Open Scientist Handbook • OSH

Open Science Badges are Coming—and the New Nobel

Bruce R. Caron

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Badges give your cultural norms footholds for members to learn and practice

“A ‘badge’ is a symbol or indicator of an accomplishment, skill, quality or interest. From the Boy and Girl Scouts, to PADI diving instruction, to the more recently popular geo-location game, Foursquare, badges have been successfully used to set goals, motivate behaviors, represent achievements and communicate success in many contexts. A “digital badge” is an online record of achievements, tracking the recipient’s communities of interaction that issued the badge and the work completed to get it. Digital badges can support connected learning environments by motivating learning and signaling achievement both within particular communities as well as across communities and institutions. This paper outlines and addresses a working set of definitions, ideas and guidelines around the use of digital badges within connected learning contexts” (Mozilla and Peer 2 Peer University 2012).

The notion of using open digital badges to acknowledge certain practices and learning achievements has been circulating in the open science endeavor for more than a decade. Over these years, this has become a perennial “near future” augmentation/implementation of how open science can recognize and reward practices and skills. Instead of using game-able metrics that rank individuals as though they were in a race, badges can promote active learning, current standards, professional development, and research quality assurance.

The transition from arbitrarily scarce reputation markers (impact metrics, prizes, awards) to universally available recognition markers also helps to level the ground on which careers can be built across the global republic of science. Every scientist who wants to take the time and effort to earn a badge for achieving some level of, say, research-data reusability, or graduate-student mentorship, can then show off this badge to the world. Every student/scientist who acquires a specific skill (R programming, software reusability, statistics, etc.) can add a new badge to their CV.

In education, micro certifications can augment diplomas and degrees by pointing to specific skills acquired during the course of study. A badge can signal the attainment of a prerequisite skill for taking an advanced course, say, or a capstone skill for outside employment. These badges can accumulate into suites of acknowledged skills that students can highlight for specific future occupations. Micro-level open badges can be assembled into practical certifications ([Leaser](#) 2016; Accessed August 14, 2020).

“Open Badges are a specific type of digital badge designed to promote learner-agency principles. Open Badges communicate skills and achievements by providing visual symbols of accomplishments embedded with verifiable data and

evidence that can be shared across the web. Open Badges empower individuals to take their learning with them—wherever they go—building a rich picture of their lifelong learning and achievements journey. Thousands of organizations across the world already issue Open Badges, from non-profits to major employers and educational institutions at all levels”

<<https://www.imsglobal.org/digitalcredentials>>; Accessed August 14, 2020.

Digital badges are like virtual top hats: they signal achievement and belonging

Photo Credit: Sigismund von Dobschütz, October 16, 2011; CC BY-SA 3.0 on
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Above: German carpenters carry a book for certifications of their work while they apprentice on the road for three years to become members of the guild.

Keeping current with the latest badge news is difficult. Several projects are moving ahead independently (sounds like open science in general). Start-up credentialing companies, spin-offs from the open-badge endeavor, are building online commercial services, some of them on a blockchain, for verifiable credentials. Their not-so-open badges help companies run internal educational services and streamline hiring for specific skills (See: <https://info.badgr.com/>).

You can check out open/digital badge resources on the web:

- Wikipedia: Digital Badges(<https://en.wikipedia.org/wiki/Digital_badge>; Accessed August 14, 2020),

- MIT initially created an open standard for blockchain-connected certifications (<<https://www.blockcerts.org/>>; Accessed August 14, 2020),
- Wikipedia: Mozilla Open Badges: (<https://en.wikipedia.org/wiki/Mozilla_Open_Badges>; Accessed August 14, 2020).
- The Mozilla effort was moved to IMS global where a standard for open badges is (currently) maintained (<<https://www.imsglobal.org/activity/digital-badges>>; Accessed August 14, 2020).

Of course, badges are not new. [Philipp Schmidt](#) (2017; Accessed August 17, 2020) points out a long, global history of verifiable certifications. Boy and girl scouts have used badges for a century or more. Academic diplomas are badges of learning, as are driver's licenses (in theory).

Publishing with open badges for open practices

Open Data badge on the COS [Open Badges Blog](#)

One place where badges might be implemented early is in open publishing, where publishers can add badges to their online descriptions of articles. These badges would serve to mark adherence to specific open practices. “Badges are an easy means of signaling and incentivizing desirable behaviors. Journals can offer badges acknowledging open practices to authors who are willing and able to meet criteria to earn the badge [(<https://osf.io/tyyxz/>>; Accessed November 17, 2019)]. Badges acknowledging open practices signal that the journal values transparency, lets authors signal that they have met transparency standards for their research, and provides an

immediate signal of accessible data, materials, or preregistration to readers. Badges allow adopting journals to take a low-risk policy change toward increased transparency. Compared, for example, to measures that require data deposition as a condition of publication, badge implementation is relatively resource-lite, badges are an incremental change in journal policy, and if badges are not valued by authors, they are ignored and business continues as usual” (Kidwell et al. 2016).

Photo Credit: Paul the Archivist on Wikimedia CC Attribution-Share Alike 4.0

Learned Societies as badge engines

Each learned society could also host badges that members can earn by sharing their research or offering services to the membership. This is an easy way to displace current journal-based reputation markers, while acknowledging quality work, and boosting membership value. Societies can reward members whose work exemplifies those norms the society determines as core to their mission. Research that demonstrates team effort, active diversity, rigorous data collection, reusability—any practice that amplifies the value of the work for the society—might be connected to a badge.

Unlike prizes, badges are open to all who meet the requirements; there are no losers here, except sloppy science. In the post-subscription business world, learned societies need to explore new value propositions. Badges are one way their communities can tap into their collective strengths to add real value to the lives of their members. At the same time, they recognize every member who qualifies, instead of awarding prizes to a selected few (See Also: [Shaming the giant](#)). How about this for a culture change practice: you acquire the right combination of badges and you automatically become a “fellow” of the society. You will have earned it; nobody needs to vote for you.

If your learned society is not planning to offer badges, you might want to inquire about this. They are missing a golden opportunity. There should be a badge for that.

Does your old/current organizational cultural path lead to nowhere? Blaze a new path with open badges.

Badges for culture building

Badges are not easy to administer. Like all recognition schemes, they need to be well crafted and constantly tended to assure validation and verification. Badges focus attention on the practices and skills they announce. The governance of badge systems requires—as it also acquires—an active, reflexive cultural capacity to build trust and buy-in. One upside here, is that the work of supporting badges can also help an organization maintain its cultural norms over time. Badges help build communities. The conversations about badges can bring out the virtues and values of the group.

To change an organizational culture you first need to change the way things get done now. But how do you intercept current decision and work flows? How can you help the

whole group unlearn toxic behaviors? Badges work to establish new paths for decisions and activities. They offer micro-rewards that nudge a community over to new practices. Badges can include learning requirements, exposing the whole community to relevant new information. Finally, earning a badge is a great occasion for a team mini-celebration. Even a skeptic with tenure can get a dose of good feelings when their team celebrates their recent achievement.

As badges celebrate cultural norms, they can help push toxic practices and other, external incentives into the margins. The badge system your academy organization creates can offer footholds up to the common goal of an open science destination; everybody can use the same badges to arrive at this shared future. There's still a mountain to climb to get to "open", only now there is plenty of room at the top, and a reliable path upward. Doing science right becomes easier when all the internal rewards are lined up. Buying into badges means buying out of current toxic conflicts-of-interest in the research flow (See: [Building a gift economy: the dance of open science culture](#)). It might be that open badges are the "killer app" for the future of open science!

The new Nobel: celebrating science events, their teams, and the history of discovery

“Please stop,” she yells, “I’m bored.” Again and again, until the speaker relents and gives up the lectern. Time management at the [Ig Nobel Prize](#) ceremony.

“I won’t have anything to do with the Nobel Prize... it’s a pain in the... (LAUGHS). I don’t like honors. I appreciate it [my work] for the work that I did, and for people who appreciate it, and I know there’s a lot of physicists who use my work, I don’t need anything else, I don’t think there’s any sense to anything else. I don’t see that it makes any point that someone in the Swedish Academy decides that this work is noble enough to receive a prize—I’ve already got the prize....

The prize is the pleasure of finding the thing out, the kick in the discovery, the observation that other people use it [my work]—those are the real things, the honors are unreal to me. I don’t believe in honors, it bothers me, honors bother, honors is epaulettes, honors is uniforms. My papa brought me up this way. I can’t stand it, it hurts me” (Feynman et al. 2005).

In their article, “Is the Nobel Prize Good for Science?,” Arturo Casadevall and Ferric Fang review the numerous controversies linked to Nobel Prize attribution. Their

conclusions are here:

“In this regard, the Nobel Prize epitomizes the winner-takes-all economics of credit allocation and distorts the history of science by personalizing discoveries that are truly made by groups of individuals. The limitation of the prize to only 3 individuals at a time when most scientific discovery is the result of collaborative and cooperative research is arguably the major cause of Nobel Prize controversies . . . Changing the Nobel Prize to more fairly allocate credit would reduce the potential for controversy and directly benefit the scientific enterprise by promoting the cooperation and collaboration of scientists within a field to reduce the negative consequences of competition between individual scientists” (Casadevall and Fang 2013).

The whole team contributed. Who gets the prize?

An uncommon commons populated by occasional giant ideas

As we explored above in [The Work of Culture](#), in open science, scientists move regularly between the complex, emergent problematics of their object of study, the complicated process (in research and writing) required to extract knowledge from this,

and the practices of open sharing. This means that the academy commons contains a whole lot of “uncommon” artifacts, pulled with great effort from the edge of knowing.

Scientists are also uncommon, made so by the demands of their profession. While their quotidian lifestyle is mainly long hours of very hard work, they have occasional days of unusual significance: the days when the months of research pay off with new knowledge. On these special days, all the work of their team and the entire history of their domain is rewarded with a new insight, pulled from indifferent data and mountains of observation. Scientists and their teams push back against the envelope of unknowns that surrounds our understanding of the universe until these unknowns surrender new understanding. In this way, scientists and their teams create the events (Badiou and Tarby 2013) that spark giant ideas.

Fund new work based on giant ideas

The idea gets the prize

A giant idea, born from a moment of new knowing, perhaps in conversation, or in contemplation after conversation, or as suddenly emergent from the data, is the prize that science needs to celebrate; not the person who announces this, since the idea had been incubated by many within the larger commons. Celebrating the scientist here is like celebrating an obstetrician for *having* the baby, instead of for assisting in the delivery (“Great work, Doctor! Have you decided on a name for it yet?”). The baby, a

giant new idea, birthed with some effort, might confirm and extend present knowledge with new information, or be the null result that corrects a widely held false scientific “fact,” or be an insight into a new theoretical space, hitherto unspoken.

Here, the collective “mother” could be the team, the room (See below), the adjacent now, a measure of luck, and the domain’s recent history. Yes, the scientist(s) here at the moment get to write up the news, but it’s really the idea, this new thing, that needs to be applauded. And it is also time to give mom her due regard when celebrating the child.

The room is smarter than any one person. Who gets the prize when a new idea is born here? PHOTO: Josh Hallett on Flickr. CCby.

“Unmooring the prize from Alfred’s ‘the person’ bonds would happen if the physics prize were awarded to groups. This would reduce the pressure on scientists to stake their claims at the expense of others; it would offer a shortcut up the ladder of authority, a ladder some underrepresented, and thus less powerful, groups such as women and other minorities feel has already been pulled up out of reach” (Keating 2018).

Science wins the award

David Weinberger (2011) noted that “The smartest person in the room is the room itself.” All the conversations in this room reflect the genius of the room, not simply that of individual occupants. Open science rewards these giant ideas by sharing them instantly, globally, and with appreciation for their value and work it took to create the event that spawned them. Open science works to spread recognition across the science endeavor, being acutely aware of cumulative advantages for some and

lifetimes of research done in obscurity for others. The latter deserve particular attention. Science at its best is not a personal heroic quest, but open, collaborative labor.

“The Nobel Prize fits with the narcissistic vision of science peopled by heroes, many of whom are very self-centred (but who of course can turn into nice and ethical people once they have succeeded). Science requires many different skills, and it is regrettable that recognition often goes to the storytellers or the dominant males of the community. By taking into account the tacit dimension, we could also better highlight the other key roles and skills—experimenter, tool constructor, organizer of databases—that hugely contribute to the progress of science” (Lemaitre 2015).

There are a lot of people pointing at several issues around the Nobel Prize and its method of selection; you can DuckDuckGo “Is the Nobel Prize obsolete” to get a list of articles with critiques and recommendations. The Handbook adds this topic here mainly to point out how science organizations can express their appreciation for great work by focusing on the science, not the scientists.

Devang Mehta puts it this way: “Here’s an even better idea: award the Nobel Prizes not *to* researchers but *for* discoveries. Imagine that today’s Nobel in physics was awarded *for the discovery of gravitational waves*, with no list of awardees, instead of awarding it to just three scientists out of hundreds. What of the prize money? Donate it to an international science fund to promote further research in each year’s prize-winning field of research. A science-oriented Nobel (rather than a scientist-oriented one) would both educate the public in the most important scientific developments and in turn stimulate new scientific progress by using the prize money to fund the next generation of researchers” (Mehta 2017; Accessed September 12, 2020).

Science prizes should attract all scientists everywhere to do their best work anywhere in the world.

The idea of giving out prizes is not itself obsolete; yet all award practices need to be refactored occasionally to capture the heart of the process of doing science, as this expands and changes in the coming decades. And, if it's time to refactor the Nobel Prize, what does that suggest for the prizes your learned society hands out? Adding an ecosystem of [badges](#) (to show off skills and accomplishments) to the recognition landscape helps to replace prizes as a central feature of open science. Since prizes celebrate brilliant work, and as [celebrations](#) as a whole add positive affect to your culture, let the prizes continue. But give them some new thought. What is your idea for Nobel 2.0?

Bibliography: Open Scientist Handbook References