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Can Gaming Be Used in the Nonprofit Sector for More than Fundraising?

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ABSTRACT: This paper explores new, game-based volunteering platforms in the sciences and discusses their viability for nonprofit organizations, which have long used gaming for fundraising but not typically in other aspects of their operations. The paper unfolds in two parts. Examples of game-based volunteering platforms in the sciences are examined in Part 1, and their broader significance discussed in regard to the history of science and the history of gaming. The games in question enable volunteers to work remotely with scientific research data and assist with data processing and information management. In Part 2, the paper outlines information management challenges in the nonprofit domain and articulates possible design modifications to the game-based platforms being developed in the sciences that would make them potentially workable for nonprofits. The modifications proposed, informed by the idea of "context-rich" design, draw inspiration from research into player habits and preferences within existing nonprofit gaming culture, with a focus on bingo, a highly popular form of NPO gaming that normally involves the analysis of individual and clustered number tables.

Keywords: game design, citizen science, nonprofits, data processing, information management, virtual work, volunteering

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Introduction

Non-profit organizations (NPO's) have long used gaming as a fundraising strategy. From raffles, pullt-abs, and bingo games to Las Vegas-themed "casino nights," gaming has been shown to be an effective way of generating NPO operating funds for causes as varied as job training programs and animal shelters to clean air campaigns, cancer patients, disaster relief, and more. This fundraising strategy, and the broader NPO gaming culture to which it gave rise, emerged in the U.S. between the 1960s and the 1980s when bingo and allied games were legalized for "charitable" purposes on a state-by-state basis, in the wake of state lotteries. Today, despite the presence of a commercial casino within 150 miles of nearly every major metropolitan area in the U.S., NPO gaming is a multi-billion dollar economic sector; in some states,

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Michigan and Pennsylvania offering good examples, thousands and thousands of registered 501(c)(3) organizations possess active gaming licenses.[1]

In this paper, I grapple with the question of whether gaming can be used in the NPO sector for organizational tasks beyond fundraising (i.e. on whether gaming can be expanded further into the NPO domain). Would it be possible for NPO's to integrate gaming into other core aspects of their operations: recruiting volunteers, cultivating donors, writing grants, or in administrative work?[2] As I show below, there are new, game-based volunteering platforms being developed in the sciences that offer a possible answer and model—a way of expanding gaming in the nonprofit sector, into organizational tasks beyond fundraising, into administrative work like data processing and information management specifically.

The paper begins by providing an overview of these new, game-based volunteering platforms that are being developed in the sciences. Designed to run on web and mobile technologies, the games in question enroll volunteers from the general publics, non-scientists, into helping analyze, sort, process, clean and manage scientific research data. But the games semi-conceal the volunteer work, the labor dimension, by sublimating it into the gaming structure; task completion is a secondary effect of the player's gaming experience. The result is a cultural mutation that still looks a bit like an information management or data processing environment, something not particularly famous for its fun factor, but also looks a bit like a "real" game— something that people might play by choice, out of curiosity, because they like science, or because they lack other gaming options.

In Part 2, I turn my attention to nonprofits. First, I outline NPO information management challenges.

There are many, and many are thorny. NPO's typically need data of different types and these data are produced (and used) according to overlapping and fluctuating deadlines and temporalities. Also, NPO data has to serve a variety of internal and external purposes. For example, a part-time staff member might document and analyze the number of hours worked by a specific group of volunteers for the sake of creating new workflow efficiencies; a volunteer "project coordinator" might take photographs or shoot video of a community improvement initiative, as it unfolds, to be used in an upcoming donor report; a grant writer might collect and aggregate statistics about a key social problem to justify an advocacy campaign; an Executive Director might conduct detailed interviews with families that have benefitted from a particular program that was funded by a major foundation. Activities of this sort often need to be performed in cost-controlled ways that minimize expenses and maximize the return on effort. They often require considerable human resources. And, like in the sciences, many NPO's mobilize a complex mix of paper-based and digital tools to carry such activities out.

After outlining NPO information management challenges, I discuss the viability of the game-based volunteering platforms that are being developed in the sciences for NPO's. The larger argument put forth in the paper— which mixes historical research, archival data, and design thinking— is that game-based volunteering platforms being developed in the sciences have obvious possibilities for NPO's, given the many information-related challenges that NPO's typically face, but such platforms would likely need sector-specific modifications to "travel" and "stick."[3] In other words, such games are not likely to work for NPO's as currently designed but could likely work (or be "accepted as working") with some basic changes.[4] I outline several possible changes in the final part of the paper, drawing ideas from research into player habits and preferences in the existing NPO gaming

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1   The National Association of Fundraising Ticket Manufacturers (St. Paul, MN: NAFTM, 2012), 2012 Annual Report, 3. From the outset of legalization, a diversity of NPO's turned to gaming as a way to raise funds. For an example of this diversity in one state, Michigan, a 1993 issue of Charitable Gaming Highlight$ published a list of the 543 organizations that first obtained licenses in 1973, when bingo was legalized in the state, and were continuing to operate twenty years later, in the early 1990s. See Charitable Gaming Highlight$ 6 (1993).

2   I should note: there have been efforts to use gaming for NPO advocacy work, public engagement, and public outreach. For examples, see Games For Change (gamesforchange.org). In this paper, however, my concern is with the use of games for organizational tasks inside NPO's, for core operations.

3   I am using "travel" and "stick" as used by David Kaiser. See David Kaiser, "Making Tools Travel: Pedagogy and the Transfer of Skills in Postwar Theoretical Physics," in Pedagogy and the Practice of Science: Historical and Contemporary Perspectives, ed. David Kaiser (Cambridge: MIT Press, 2005), 41-74.

4   Donald Mackenzie, Inventing Nuclear Accuracy: A Historical Sociology of Nuclear Missile Guidance (Cambridge: MIT Press, 1993), 47.

sector. Thus, the larger stakes of the paper concern not just whether NPO gaming can be expanded into other organizational tasks beyond fundraising, I argue it can, but also game modification and issues of adaptive reuse— the process of making something travel and stick, moving something (a tool, platform, or solution) from one organizational context to another.

Part 1. Game-based Volunteering Platforms in the Sciences

The current generation of game-based volunteering platforms that are being developed in the sciences typically enroll the general publics, non-scientists, into working with scientific research data that would require— to organize, clean, correct, sort, process or analyze— human and technical resources in excess of those currently available at a time of flat and, in many fields, declining science funding. A good example can be found in *Phylo,* which was developed at the School of Computer Science and Centre for Bioinformatics at McGill University (Montreal, QC).[5] Promoted as "a puzzle game that contributes to genetic disease research," the game asks players to double-check work that was previously performed by computers, which due to technical limitations still commonly produce errors when arranging and aligning long DNR, RNA, and protein sequences. Something key to *Phylo*, however, is that the game intentionally hides much of the science. Rather than immerse players in the world of pipettes, centrifuges, thermal cyclers, chemical fumehoods, freezers, computers, and the other objects and artifacts populating a modern genetics laboratory, the volunteers, playing the game online, instead interact with a puzzle-like "skin" that has them never working directly with the scientific research environment or the scientific research data; the players solve colorful puzzles and, in doing so, sequence alignment error corrections are made automatically and, once verified, resubmitted into the existing scientific datasets stored remotely on securitized university servers. In other words, the volunteers never leave the game-like interface, and never have to confront the complexities of the scientific work process. In terms of features beyond the "skin" or interface, *Phylo* includes a timer, a player ranking system, and a puzzle selection mechanism. In addition, "*Phylo* players can choose puzzles based on the disease category [on which they want to work]," which according to the game's developers, "gives the player a better feeling of (indirectly) contributing to biomedical research."[6]

Another example of these new, game-based volunteering platforms being developed in the sciences can be found in *Happy Moths,* which involves non-scientists in helping to process and analyze visual data, photographs specifically.[7] Created at Syracuse University's School of Information Studies (the Syracuse iSchool), the *Happy Moths* game was developed by drawing together "information scientists, natural scientists from a variety of ecological disciplines, software engineers, and web and multimedia designers."[8] Whereas *Phylo* focuses on data error correction, *Happy Moths* engages players in "a classic quiz game" that enrolls volunteers into the work of classification, sorting, and content analysis. Players are prompted to answer questions that were developed by scientists, and to engage in playful activities such as dragging photos of specimens across the screen to match them with similar photos, earning points along the way. There are plans for various specimen-specific iterations of the game such as *Happy Sharks* and *Happy Plants*.[9] The game elements, in addition to the colorful layout, include a scoring system and the ability to "compete with friends." The developers have also experimented over time with music, aesthetics and the game's overall design.

The advent of these games has broad significance at two distinct analytical registers. The first, which might be called their "internal" significance, involves the history and culture of science. Something well documented in the historical records, and a major theme in the academic literature on science and its histories, is that many scientific communities worked

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5   http://phylo.cs.mcgill.ca

6   Alexander Kawrykow et al., "Phylo: A Citizen Science Approach For Improving Multiple Sequence Alignment," PloS one 7 (2012): 3.

7   http://socs.ischool.syr.edu/happymatch/index.php/GameInitialization/startGame/59

8   Nathan R. Prestopnik and Kevin Crowston, "Gaming for (Citizen) Science: Exploring Motivation and Data Quality in the Context of Crowdsourced Science Through the Design and Evaluation of a Social-Computational System" (paper presented at "Computing for Science" workshop at IEEE eScience Conference, Stockholm, Sweden, December 2011).

9   Nathan R. Prestopnik and Kevin Crowston, "Purposeful Gaming & Socio-Computational Systems: A Citizen Science Design Case" (paper presented at Group '12, Sanibel Island, FL, October 27-31, 2012).

diligently over the 1800s and 1900s to promote themselves as special actors with unique habits, commitments and practices— something Thomas F. Gieryn began calling scientific "boundary work" in the 1980s and that many other scholars have written about and shown to include a number of interrelated developments that unfolded in the aftermath of the 17th and 18th centuries: the formalization of various scientific fields of inquiry, the creation of special scientific credentials, the establishment of new scientific associations and bodies, the development of specialized scientific terms and vocabularies, the engineering of special scientific instruments and tools, the formulation of new and distinct ways of making and disseminating knowledge about the natural and social worlds, and the invention of scientific "objectivity"— a social contract, moral economy, and set of affective norms that came to shape, structure, and delimit ideas of best scientific practice.[10] Many scientific fields, as part of this larger set of boundary-creating acts and processes, also came to focus heavily on data and to privilege data-intensive research practices.

These interrelated developments had unforecasted outcomes, including the emergence, over time, of a tremendous accumulation of what might be termed, for the sake of simplicity, "old data." This accumulation of old data was produced collectively across the different scientific research fields as part of the larger turn to data-centric scientific investigation that coincided with the creation of the scientist subject and the professionalization of scientific work. In addition to its volume, this accumulation of old data is further complicated in the present day by several factors. First, much of this old scientific data is stored in and through a dizzying array of old media: handwritten field notes, bound reports, drawings, printed photographs, paper charts, and more. The problem that arises from this situation, for present day scientists, is one of information retrieval, re-use and re-analysis. The heavily computerized scientific research environments that were developed over the past several decades (1970s-2000s), the sites in which scientists currently work and that continue to achieve

new networked complexities, do not interoperate well with old data trapped in old media, such as paper. This makes integrating old data into new studies difficult and cumbersome. Second, present-day scientific research endeavors generate tremendous volumes of *new* data using a wide array of new, digital tools and technologies. Such tools can create, with relative ease, highly complex digital objects and datasets that come into being against the backdrop of the massive amounts of old data still trapped in the old media aforementioned. And third, as mentioned briefly above, many present-day scientific communities have become increasingly under-capitalized. They lack resources (human, financial, technical, and otherwise).

For those interested in the history of science, these new, game-based volunteering platforms like *Phylo* and *Happy Moths* mark an important and fascinating development. They create a small rupture, deviation, or break from the idealized cultures of scientific research that developed, flourished, and then industrialized between the Enlightenment and the Great Recession. Games of this sort flirt with the de-coupling of science from objectivity, at least at the interface level. They also engage in what might be termed blurring work: they de-prioritize social distinctions between scientists and their publics, distinctions that were previously deemed foundational to many scientific communities, and to many external audiences in regulation and government that came, over time, to strongly prefer that scientists create knowledge with impersonality.[11] Turning scientific work into a game, and involving non-scientists, is not where science appeared to be headed for much of its recent history.

Not to suggest that these new games are equally distributed across scientific fields, that existing versions of them are un-changing or un-changeable, or to suggest that they have legions and legions of players. In fact, so far, these games have comparably few dedicated players, fans, or followers. This could be due to the design of the games, or current trends in gaming preferences, or the roll out and marketing of the "product." It could also be that, after spending decades (if not centuries) actively isolating and elevating scientific work as the purview of special

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10   Thomas F. Gieryn, "Boundary-work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists," *American Sociological Review* 48 (1983). On the rise of objectivity specifically, see Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007). On the other developments mentioned, see the historiography of science, 1960-2014.

11   On the demand for impersonality in the sciences, see Theodore M. Porter, Trust in Numbers: The Pursuit of Objectivity in Science and Public Life (Princeton: Princeton University Press, 1996).

expert actors, only to then rather suddenly ask for public assistance in carrying out basic scientific research endeavors, but also to then limit and structure that public assistance so that it frequently unfolds at the most mundane and grunt level of the scientific research process, has created barriers to widespread participation and play. All of these could be factors, and there could be more, as to why such games take their current forms and have their current levels of player interest and disinterest.[12]

In addition to an "internal" significance specific to the history and culture of science, these games also have an "external" significance that involves recent and larger developments in the history of gaming. Inside of science, these new, game-based volunteering platforms offer one small way of coming to terms with an accumulated past, a "high tech" present, and circumscribed resources. But in the broader history of gaming and game development, they are part of a larger trend more typically associated with the private sector, one that entails using games and game mechanics for employee management, to "incentivize" employees, and to make certain types of occupational tasks more enjoyable, competitive, or rewarding in sites like call centers, which have been shown to be especially monotonous work environments.[13] In the private sector, such platforms are typically framed as "gamification."[14] The existence of such platforms in the sciences shows how these larger developments in gaming history are mutating and spreading, beyond the corporate sector, into other social domains where gaming was previously unimaginable. It also suggests that gaming history is perhaps entering a new phase

that will involve an even more complicated set of terrains and itineraries that link an even wider group of actors, and bring into association an even stranger mix of sites and characters.

In the following section I turn to the issue of how these types of game-based platforms, like those being developed in the sciences or close cousins in the private sector such as packages like *Arcaris* and *RedCritter Tracker*, could continue their travels, on how they might be made to move into the NPO sector. Despite having a well-established volunteer culture, a long record of using gaming to carry out fundraising, and numerous administrative challenges that relate to data processing and information management, such platforms are not yet widely known or integrated into NPO workplaces and workstreams. Informed by the idea of "context-rich" design, a mode of designing concerned with situatedness and specificity, as well as concerned with "relating advanced technologies to the social ecologies they might serve," I begin by briefly outlining NPO information management challenges.[15] I then present some research and discovery work that would likely make game-based volunteering platforms like those being developed in the sciences more doable and probable for NPO's. My research attention has been focused on player preferences and habits within existing NPO gaming culture. Again, the larger argument put forth in this paper is that such games would likely need sector-specific modifications to "travel" and "stick," the topic to which I now turn.

Part 2. Information Challenges in the Nonprofit Sector, Design Modifications

NPO's vary greatly in size, scale, scope, structure, and mission. In fact, the very idea of a coherent nonprofit sector, at least in the U.S., is the result of a relatively recent and complex social and political process that grouped into a single conceptual framework a wide range of disparate organizations— for the sake of easier regulation, monitoring, and study.[16]

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12   Citizen science game developers often frame player interest and disinterest as an issue of "motivation." For an example, see Nathan R. Prestopnik and Kevin Crowston, "Citizen Science System Assemblages: Understanding the Technologies that Support Crowdsourced Science" (paper presented at iConference 2012, Toronto, Ontario, February 7-10, 2012).

13   For a detailed ethnography that captures key features of the types of monotonous work environments that are now embracing gamification, see Carla Freeman, "Inside Multitext and Data Air: Discipline and Agency in the 'Open Office'," in Carla Freeman, High Tech and High Heels in the Global Economy: Women, Work, and Pink-Collar Identities in the Caribbean (Durham: Duke University Press, 2000), 141-212.

14   For an historical overview of the term "gamification," see Deterding et al., "From Game Design Elements to Gamefulness: Defining 'Gamification'" (paper presented at MindTrek '11, Tampere, Finland, September 28-30, 2011).

15   On context-rich design, see Steven A. Moore and Andrew Karvonen, "Sustainable Architecture in Context: STS and Design Thinking," Science Studies 21 (2008): 38-43.

16   For an overview of how the NPO sector came to be created in the U.S. see Emily Barman, "Classificatory Struggles in the Nonprofit Sector: The Formation of the National Taxonomy of Exempt Entities, 1969-1987," Social Science History 37 (Spring 2013): 103-141, especially 115-118.

This grouping (and conceptual re-framing) occurred in the second half of the twentieth century, involving a significant amount of theoretical and organizational abstraction. Which is why, today, some NPO's have multi-billion dollar operating budgets, thousands of paid staff, and planet-scaled reach. But other NPO's survive donation-to-donation, with little to no formal staff, working with small communities and neighborhoods. These differences inside the so-called "Third Sector" mean that information challenges vary considerably within it.

But there are, however, some discernible patterns. For instance many NPO's, regardless of their size, collect and store data about new volunteers— asking people to generate personal data about themselves, about their prior volunteer experience(s), about their schedules, and about their interests and goals when it comes to volunteering. Many NPO's also compile information about prospective and current donors, about laws and policies connected to various NPO issues, and about third-party vendors and consultants who support the NPO sector. In addition, data processing and information management plays a key role in grant seeking, advocacy work, compliance with laws and regulations, and in how individual NPO's carry out performance measurement and reporting to their funders.

Each of these activities could be discussed in more detail but this last item— performance measurement and reporting to funders— is especially worth highlighting as an example of NPO information management challenges. Reporting is heavily discussed in the academic literature on NPO's and has been shown to be especially burdensome for many organizations. The sector's heavy reliance on operating grants creates unique responsibilities and peculiar information work rhythms that can come to involve a dense network of funders, including foundations but also various levels of government, each with uneven, shifting expectations and requirements. Moreover, funders often require grantees to participate in complex reporting processes that entail cyclical, and increasingly data-driven, accountings of how grants are spent and of what, if any, "impact" has been made by the NPO in question toward meeting its proposed mission-related goal(s). This reporting is sometimes required to be descriptive, narrative-based, and qualitative. But other times it can be highly quantitative and require complex statistical analysis. In this regard,

many NPO's tack back-and-forth, generating different amounts of qualitative and quantitative analyses of their activities, making and using different data types. However, individual funders often then have their own, unique reporting standards and thus reports are not easily re-used for different funders.[17] In addition, many funders will ask for additional reporting if and when their expectations are not met.[18]

All of these reporting activities take place alongside, and on top of, the other data processing and information management activities aforementioned. NPO's are dense and lively information cultures— working continuously to make measurable their various programs and services, engaging in self-documentation, and exchanging information about mission-related activities within and beyond the sector as needed and demanded. Of course, to accomplish these tasks, many organizations use a hodgepodge of old and new information tools and systems: paper surveys and questionnaires, hand-held cameras and tape recorders, overlapping generations of computers, newer web-based services, as well as "homebrew databases" that intermix paper and digital components into single information "systems."[19]

As highlighted above, NPO's are not alone in dealing with such challenges. Many scientific communities face considerable data processing and information management challenges of their own. And these challenges proliferate in a moment when many scientific communities, like NPO's, are working with fixed, and in some cases declining, amounts of capital. I acknowledge that scientific communities and NPO's have key differences between them. The sciences are relatively new to gaming (if we set aside the many government-sponsored "challenges" that have forwarded scientific research for centuries) and also new to volunteers and volunteer culture, or at least much less organized around it.[20] This newness

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17   Alana Conner Snibbe, "Drowning in Data," Stanford Social Innovation Review 4 (2006): 41.

18   Lehn M. Benjamin, "Account Space: How Accountability Requirements Shape Nonprofit Practice," Nonprofit and Voluntary Sector Quarterly 37 (2008): 201-223.

19   Amy Voida, Ellie Harmon, and Ban Al-Ani, "Homebrew Databases: Complexities of Everyday Information Management in Nonprofit Organizations" (paper presented at CHI 2011, May 7-12, 2011, Vancouver, BC).

20   When I say that scientific communities are "new to volunteers," I am drawing a distinction between "amateur"
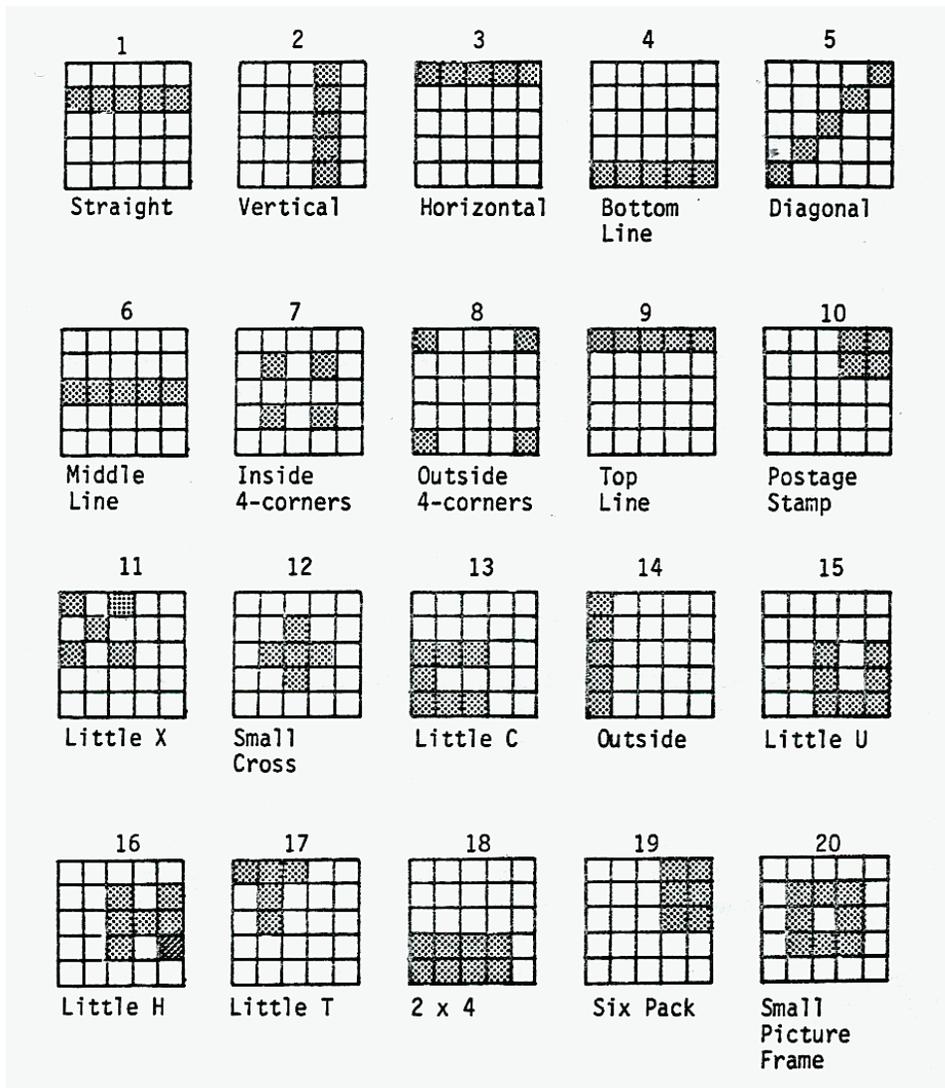
Figure 1. Examples of bingo game designs and patterns. Source: Michael A. Connelly and Merrill Macmorris, Success Now! The Bingo Managers Textbook (Riverside, CA: The Astro Press, 1984), 84.

is reflected in the current design(s) of the games being developed in the science arena: the games in question blur distinctions between scientists and lay publics but in careful, one might say, almost nervous ways. The gaming interface or "skin" keeps players at a distance, visually and cognitively, from the innards of scientific work practices and processes. The energy and effort inherent to scientific research, the many social and distributed acts of negotiation, tool selection, decision-making, problem formulation, initial failure, consensus building and whatnot, are never exposed to players. Neither are the scientific research environments, or the raw data itself.

In contrast, a deep and pervasive reliance on volunteers is thoroughly normalized in the NPO sphere.

Many NPO's have few if any formal staff and thus rely on volunteers to carry out essential organizational tasks, including administrative work like data processing and information management. Because volunteers already perform such work within the NPO domain, the advent of these types of game-based volunteering platforms in the sciences immediately makes thinkable new solutions and assemblages in which NPO staff or volunteers could perform information-related tasks through similar game-based interfaces. But to work, or be accepted as working, likely requires modification to the existing game designs coming out of the sciences.

One approach to modification could involve thinking more deeply about why people volunteer. There is an extensive body of academic literature on volunteering that spans several different disciplines in the social and policy sciences. Currently under-cited by developers of game-based volunteering platforms in the sciences, this literature shows that people volun-
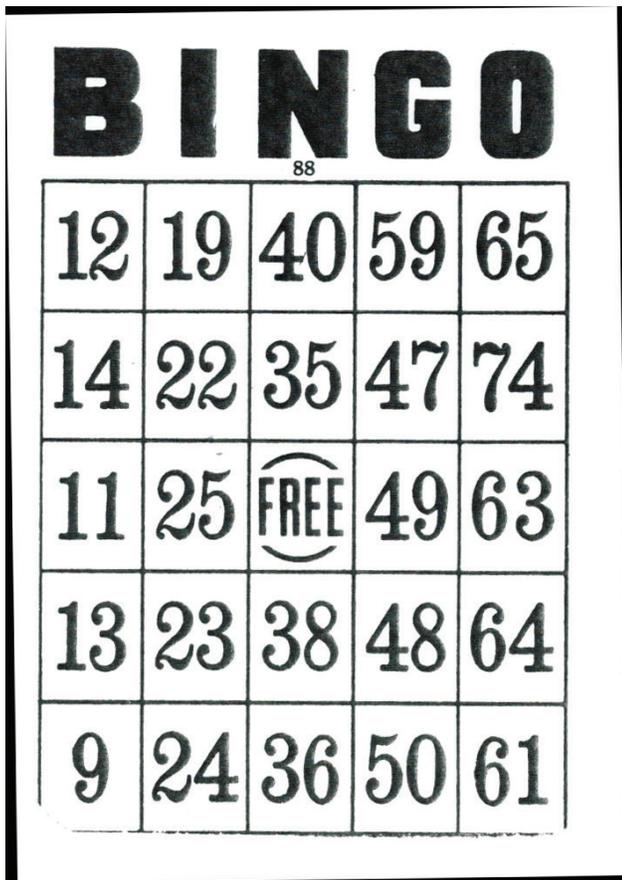
scientists of the past and the types of labor formations enabled by recent and emerging volunteer platforms like those discussed in this paper. Formal volunteering, akin to normative workforce practices in the NPO sector, has not been a central feature of science.

Figure 2. A typical bingo card. Source: E-Z Card Service, *The Bingo Player*: Bingo (North Hollywood, CA: Gaming Systems Co., 1966), 3.

teer for a host of concrete reasons and at specific moments in their biological, interpersonal, and financial lifecycles.[21] For example, one recurring theme is that people often volunteer out of professional self-interest, hoping to acquire new skills and work-related connections. The game-based volunteering platforms being developed in the sciences work hard to expressly conceal and minimize the labor dimension, and thus prevent by design the acquisition of any transferable skills. In doing so, such games arguably design out one of the key drivers behind volunteering in the general population, further limiting their own player pool(s). A second approach to modification, my focus here, could tease out inspiration and ideas from existing NPO gaming culture. Although NPO gaming initially developed around the organizational task of fundraising, not data processing and information management, active participants within NPO gaming culture mark an obvious potential force of volunteer

players. Bingo, with its widespread popularity and heavy use of number tables (typically 25 digits, organized into 5 columns), is particularly suggestive when it comes to matters of design.[22]

For starters, bingo players (statistically more likely to be women) frequently alter the game at the level of the "interface," typically a paper-based one. Specifically, players commonly tape together, spread or arrange the paper bingo cards into what functions as a much larger number table comprised of discrete sub-tables— to create more complex versions of the game, to increase one's chances of winning, or to increase one's potential winnings. A former NPO gaming operator, speaking in the 1990s, evocatively describes the resulting player experience in the following terms:

"[I]f you think about what's happening when a person is playing a bingo game, the numbers are being called, they're identifying the numbers in their mind, they're searching for them on their sheets, they're daubing them, and at the same time they're trying to discern the respective pattern for that game. [It] requires a lot of concentration…I recently did a survey at one of the charity halls in Los Angeles County and when I asked the question of players 'What do you think about when you're playing bingo?' universally each of them laughed at me. 'I think about the number.' I think it's very important for you to note that, when a person is playing bingo, they can't think about anything else but the next number or the next pattern…I can't over-emphasize the importance in that element of the game."[23]

Bingo players in the present day continue to play multiple cards at once. These sorts of practices, and the strong emphasis within bingo on numbers, numeracy, and numerical pattern seeking, promotes creative ideation about the potential viability of simple, bingo-like environments for analyzing NPO quantitative data, like program statistics, volunteer tracking data, service provider user metrics, and the like. Although the *Phylo* and *Happy Moths* volunteering

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21   For a recent overview of the volunteerism literature, see John Wilson, "Volunteerism Research: A Review Essay," Nonprofit and Voluntary Sector Quarterly 41 (2012).

22   For a description of a typical bingo game, see Bingo-Bingo-Bingo (Las Vegas, Computered Systems, Inc., 1970). Although a pocket manual focused on numerical patterns that appear within bingo, the text also contains a thick description of bingo gaming environments.

23   Mike Lombardi, "Bingo: Know Thy Customer," World Gaming Congress & Expo 1992 (audio recording, UNLV Center for Gaming Research collection).

platforms offer players some degree of choice, by letting players pick the disease category on which they want to work or the specimen type they wish to sort and categorize, neither permits a player to modify the game components in substantial ways at the interface-level (i.e. during play), or permits players to scale the volume of their work according to personal habits and preferences. Given how iterations of bingo-like games have been developed to teach children and young learners everything from shapes and colors to counting, punctuation, human anatomy, geography, and vocabulary, there also seems to be the potential for drawing ideas and inspiration from bingo to develop game-based virtual environments that would allow NPO staff or volunteers to work with qualitative data, like event photographs, client testimonials, scheduling information, donor research, descriptive accounts, story creation, and more. However, again, player habits and preferences within existing NPO gaming culture suggest a pervasive player desire to scale-up and scale-down the games at the level of the interface, as well as a pervasive fondness for numbers specifically. In fact, when bingo players are sitting in rows with their cards, they look much like the key-punch operators (usually women) from the history of computing; paper-based computer punch cards is how a lot of data was previously stored and processed.

Something else suggestive about bingo is that opportunities for community and socialization have been, and continue to be, a key driver for attracting players— people do not necessarily participate in NPO gaming, including bingo, out of a strong or direct interest in the NPO cause, project, or service for which funds are being raised. I say this having conducted extensive historical research that included looking at organizational records, game documentation, NPO gaming regulations, game manuals, handbooks, textbooks, conference recordings, media coverage, as well as secondary sources on NPO gaming culture. As early as the 1960s, bingo was referred to as "social gaming."[24] The specificities of which are well captured by a newspaper piece that was published in the mid-1980s: "Many [charity bingo players] arrive an hour or so early, drinking coffee, reading newspaper, spreading their bingo cards— sometimes as many as 40— and catching up on gossip."[25] The article

goes on to quote a bingo operator: "Say you're 70 years old. You come alone every day, but you know everyone, so it's not aloneness anymore. You develop a relationship with the people around you." In an ethnographic study of nonprofit bingo games, published in the 1990s, one of the research subjects ("Mrs. F.") described the social elements in the following manner: "I see Mary here only when we play bingo you see….so we'd like to chat…no, I won't miss a number just because we talk, no…that's why we have this system, you see, we know that under—like N…here…N [on the bingo card]--- it has only numbers between 31-45…so if they call N37 we just look for seven, and if it's not there, we can keep on talking."[26] These practices are well known within the NPO gaming sector. For example, a government publication, from the 2000s, instructing bingo operators on how to run games and acquire players, tells readers that bingo's "social environment" is a key feature to emphasize when trying to attract new players.[27]

The new, game-based volunteering platforms in the sciences (as currently designed) create a sense of community but only in the most minimal of ways. By which I mean there are relatively low levels of socialization, participant communication, and relationship building that occur within the games themselves. The centrality of socialization for player participation in existing NPO gaming culture, especially in bingo games, suggests that increased levels of interpersonal communication, relationship-building, and human interaction are likely required to make such platforms work in the NPO domain, if the goal was to draw players from existing NPO player pools. One can imagine players "arriving early" online, merely to socialize, before starting to play— or perhaps to read items online and comment— prior to engaging directly in the game-based data processing and information management work. One can also imagine a structure that would allow players to communicate with one another, to "keep on talking," during play sessions, even while the game was in progress. Placing the emphasis on "social gaming," foregrounding the "social environment" over the game mechanics or the NPO cause, is a modest and makeable change with the potential for significant effects.

24   E-Z Card Service, The Bingo Player: Bingo (North Hollywood, CA: Gaming Systems Co., 1966), 1.

25   "Bingo! Players Find Fun in Numbers," Chicago Tribune,

July 11, 1985.

26   Djuhertati Imam-Muhni, "'Charitable Gambling' In American Culture: An Ethnographic Study of Bingo and Poker Players" (PhD diss., University of Maryland, 1993).

27   Charitable Gaming Highlight$ 20 (2007): 3.

Conclusion

This paper grappled with the question of whether NPO's can use gaming for organizational tasks beyond fundraising. It showed how new game-based volunteering platforms that are being developed in the sciences offer a possible answer and model—a way of expanding gaming in the nonprofit sector, into administrative work like data processing and information management specifically. I looked at two examples, *Phylo* and *Happy Moths*, and explained their "internal" significance to the history of science and their "external" significance to the history of gaming, where they form part of a larger trend involving the use of games and game machinery for employee management and virtual work. I then discussed the issue of adaptive re-use: the potential for such platforms to "travel" and "stick" outside the sciences, inside NPO's. In doing so, I outlined NPO information management challenges and an approach to modification focused on existing NPO gaming, bingo specifically. The paper also helped document two under-studied gaming cultures: one heavily populated by grandmothers, military veterans, retired persons, families, churchgoers, and the like— people looking to socialize, looking to place small bets and wagers, and possibly looking to support a particular NPO or cause— the other populated by lab directors, postdoctoral researchers, university students, and lab technicians looking to advance and forward scientific research projects by incentivizing strangers into performing some of the mundane, inexpert work that lurks within all "expert" realms.

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