IF IT'S WORTH DOING, IT'S WORTH PAYING FOR. J.H. Roberts[1], J. A. Rathbun[2], I. J. Daubar[3], and the Professional Culture and Climate Subcommittee of the DPS. [1]Johns Hopkins Applied Physics Laboratory, Laurel, MD, USA; [2]Planetary Science Institute, Ithaca, NY, USA; [3]Brown University, Providence, RI, USA.

Introduction: Although scientific research and teaching, or mission work, constitute the bulk of work conducted by planetary scientists, and is what we normally think of as "science," that list is not comprehensive, and excludes a number of tasks that are vital to sustain the scientific community [1].

A significant and critical portion of the work required to keep science moving and improving, takes the form of unpaid volunteer efforts. From reviewing papers and proposals, to advancing equity, diversity, inclusion, and accessibility initiatives, these tasks disproportionately fall on the less privileged sectors of the community who are often least able to sustain the added workload [2–5]. Moreover, much of this work, while essential, falls outside the fields in which our community has been trained, and would be better done by paid professionals in collaboration with the scientists.

Here, we present ways to enable these service jobs to be equitably distributed, valued, and funded in our community; and to build relationships with other communities to improve the quality of this work.

Reviewing: Publication of research results constitutes the core deliverable of most scientists, and the publication record (number of publications; journal impact factor, citations) forms the principal metric by which scientists are evaluated for hiring and career advancement (tenure, promotion, awards), despite the known flaws in this approach [6]. Peer review of these articles fall disproportionately on early career researchers who have the highest need to focus on their own publications and on women who are more likely to accept tasks with low promotability [2]. The lack of compensation for review efforts is particularly distressing considering that most journals charge high publication fees, subscription fees, or both, none of which goes to the author or reviewers.. The "staggeringly profitable" scientific publishing industry is based on scientists' free labor [7]. Scientific peer review should be paid.

In order for published research to be conducted in the first place, the researcher must be funded. This is predominantly done in the form of externally funded grants, chiefly through NASA and NSF, and these grant proposals must be reviewed as well. Without these public sources of funding, the above groups will not accurately reflect the planetary science community and will include disproportionate representation of faculty and planetary scientists at institutions with discretionary funds available. And yet, these groups are actively involved in determining what science gets done and by whom. When these groups are not inclusive or diverse, neither are their decisions, conclusions, or recommendations [8].

Although these funding agencies typically offer review panelists an honorarium to cover their time on the panel,, these honoraria typically do not cover significant work time spent reading and reviewing proposals in advance of the panel meeting. Moreover, the honorarium policy is inconsistent, not clearly outlined, and the rate of pay variable. Furthermore, not all panelists (e.g., in-person vs. external) are compensated, and not all panelists are allowed by their institution to accept the honorarium, and so alternative funding mechanisms must be considered [8]. Honorariums for review panels should be guaranteed and consistent.

Proposal writing: Although research grants may be the principal funding mechanism for science, the work of obtaining the proposals is also inconsistently funded across the field. The process of writing a selectable grant proposal is nontrivial and often requires that a significant amount of preliminary work be completed in advance to be presented in the proposals. Some institutions provide a budget to proposers out of their overhead, but this is inconsistent, and rarely sufficient to cover the time needed to write a credible proposal. Many institutions provide no support for this at all.

Writing a proposal on a currently funded grant is legally disallowed, so all support would need to be institutional. Institutions should evaluate the resources needed to submit credible proposals and be required to make those available to their proposers, either through overhead, or other internal funding sources.

EDIA Work: The most ironic category of unpaid work is that which involves Equity, Diversity, Inclusion, and Accessibility (EDIA), as the people most likely to volunteer for that work are those most impacted by the lack of those qualities in our community, and they are those most detrimentally impacted by the resultant loss of time spent on tasks that have more weight in performance reviews [refs from above].

A major goal of workforce studies [9–19] is to make the planetary science community more diverse and inclusive. NASA shares these goals, which is explicitly stated in all high-level NASA strategic documents [20–21]. It could be argued that diversity, equity, and inclusion are more central to NASA's goals than almost any one particular planetary science investigation [8]. However, there is little to no dedicated NASA funding to support these goals.While NASA funds programs that help advance their scientific and exploration goals,

including instrument design and scientific research, they generally do not fund studies of and service to the planetary science community, despite a clearly defined goal to support a sustainable and diverse workforce. The lack of funding for EDIA initiatives also means that some researchers cannot present their own EDIA work at conferences, lacking funds for travel [22].

Recently, NASA has announced an initiative to require inclusion plans in many of their ROSES programs. PIs must outline how their teams will work against barriers to create and sustain inclusive work environments [23]. This is a key development moving toward an increasingly diverse and inclusive workforce. NASA held a workshop to discuss the initiative, but feedback from those who attended suggested that more guidance is required. Comments indicated that many members of the community feel they do not have sufficient expertise to write and implement a good inclusion plan. This is because they have neither had the required training to do so, nor have an avenue to be funded to receive such training.

In other support areas, NASA provides scientists with tools necessary. For example, NASA believes in the importance of the ability to freely share data with each other so they provide financial support to the PDS, and to individual researchers and mission teams for PDS archiving activities. NASA should fund work done toward DEIA efforts, e.g. inclusion plans, in a similar way that they fund PDS archiving and maintenance efforts. [24]

Building Relationships: The example of the inclusion plan illustrates a common theme in much of the needed, but unpaid, volunteer work. It falls outside of the expertise of most members of the scientific community. Most planetary scientists have been formally trained in one or more of the physical, biological, or mathematical sciences, or in an engineering specialty. Proposing, reviewing, EDIA work and more is much broader than this, requiring expertise in fields such as social sciences, communications, languages, business, and law. Many scientists have no formal training in these fields. Even teaching and management are roles that many academics take on but rarely have any formal education in, and consequently the quality of this work can be highly variable [25].

Rather than tasking each individual researcher to become a polymath, a more sustainable approach is to work with professionals in these fields, whose expertise and experience would lead to greater outcomes. Naturally, a professional social scientist would expect to be paid for their time. It would therefore need to become acceptable, and indeed even expected to include funding for such work in grant applications. This would, for example, enable proposers to leverage their institutions' own resources for inclusion plans by requesting funds to support those institutional plans into grant applications, and making these efforts more sustainable. Just as a PI would not hesitate to include co-investigators from other subfields based on their expertise, they should be encouraged to reach further afield and subcontract with professionals with the needed expertise. NASA and NSF should encourage this type of co-investigation in grants and provide resources for networking with appropriate experts. Building these cross-sector, interdisciplinary relationships strengthens institutional cohesion, and brings a greater diversity of viewpoints into each project.

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