Communal Philosophy? A Possible Framework for Science-Society Interaction

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Abstract

Interaction with local communities is now labeled academia's "third mission," yet science-society rifts are still common, running deeper in marginalized communities. A first step towards bridging the gap is clarification. I review core concepts (e.g., 'outreach,' 'accessibility,' 'engagement'), sort them into two model frameworks – "Ivory Tower" and "Mutualism" – and describe their distinct structures. Both are helpful in relevant context yet their default application practically reinforces hierarchical boundaries, increases epistemic injustice, hampers science's epistemic values, and couples 'diversity' with ethnic divergence. Therefore, another model is suggested: 'Communal Academia.' I unfold how this model practically foregrounds activism, heterogeneity, and pluralistic interaction and advocate its evaluation based on heterogeneity rather than diversity measures. Imaginary and real-life examples demonstrate the practice-based advantages of this model, and the philosophical relevance of a communal approach is reflected upon.

"Doing something together with another person, and understanding that this is what one is doing…are central determinants of the human condition" (Gilbert 2014, 3). This paper examines one feature of joint activity: its communality, and does so within one important context – community-science interaction.

Scientists emphasize their research and teaching; yet, whereas nearly half deem community interaction important, an average of only 22% actually do it (Anzivino et al. 2021), and their motivation is often identity related, qua 'scientist' and/or 'citizen' (Atias et al. accepted). Without lessening the good will embedded here, in "academia's third mission," I argue that existing core concepts practically shape two major model[1] frameworks that dominate this field – "Ivory Tower" and "mutual benefit" – producing

[1] Within the large body of literature, I employ Weisberg's 2013 definition of models as incomplete, idealized, and abstract representations. They are specified by descriptions such as "words, pictures, equations, diagrams or computer programs and are accompanied by legends" (2013, 45) and interpretations, which "set up relations of denotation between the model and the real-world targets and give criteria for evaluating the goodness of fit between a model and a target" (2013, 39). A model's description constitutes its causal explanation, which amounts to identifying a variable that '"makes a difference' for an idealized model in the sense that its removal prevents the model from entailing the occurrence of the phenomenon." (2013, 101). The models discussed here are informal, using description of words and visual images, yet implicitly refer to and derive their authority from formal models in game theory and systems theory.

conceptual ambiguity, epistemic losses, and injustice. To address these difficulties, I suggest a third model framework – "communal academia" – and argue for its employment alongside existing model frameworks.

During science-community interactions "science as usual" practices tend to ignore or suspect local knowledge, thus hampering their own research (Wylie 2014) and causing epistemic injustice, "a wrong done to someone in their capacity as a knower" (Fricker 2007, 3). Similarly, public distrust in science is substantial (Kabat 2017), leading to rebuttal of scientific solutions to pressing issues (XX describes such a climate-change case in our session, and XXX adds an analysis of 'mistrust'). Such mutual distrust is also molded by the concepts and models employed during science-society interaction; hence their clarification may help understand, and perhaps begin to amend, this community-academia gap.

The first and second sections clarify the rich terminological field describing academia-community interactions by extracting from it the two major model frameworks: the "Ivory Tower" framework, structured as a hierarchy between two distinct collective participants, academia and the community, with the former's variables unilaterally entailing the model's prediction; and the individualistic "mutual benefit" model framework, structured as two distinct individual participants, each maximizing its self-benefit, ideally free of collective ties, and co-determining the model's prediction. Despite their differences, both models share the same default measure of success for community-academia interaction: number and diversity of individual participants. Both frameworks are hereafter critically examined. The third section suggests a "communal academia" model framework,

structured as a single collective, with multiple different, co-determining and potentially changing individual *and* group participants. A communal academia example ("Town Square Academia") is presented. Given the importance of bridging science-society gaps, and of the core concepts and injustice involved, I argue that even if communal academia only *sometimes* succeeds, it should be attempted in *all ways*. The final section amalgamates the lessons from employing a communal philosophy approach, and pleads for its implementation in additional contexts.

1. A Conceptual Overview

Nearly all the core concepts in the discourse over science-society interaction assume a clear "us" "them" distinction. For example, the collectivist-oriented 'outreach' means the "activity of an organization in making contact and fostering relations with people unconnected with it" (Oxford English Dictionary (OED) 2021). Helping another also illustrates one's dominance, made explicit by terms like 'accessibility,' 'popularization,' and even 'stewardship' (Wylie, 2005). Such hierarchical concepts[2] encapsulate the kernel of the Ivory Tower metaphor. An insulated, independent, and virtuous collective entity, able and willing to help those inept to enter its gates.

Practically, a hierarchical model structure means that its conditions for the community (for example the value of the variable "degree of public knowledge") are

[2] Similar tones dominate pedagogic research: PUS "Public Understanding of Science" and PCST "Public Communication in Science and Technology."

unilaterally determined by the conditions of academia (for example the value of the variable "degree of scientist's availability for public meetings"), and that the latter entails the model's prediction. Within a specific research question or practice, knowledge inequality can be obviously true. It is the expansion of a justified epistemic hierarchy among particular experts into a non-particular privileged epistemic separation that is unwarranted and could explain, at least partly, anti-science reactions. That said, if the hierarchy is due to academics' role as a "serving meritocracy," then the gap seems at least morally justified. However, given the average income and social status of tenured college professors, "servants" of humanity seems inaccurate in this context.

Such up-down metaphors are often eschewed by recently developed individually-oriented models, shaped by concepts like 'engagement,' 'partnership,' 'mutual benefit' or 'win-win situation' implying reciprocity rather than a hierarchy of active donation and passive reception. All these terms are rooted in the economic, diplomatic, and legal meanings of contracts (OED 2021). 'Engagement' adds active commitment to the – formal or informal – deal; hence, it makes sense to say that "Sharon is highly engaged in coordinating the activities of her bird-watching group" but it sounds awkward – or cynically insulting – to say that "she is highly engaged in raising her baby". Why? Because 'engagement' typically refers to those types of interactions that maintain one's individual identity intact. Yet when it comes to one's child or political activism, one's individual identity often becomes partly absorbed in one's role within a larger collective. In such cases, using 'engagement,' 'partnership,' 'reciprocity,' 'mutual benefit' or 'win-win' often mis-describes one's actual belief. Furthermore, since these concepts shape the individually-

oriented mutualistic model framework, such a model is not expected to explain dyadic or activist phenomena well enough.

Recent models of citizen science interaction assume mutualism as a cornerstone principle (Atias et al., accepted; XXX in our session) and thus imply that no collective absorption is required. Instead, the mutual aim is typically built into an individually oriented "game theory" model structure.[3] Under this model framework, 'academic' and 'community' agents can be kept clearly distinct. Each represented individual is expected to fully describe its own tangible goals and priorities (player traits), its practically available routes of action (strategies), and its specific pay-off, that is, its net benefits given expectancy of their occurrence (measure of success). Since each individual rationally acts to directly promote its own payoff, and since the model's structure is co-determinant (see footnote 4), a mutual "win-win" or "middle-ground balance" can be expected for all.

However, given the current conditions of academic competitiveness, even if aiming for a joint community-academia product, defection becomes a more rational choice under

[3] The full and precise meaning of a 'game' is its mathematical formulation. Yet, in common parlance, it means a rationally strategic co-dependency of individuals, as one's benefit depends on another's action. The 'game' is a mathematical function of three variable types: an individual agent (a collective is assumed to be represented well enough by an idealized individual); the strategies (e.g., 'cooperation' with or 'defection' from mutual engagement); and payoffs (a common measure of success). The agents are assumed to know all available options and always act to directly maximize their individual payoffs.

this model. In that sense, this structure fits a variant of the "prisoner dilemma" game;[4] and, most importantly, it assumes a trade-off between the agents' goals of academic excellence and community relevance. Even if both agents strive for both goals, since stakes are high and one must choose, the structure rationally leads scientist and locals against mutual partnership.

2. Community-Academia Trade-off

To justify this gloomy prediction, advantages of mutual engagement are described, and the constraints leading both sides to mutual distance specified. I criticize this framework, on moral and empirical grounds, and suggest an alternative, elaborated upon in the next section.

[4] In this model, two agents meet a finite number of time/s and defect regardless of their partner's action. As a collective of two players, mutual defection worsens their payoffs compared to mutual cooperation, yet as an individual rational player who knows all available options, given the payoff structure they must defect. The payoff structure is: T>R>D>S. Hence even if mutual cooperation (R-reciprocity) is high, it pays more to defect while the other cooperates (T-temptation) and it pays least to cooperate with a defector (S-sucker). Therefore, both defect (D) in an undesirable steady state equilibrium: Anyone employing an alternative strategy obtains worse or equal payoffs, and if enough agents employ this new strategy they only lose to those defecting (Smith 1983).

Social epistemological models support interactions among participants with different perspectives and values (Douglas 2009). Academics and local communities similarly bring different perspectives and values to a joint project, but while some of those differences contribute to epistemic robustness others pull it apart. A scientist conducing a dialogue with community members, i.e., not merely transferring her knowledge, would be wise not to expect a single research standard or result that is universally replicable and generalizable. In that minimal sense she is a pluralist. If she also aims for more objective conclusions, their interaction should focus on dissent, in particular those differences put forth by underrepresented groups (see XXX in our session). This dialogue is now pluralistic in a stronger sense: A given phenomenon is correctly, but partially represented by more than one model and those models are not reducible one to another (Longino 2020).

Such pluralistic interactions of scientists with underrepresented community members can be expected to increase robustness of overlapping model interpretations (XXX and XXX in our session). The local aspects relevant to the community increase the accuracy and precision of the model. It helps identify casual factors and, in that sense, improves the model's description and its efficiency for local policy change. If different communities face similar challenges, as often attested by minorities, then the model's impact is also importantly generalizable: not via universal idealization but via abstraction of the local information practically accumulated. An explanatory model that facilitates

accuracy, precision, local impact, and context-dependent generalization seems crazy to give up.[5]

Yet such a dialogic interaction is also expected to substantially increase the study's complexity and flexibility. Increased flexibility raises uncertainty for everyone: What will they focus on? Will results be published? Where? By whom? Answers require careful and time-consuming negotiations. Since a higher rate of indexed publications receives higher academic payoff, it seems irrational for the scientist to invest in interacting with her local community. An epistemic loss.

Similarly, given the mutualistic aspects of this interaction, it also seems irrational for the underrepresented community member to invest the effort needed to produce the results required by scientific journals. If she seeks local relevance and change, rigorous scientific validation takes too long, her localized data will be too cumbersome for standardized databases metadata, and reproducing her data may destroy its local relevancy and/or even convert its meaning (Lonelily 2016). Moreover, transformative change often faces counter-pressure by the state establishment, and because scientific institutions typically serve and are rewarded by the state system, refraining from any interaction can make sense.

[5] The meaning of 'generality' here differs from the concept clarified by Weisberg (2006), thus not in tension with Levins' trade-off between precision, accuracy, and generality in ecological models.

That said, for some local policy initiatives, for example in climate change (XXX, this PSA session) or genetically modified food (XX this PSA session), obtaining data by academic standards is often very relevant for community members. However, even when the practical objectives and epistemic values are met, science-society interactions are infused with epistemic and social injustice. In fact, human transparency runs so deep that even the community member herself often does not expect social recognition, and certainly not academic credit. Ignoring her contribution is routine academic practice, even at the PSA.[6] As a result, academia-community gaps are deepening even while successful and well-intentioned interactions occur.

In other words, the excellence-relevance trade-off becomes the model's stable-state equilibrium. Therefore, not only will mutual cooperation between those prioritizing excellence with those prioritizing relevance rarely happen, but alternatives to mutual defection is expected to inflict further disappointment, intentional or unintentional. One can still hope that radically different initial conditions, even if uncommon, could prompt the participants to shift the point of equilibrium to a new, less deficient one. Yet one can expect such rebuttal of unfairness only as long as these very particular conditions and the

[6] A local expert in a Middle Eastern village obtained funds and approval from the village elder council to discuss her role at the PSA. However, she did not fit the registration form categories and hence could not register for the conference or receive travel grants. The alternatives – changing the form and/or bringing her husband as escort – created deeper challenges.

extensive efforts to maintain them exist. Even minute changes can return these individual agents to their unmerited traditional social hierarchy (O'Connor 2019).

Even those who dislike this result typically consider it "realistic," that is, accurate in its description and practical in its easily obtainable goals and expectations. A realistic model sends an "it is what it is" message, to which a rational being is expected to adhere. The only problem with this model's assumed realism…is its lack of fit to the available evidence. Instead of a trade-off between academic excellence[7] and social relevance, academics who participate in community engagement tend to publish more (Anzivino et al. 2021), and re-join such projects despite reporting their lack of individual benefits (Atias et al. accepted).

How could that be? One explanation for such model-world discrepancy is that science-society interaction is clearly a *collective* phenomenon, hence the default assumed sufficiency of an individualistic model framework is perhaps not the best – clearly not the only – tool to describe and interoperate this phenomenon. In the next section I argue for an alternative 'communal academia' model, built upon dynamic "me-you" and "us-them" boundaries within a joint collective.

3. Communal Academia. What Does It Practically Mean?

[7] 'Excellence' refers to the narrow and standardized formal measure of number of publications, informally constrained by journal impact factor.

I argue that when scientist and under-represented citizens interact at their best – 'best' both epistemically and morally – it is a shared dynamic, therefore better carried out by communal practices and more clearly understood by a communal philosophy of scientific practice. To ground this claim, I will briefly describe the practical meaning of 'community,' 'collectivity,' and 'communality,' the structure of communal models, why they are potentially transformative, pluralistic, and necessarily heterogenous, the impact of measuring 'heterogeneity' rather than 'diversity,' and the relevance of this framework for modeling science-society interactions at large.

Our starting point is the concept of a community. Among its various definitions, Wendell Berry's poetic paragraph is my favorite: "A community is the mental and spiritual condition of knowing that the place is shared, and that the people who share the place define and limit the possibilities of each other's lives. It is the knowledge that people have of each other, their concern for each other, their trust in each other, the freedom with which they come and go among themselves" (1969). My focus here is on "knowledge of each other" within a collective.

The dictionary meaning of the noun ‘collective’ is "a substantive which denotes a collection or number of individuals" (OED 2021); yet its usage in our context is narrower. It holds a joint character to it,[8] implying a collective's non-aggregated model structure. The

[8] Griesemer (2018) already clarified that sense for 'collectivity' and Gilbert (2014, 49-50) presented a list of clarifying examples for "we" groups.

shared dimension of a 'collective' is helpfully captured by its 'communal' adjective, driven from the Latin *com* (together) and meaning "belonging to a commune" (OED 2021).

A communal model tracks the non-aggregated interactions and entities of a single collective system. Within it, its participants are both individuals and groups of individuals ('community' and 'academia'), and their individual variables co-determine the model conditions for themselves and others, on various levels of organization. For example, a particular woman is both an individual and a member of a minority group, experiencing different pressures and opportunity in academia, the community, and in their interaction. Therefore, sufficing with an aggregated variable (e.g., "percentage of women in the crowd") is not expected to casually explain why certain community-academia interactions were less successful than others. This may seem common knowledge, yet only communal models necessarily include non-aggregated variables tied to heterogenic *interaction* within and outside one's group/s in a larger system. Only here such variables (e.g., "sense of belonging" SOB) constitute a causal "difference maker" (see footnote 1). Unlike the Ivory Tower and mutualistic model structures, a communal model structure necessarily includes at least two levels of participants (individuals and groups), and must record their heterogeneity and dissent within its overall system (for more on dissent see XXX in our session). Due to lack of space, I develop only two points that emerge from a communal model.

First, I argue that representing a collective phenomenon via a communal model structure implies a potential to *destabilize* that phenomenon. A model's structure determines a set of relationships between individual variables so as to follow changes in a

variable's value, often via intervention. The decision which variable is casually important enough to follow determines the model's range of observations, predictions, and casual explanations. Specifically, in a communal model, each individual is necessarily also a group/s member, thus cannot be individualized without its social structure. This is not only trivially true, part of nearly every model's background conditions, but foregrounded as a cause in the model, thus intervened upon and potentially transformed (see footnote 1). The Ivory Tower and mutualism model frameworks consider social context a fixed background parameter and thus do not intervene upon it. Thus, any boundaries or hierarchies that may exist between these individuals or groups are either assumed casually irrelevant or relevant as a steadfast model constraint. Therefore, any such borders are in effect *reinforced* by such a model description, whereas a communal model foregrounds the possibility of their destabilization. In our practical context of community-academia boundaries, communal models thus readily suggest a possibility for pluralistic description and activist interpretations. Moreover, since complex social structures often function via hierarchies, a communal model that readily suggests activism is expected to seek a more egalitarian change. "Activism" and "egalitarianism" indeed shaped the history of many actual communes, including the Russian and Parisian revolutionary ones.

Second, I argue that a more dynamic type of *difference* needs to be measured in a communal model, and that this difference makes a difference. Currently, for tracking differences in academia and the community, the sufficient and default measure is diversity.

'Diversity'[9] describes a population or collection well enough, but does not describe a collective well, at least not the sense described here. A population is any subset within a larger group with no prerequisite of any joint interactions, whereas exactly such aspects characterize a collective.

The same individuals and abundance can be counted in a basketball team or a supermarket queue, in an ecosystem or a zoo. Yet only a team or ecosystem causally depends on their type of joint interactions. Shavit and Ellison (in press) name the former a heterogenous collective and the latter a diverse collection, offering formal measures to both. Academia-community meetings, at their best, aim for a joint dialog among dissenting people and groups, rather than a collection of different people sitting next to each other quietly listening to the lecturer. Modeling and recording interactive differences during such meetings is especially relevant to minorities. A first step to ameliorate the epistemic injustice inflicted upon them, and to confront science alienation in the periphery without blaming the victim. Therefore, measuring the success of such meetings while ignoring factors like "who is talking" and "how much time is set for discussion" but only via their "diversity" can be self-defeating for those who truly care about social diversity.

Unfortunately, nationwide data-models on minorities typically suffice with diversity and ignore measures of interaction within and between groups. Heterogeneous

[9] Diversity metrics are derived from two quantities: number of different objects in a population (S) and the relative abundance p_i of each of the i^{th} objects: ($p_i = \frac{n_i}{\sum_{i=1}^{S} n_i}$) (Shavit and Ellison, in press).

measures, such as SOB, are left for individual initiatives although they clearly affect minorities' success (Walton and Cohen 2011). Since the latter's success depends on connectedness with a larger collective, and since increased diversity does not promise increased connectedness, then perhaps the disappointing results after decades of investments in "diversifying the campus" should not be so surprising. Since diversity measurements began, many more minorities entered the academia yet little changed in minority graduates and faculty, especially in philosophy departments,[10] and more so in philosophy of science.[11] Similarly, locals meeting academics are repeatedly "head counted" but their interactions with someone outside their group, lay or academic alike, is hardly addressed. As a result, if diversity increases (e.g., "overall percentage of women") while interaction structure remains intact, then heterogeneity can be reduced (e.g., "percentage of time women talked from stage"). This diversity-heterogeneity conflict is not rare, clearly noticed by under-represented participants, yet currently unmeasured. It often increases alienation and widens the community-academia gap.

All the above notwithstanding, one still seems perfectly justified in arguing that our world is far from perfect, hence it is better to take one small imperfect step after another than wait for the perfect storm. I agree. In certain important contexts diversity-based

[10] For example, women representation in philosophy journals from 2004 remained 14%-16% throughout (Wilhelm 2018), and Afro-American philosophy graduates from 1995 reached only 5% in 2019 (National Center for Education Statistics 2019).

[11] Jennings et al. 2019. Retrieved from: https://philpapers.org/archive/JENAPD-4.pdf

policies or popularized science lectures result in true individual empowerment and/or policy change. My concern is not with any particular community-academia model or measure but with its framing as *sufficient* and the *default* strategy for "the third mission" of academia.

A follow up criticism is the lack of actual cases of communal academia. Hence, I present an example of a project named "Town Square Academia" (TSA). It emerged in the midst of the 2011 "Arab Spring" and "Occupy Wall-Street" movements, in a peripheral region in the Middle East, with the goal of galvanizing community-academia relations that will resist existing power structures within and between the community and academia. In practice, short-term courses and long-term community-science projects take place outside the campus – in pubs, schools, community centers, forests and streams – over questions of local relevance and under debate. Most courses are co-built and co-led by volunteering academic and local experts, and participants hold dissenting worldviews – religious/secular, progressive/conservative – and are of different ethnicities (Shavit, Kolumbus, and Silver 2018). By 2021, 51 lecturers and 39 local experts co-produced over 100 courses and long-term projects, 13 peer-reviewed papers (over 70 popular articles), two international workshops, four policy changes, four national prizes (awarded to local and academic experts), and over $1milion recruited for community knowledge production, translation, dissemination and scholarships (Shif-Sinai 2021).[12]

[12] This is not a peer-reviewed publication but a written report reviewed by Tel-Hai College authorities and governmental representatives of the national Council of Higher Education.

Obviously, failures occur. Not all courses reported were led by heterogenous experts and not all projects produced policy change or worthwhile scientific data. Yet after a decade, it seems safe to say that a communal framing is practically feasible. Given the epistemic and moral costs of science-community gaps, both for science and for underrepresented communities, a communal academia framework that works only *sometimes* to bridge these gaps, should *always* be attempted before being ruled out.

4. Conclusion

In the end, even if a practice-based argument was made for communal models and for a communal dialogue between the sciences and peripheral communities, a case still needs to be made in the inverse direction: for a communal philosophy of scientific practice. Therefore, this section amalgamates the conceptual results of employing a communal approach to a conceptual investigation of an ongoing scientific practice, with the hope that others may find it relevant and interesting to improve.

First, instead of the blurry conceptual landscape of science-community interaction, three model frameworks were identified and explicated: the traditional Ivory Tower model, the presently dominant mutualistic model, and the alternative communal model. There is no single fit-for-all correct model, since 'interaction' is inherently pluralistic and context-dependent (Longino 2020). From the framework perspective, the first two reinforce existing hierarchical boundaries and hence often epistemic and social injustice, whereas the third framework potentially destabilizes inner-and-outer group limits and inequalities.

Second, the concept of communal was clarified, and its constitutive role for a communal model revealed. The model's structure and relevant measurements were briefly sketched, and much work still needs to be done. Importantly, the expectation for activism via pluralistic – rather than uniform – interaction was justified. In fact, the emerging communal feeling in TSA occurred because of noticing local differences rather than reaching a "consensus", "common language" or a single "translatable manual" for all participants (Shavit, Kolombus, and Silver 2018). Furthermore, foregrounding differences within and between groups suggests to compare groups, and thus notice their inequalities. Therefore, an inherent transformative potential was revealed in 'communality.' Third, for comparing and evaluating these differences, a measurement is needed. The analysis of 'communal' revealed its direct link to 'heterogeneity,' its possible practical conflict with 'diversity,' and the advantages of the former for leaving more space for underrepresented groups in academia-community interactions.

Space limitations prevent a full description of a communal philosophy method, so only a plea for its usage is made: Since a 'communal philosophy' approach helped clarify basic scientific concepts, framework, and measures, it could help dismantle other ambiguities regarding scientific practice; and, since a practice of communal academia pro-actively bridged science-society gaps here, it could be useful to examine elsewhere. Overall, the two-way communal "togetherness" attempted here, of philosophy of science and scientific practice, of academic institutions and local communities, and of theory and activism, seems like a worthwhile attempt.

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