it's useful to create unconventional situations.

As the workshop had many sessions, with individual results, we particularly appreciated the range of ideas generated throughout the workshop, not just the final outcome. It would be useful to revisit some of these proposals for future development. Many of them are worth further consideration.

Reflections from Marcin Ignac

In February 2016 I had a chance to participate in a Force11 workshop aimed to re-imagine scholarly communication. The invitation came from Bianca Kramer and Jeroen Bosman as they were looking for "real time visualization of concepts during a workshop". Given my specialty in data visualization and long term interest in linked data, open research and ways to model knowledge systems, I stepped up to the challenge.

Role of the visualizer

From the very beginning the task at hand was shaped as an experiment and investigation into the role that "a visualizer" (person designing the visualization) can play during a workshop session. How can a visualization facilitate the idea creation? How adaptive can the visualization be to respond to the workshop dynamics?

Requirements and Challenges

Exploration of available tools for collaborative editing and brainstorming failed to reveal one fulfilling all of our needs:

- ability for multiple people to write down notes during brainstorming sessions in parallel
- easy way of tagging and sorting of ideas
- possibility to define relationships (links) between ideas
- open API for accessing the data and export during and after the workshop
- interactive visualization and filtering

Beside these technical requirements, we had number of challenges for the visualization itself. First, we were trying to visualize data that didn't exist when we started the project. We haven't done similar workshops in the past so a set of constraints and predefined boundaries had to be set. We estimated the amount of text we would be capturing and the vocabulary (tags) we would use to describe the ideas. Removing any friction for note takers was crucial in choosing the tool for collecting the ideas. Compared to paper note taking, digital tools can be distracting and excluding. We eventually decided on assigning only one person to take notes in each group and set on Trello as the interface because of the familiarity among participants. There was also a question of realtime vs. live visualization. A realtime visualization would update as notes would come in, streamed via the API. Live visualization comes with a slight delay needed to process, tag and organize the notes. We decided to go with the second option, as it allowed for a more curated and less distracting experience during the workshop as the visualization was projected in the same room as participant sessions.

Technology stack and setup

The final visualization used during the workshop was built on top of a number of tools:

- Trello : two separate boards, one for note taking, one for organizing, tagging, grouping and linking of ideas
- Node.js server pulling the data from Trello API and caching them for the use in the visualization
- D3.js visualization with force directed layout showing the individual ideas, colored by brainstorming group id and linked via relationships.

Outcomes

The data captured during the 2 days of the workshop resulted in an unique documentation of a workshop brainstorming process. Trello proved to be an excellent choice and we were able to capture much more ideas that we hoped for. Nevertheless, due to the workflow of transcribing and annotating there was around 1 session (1 hour) delay between the capture and visualization. While annotating, some of the ideas were rephrased in order to use common vocabulary and make connections between them. This synthesis, together with the vast amount of information, proved to be challenging for the participants. While they were the creators of the ideas, seeing them represented in a completely new way required exploration and focus for which there was no time during the fast-paced workshop. More research is needed on how to best visualize the evolution of ideas with some ideas outlined in the next section.

Future improvements

The following open questions remain:

1. How can we represent the change in the captured ideas over time? The introduced concept of sessions hasn't been fully utilized in the visualization and it was not always possible to track which ideas were build on top of which ones from the previous sessions.
2. How can we give more context to the visualization? Screen estate was quite limited and readability suffered. A multiscreen projection would allow for a more zoomed-in view as well as potentially showing all groups in parallel. Additional space would make it possible to include commentary and instruction on how to interpret the visualization, which currently required 1:1 sessions.
3. How can we allow people better explore ideas during the workshop? The way we visualized the data and always updating aspect of the visualization suggest more exploratory mode. A sythesised view was developed after the workshop allowing people to see prefiltered views of the visualization. Additional commentary is required to set the context and initial interpretation.

I'm looking forward to future workshops where these ideas could be explored.

Funding program

The Leona M. and Harry B. Helmsley Charitable Trust aspires to improve lives by supporting exceptional nonprofits and other mission-aligned organizations in health, selected place-based initiatives, and education and human services. Since 2008, when the Trust began its active grantmaking, it has committed more than \$1.4 billion. The Trust's Biomedical Research Infrastructure Program seeks to lower the barriers for biomedical discovery through the development of research tools, training and collaborative platforms that improve the quality and reproducibility of pre-clinical research. For more information, visit www.helmsleytrust.org

Project

The digital age is seeing an informal convergence within the scholarly communication space: the Natural and Health Sciences, the Humanities, Arts and Social Sciences, applied and professional fields are all discovering that they have more in common when it comes to the future of research communication than they have differences. What is needed now is a program that will help us realize the potential of this merger: the development of a "Scholarly Commons."

This program, organized through the [Force11 Scholarly Commons Working Group](#), is designed to define and incubate this Commons. We will conduct a series of workshops and exercises to examine the best thinking around the world about what is required for a scholarly communications ecosystem designed for 21st century scholarship. We call this ecosystem the Scholarly Commons. It is not a single platform or tool, but rather the principles, best practices, interfaces and standards that should govern the multidirectional flow of scholarly objects through all phases of the research process from conception to dissemination.

The activities of the Scholarly Commons Working Group are coordinated by its steering committee:

- Jeroen Bosman - Utrecht University
- Ian Bruno - Cambridge Crystallographic Data Centre
- Amy Buckland - University of Chicago
- Sarah Callaghan - STFC
- Robin Champieux - OHSU
- Chris Chapman - Pentandra
- Stephanie Hagstrom - UCSD
- Bianca Kramer - Utrecht University
- Maryann Martone - UCSD and Hypothesis
- Daniel O'Donnell - Universtiy of Lethbridge

Hosting institution

[FORCE11](#) is a community of scholars, librarians, archivists, publishers and research funders that has arisen organically to help facilitate the change toward improved knowledge creation and sharing. Individually and collectively, we aim to bring about a change in modern scholarly communications through the effective use of information technology.

FORCE11 is a movement of people interested in furthering the goals stated in the [FORCE11 manifesto](#). An important part of our work is information gathering and dissemination. We invite anyone with relevant information to provide us links which we may include on our websites. We ask anyone with similar and/or related efforts to include links to [FORCE11](#).

We are a neutral information market, and do not endorse or seek to block any relevant work.

Author contributions

The authors were jointly responsible for the workshop and this article describing it. The specific roles, described alphabetically using the [CRediT contributor roles taxonomy](#), were

- **Conceptualization:** Bosman, Bruno, Buckland, Callaghan, Champieux, Chapman, Hagstrom, Kramer, Martone, O'Donnell;
- **Methology:** Bosman, Bruno, Buckland, Callaghan, Champieux, Chapman, Hagstrom, Ignac, Kalleinen, Koskinen, Kral, Kramer, Martone, O'Donnell;
- **Software:** Ignac;
- **Formal Analysis:** Bosman, Ignac, Kramer;
- **Investigation:** All authors;
- **Resources:** Bosman, Bruno, Buckland, Callaghan, Champieux, Chapman, Hagestrom, Ignac, Kral, Kalleinen, Koskinen, Kramer, Martone, O'Donnell;
- **Data curation:** Bosman, Ignac, Kramer, Murphy;
- **Writing--Original draft preparation:** Bosman, Ignac, Kalleinen, Koskinen, Kral, Kramer (lead author);
- **Writing--Review and editing:** Bosman, Bruno, Buckland, Callaghan, Champieux, Chapman, Hagstrom, Ignac, Kalleinen, Koskinen, Kral, Kramer, Martone, O'Donnell;
- **Visualisation:** Ignac;
- **Supervision:** Bosman, Bruno, Buckland, Callaghan, Champieux, Chapman, Hagstrom, Kramer, Martone, O'Donnell;
- **Project administration:** Hagestrom, Kling;
- **Funding acquisition:** Martone, Hagestrom

Kramer and Bosman wrote the manuscript, with contributions from Ignac, Kalleinen, Koskinen and Kral.

In addition to the authors named in the byline, the following participated in the Workshop and its organisation:

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Conflicts of interest

Bosman, Bruno, Buckland, Callaghan, Champieux, Chapman, Hagstrom, Kramer, Martone, and O'Donnell are all members of the steering committee of the Force11 Scholarly Communication Working Group. Bosman is a subject editor for the RIO Journal.