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August 2015

Humanities **2015**, *4*, 353–368; doi:10.3390/h4030353

OPEN ACCESS

humanities

ISSN 2076-0787

www.mdpi.com/journal/humanities

Article

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Academic Editor: Albrecht Classen

Received: 8 June 2015 / Accepted: 20 July 2015 / Published: 31 August 2015

Abstract: Like those in the Sciences and Social Sciences, humanities researchers are turning to collaborations to explore increasingly complex questions and implement new forms of methodologies. Granting agencies are supporting this trend with specific programs focused on highly collaborative research. While researchers and other associated team members welcome these collaborations as a way to undertake projects that would not be otherwise possible, work needs to be done to prepare individuals for team research. This becomes especially important for those in the Humanities who have been trained in single author work patterns and rewarded for those. Given this, what does collaboration look like in Humanities research? This paper will explore the experience of a large scale Humanities collaboration to understand the nature of collaboration, benefits and challenges and conclude with best practices for individuals and teams considering collaborative research.

Keywords: collaboration; team research; Humanities; case study; INKE

1. Introduction

Along with those in the Sciences and Social Sciences, humanities researchers are turning to collaborations to explore increasingly complex and large-scale questions [1–6]. Granting agencies are supporting this trend with specific programs focused on highly collaborative research including Digging into Data [7], Partnership Grants [8], and many others. While researchers and other team members welcome these collaborations as a way to undertake projects that would not be possible otherwise [2,3], it is not clear that all are accustomed to or trained for this type of work [9–12]. As a result, teams may not understand the best ways to work together in order to be successful, creating

challenges for a collaboration [9]. However, what does collaboration and team research look like in the humanities, a discipline with an emphasis on solitary research? What are the factors that contribute to success within this community of practice? And what are the challenges? This paper will explore these questions by examining a large-scale humanities-oriented research project focused on electronic books [13] to understand the nature of collaboration, its benefits and challenges.

The paper will unfold as follows: first, the context for collaboration will be explored with a focus on the challenges of undertaking such work in the humanities. Next, the case study, the Implementing New Knowledge Environments (INKE), will be outlined along with the nature of collaboration within this team, its benefits and challenges, and associated strategies for success. The paper will conclude with best practices for individuals and teams considering collaborative research.

2. Context

Academic collaboration among and between disciplines is becoming more common for several reasons. First, research questions are becoming more complex, larger-scale and/or in need of expertise available from other disciplines [6,12,14,15]. Further, collaboration can increase the quality, depth and scope of the research and often achieve what a single researcher cannot [6,12,16,17]. Finally, these collaborations afford individuals an often-welcomed change from solitary work and a chance to learn new skills and knowledge [2,3,6,18].

However, challenges accompany these benefits. First, given their academic training, team members are not often prepared for the level of interdependence that is needed within these projects [19]. Second, differences in disciplines can create conflicts over terminology, research methodology, appropriate research questions and authorship conventions. Further problems can arise from varying expectations of roles, contributions, power, personalities, and status [12,14,17,20–22]. Finally, contextual and institutional factors, such as reward and recognition policies, conflicting reporting mechanisms and relative prestige of the involved academic institutions, can further minimize a research team's effectiveness and ability to achieve its objectives [9,23–25]. Ultimately, when teams are not successful, the end result can include a loss of reputation and research money, disrupted personal relationships and uncompleted research [12,26]. Consequently, research teams must understand the nature of collaborations, their benefits and challenges in order to be successful.

While all disciplines experience challenges collaborating, this form of research can be even more so within the humanities with its traditional emphasis on the solitary researcher [5,27–29]. In many cases, this means that co-authored work is downplayed or de-emphasized. At one possible extreme, some humanities conferences do not even allow co-authors to present [30]. This perspective is reinforced through graduate training where students are trained to be solitary scholars and are not generally seen as collaborators and equal contributors when working as research assistants [12,14,31]. Despite this context, several examples of humanists collaborating with each other and those in the disciplines exist [5,22,29,32–34]. However, this context raises questions about the nature of collaboration in a humanities research project. What are the advantages and challenges associated with the collaboration? What strategies are employed to maximize benefits and minimize challenges? It is worth examining these questions within the humanities given that most work on research collaboration is focused on the sciences and social sciences [6,26,35,36].

The rest of this paper will explore these questions through the examination of the Implementing New Knowledge Environments (INKE), a humanities-grounded research team, as a case study of a successful collaboration.

3. Methodology

This analysis will be explored within the context of a case study research approach as defined by Yin [37] and Stake [38,39]. This methodology is appropriate when one is considering "how" and "why" questions over a period of time, as is the case with this example [37]. In addition, by exploring a single case, one can explain a situation and the dynamics that are at play within that particular setting and develop recommendations for others who face similar contexts [37–40].

Data was collected through a series of annual semi-structured interviews with members of the administrative area leads, researchers, graduate research assistants, postdoctoral fellows and other team members. These individuals were asked about their experiences collaborating within the project in order to understand the nature of collaboration and the ways that it might change over a grant's long-term life, as well as the advantages and challenges associated with it. These interviews allow the researcher to explore topics more fully and deeply with probing and follow up questions [41–43] while participants reflect on their own experiences and emphasize those issues that are most important to them [44–48].

Data analysis involved a grounded theory approach that focused on themes that emerge from the data. This analysis is broken into several steps. First, the data is organized, read and coded to determine categories, themes and patterns. These are tested for emergent and alternative understandings, both within a single interview and across all interviews. This is an iterative process, involving movement between the data, codes and concepts, constantly comparing the data to itself and the developing themes [41–43].

4. INKE as Case Study

Funded through Canada's Social Sciences and Humanities Research Council's Major Collaborative Research Initiative granting program [49], the INKE research project is a seven year multidisciplinary project with over 35 active researchers (drawing from assistant, associate and full professor ranks) plus postdoctoral fellows, undergraduate and graduate research assistants and partner organizations with a budget of approximately $13 million in cash and in-kind funding. The team was based in Canada, United States, and the United Kingdom at nine universities [50]. Grounded primarily in the humanities with representation from English, Book History, Philosophy, French, and Communication and beyond into Information Studies, Education, Design, Public Administration, and others, it is focused on studying different elements of reading and both digital and printed texts and contributing to the articulation of new knowledge environments [51–53]. The project is about to start its seventh and final year of funded research.

Building on a foundation of five years of discussion [54,55], the initial grant application envisioned an integrated program of research supported by an administrative structure, which included an executive committee, external advisory board, partners committee, sub-area administrative group, and four sub-area research groups, Textual Studies (TS), User Experience (UX), Interface Design (ID), and

Information Management (IM). (For a fuller discussion of the project structure, see [44,56,57].) During the second year, the team divided into three areas including ID, TS and Modeling and Prototyping (M/P). Finally, in year three, the team was consolidated into two sub-area research groups–M/P and ID. (For a discussion of reasons for reorganization, see [45,58]). In the fourth year of funded research, INKE underwent a mid-term review where it reported on its research outcomes relative to the grant application, initial project planning and ongoing yearly plans. Beyond reading the report, the review panel interviewed the administrative team, researchers, partners, and past and present graduate research assistants and postdoctoral fellows to understand research outcomes, and collaboration and administrative processes. Based on its demonstrated productivity and collaboration, the project was renewed for the final three years. Now nearing the start of its final year of research, the team is considering future research directions and partnerships with a focus on digital knowledge production within Canada [59].

5. Findings

The findings focus on the benefits and challenges with collaboration and associated strategies.

5.1. Nature, Reasons and Benefits of Collaboration

Overall, interviewees have found collaborating within INKE to be a positive experience with clear advantages. From the outset, the team has been able to accomplish more within INKE than would be possible as individual researchers. The participants also highlight that they have been able to learn from each other in terms of content, skills, methodology and new ways of thinking while pooling information and the expertise needed for individual projects within the larger INKE research framework [46]. Further, the individual team members find that the work is a welcome change from their often-solitary research as they are part of a larger community of practice that is grounded within the humanities as a whole. This has been of great benefit to the graduate students and postdoctoral fellows who, by interacting with the larger community, extended their understanding of the field and their connections to it. Finally, the team has been successful in terms of productivity and output as evidenced by the long list of publications, conference papers, interface designs and prototypes [60,61].

As the years have gone on, participants have been able to outline more specific reasons for collaborating at the administrative, individual researcher, graduate student and postdoctoral fellow levels. The administrative leads have found clear benefits. For example in year three, one administrative lead (AL2Y3)[1] commented that as new leads were added to the project, "more hands" meant "more ideas" in adjacent but not overlapping areas and more to share the administrative load. For another (AL1Y4), INKE has become a "lab space for idea generation" which keeps energy going and creates new angles for consideration within the research. This idea was echoed in the next year where one of the administrative leads (AL2Y5) remarked that the collaboration was acting like an incubator that was fostering networks and partnerships that enabled other research beyond the scope of INKE, an impact that is not easily measured. As the administrative leads gained confidence in working with each other,

[1] Individuals will be identified by the abbreviation for the group that they represent and the year of the particular interview. For example, a graduate research assistant interviewed in year four will be named GRA1Y4.

they have experimented with alternative hiring models of graduate research assistants (GRAs) and postdoctoral fellows (PD) to address some of the challenges associated with working with them (AL2Y4). (For a discussion of challenges working with GRAs, see both [45,62]).

The researchers also found advantages and benefits to working within INKE. First, one researcher (R1Y3) found that their participation in INKE provided a chance to broaden the "scope of their own work" with access to wider range of expertise, while preventing the myopia that might come from focusing on just one project. They were also able to do more than would otherwise be possible. Another commented (R1Y4) that INKE "keeps the momentum" going at times when one's own research might be stalled due to teaching and other commitments. This occurred in part because they got access to resources such as GRAs and PDs who undertook the work under their supervision. This was echoed by an administrative lead (AL1Y4) who commented that timesharing between INKE and other projects mean that an individual could deliver more. These participants also reflected on the social benefits to collaboration. One researcher (R1Y5) commented that they were able to talk and work directly with peers on research. For another (R4Y5), INKE provided an opportunity to pool intellectual resources and skills. One administrative lead (AL3Y5) remarked that INKE was a space where one can keep learning.

Student research assistants and postdoctoral fellows found advantages to their participation in INKE, particularly in contrast to the experience of those on other faculty research projects. As highlighted in year two, they felt that they deepened their collaboration and academic skills. One (GRA1Y2) felt that they made intellectual contributions in ways that other graduate students would not be able. Another remarked (GRA2Y2) that they met people within the field from across Canada and around the world. Building from this, a PD (PD1Y2) remarked that they had a chance to build a scholarly professional network and, by extension, their academic curriculum vitae, something that many humanities postdocs in traditional positions have more difficulty achieving. These positive experiences continued into year four where the GRAs and PDs commented on the opportunities that they had to travel and present at conferences and write articles. In addition, as one GRA (GRA2Y4) commented, they saw themselves as collaborators with few barriers between themselves and their supervisors. In other words, they did not feel that they were "merely" RAs working on the project. One (GRA1Y5) remarked that their involvement was an "unique experience" not available to all graduate students. Further, their work in INKE was contributing to their own research, intellectual development and professionalization. Finally, participation in INKE provided exposure to different skills and perspectives (GRA2Y5, PD1Y5).

5.2. Challenges with Collaboration

Of course, every collaboration comes with its challenges. INKE is no exception with those flowing from several areas. First, as noted by one researcher (R2Y5), collaboration requires skills and perspectives that are not often found in humanists due to graduate training and disciplinary mindset. As an administrative lead (AL1Y1) highlighted, collaboration requires skills such as interpersonal, planning, patience, flexibility and the ability to "see the world in other terms". Further, even the act of writing is different as collaborative writing requires that voices be blended into a single one (R1Y1). Collaboration also requires that a participating team member is willing to cede control (R2Y5) and

even at one level, lose their individualism (AL1Y3). Finally, it also involves managing yearly planning cycles and budgets, a skill and training that most researchers do not have (AL2Y1).

Further, collaboration requires high levels of communication and coordination within the project and with other responsibilities and obligations. As highlighted in year two interviews and subsequent years, given the project's scale and interdependences between sub-research areas, communication within and between these and scheduling against other responsibilities remained ongoing issues. The fact that the team is working at a distance across three countries further complicates this. As one of the sub-research areas found, when other responsibilities are combined with multiple time zones, only a few small windows of time for meetings on a regular basis was available (AL2Y4). It can be become hard to manage relationships between team members from a distance. As a result, the more difficult issues were resolved at face-to-face meetings, as noted by several administrative leads (AL2Y5 and AL2Y4).

INKE also faced challenges with GRAs and PDs. First, by year two, it was clear that it would be difficult attracting and retaining postdoctoral fellows with technical skills and a project manager in part due to salary differentials between the sciences and humanities (AL3Y2). Further complicating the situation, when someone was hired, INKE found it difficult to keep them, as better-paid opportunities often beckoned. Second, differing cost-sharing arrangements between participating institutions also impacted INKE's ability to hire postdocs and GRAs. Given the funding cost models which focus on full cost recovery for research activities at British and American universities, the equivalent amount of money allocated for a full-time postdoc in Canada translated to less than full time at a UK or US partner institution, which limited the amount of work that could be undertaken (PD3Y2). Unfavourable exchange rates relative to the Canadian dollar did not help the situation. The project manager position also proved problematic in the second year. INKE desired someone with both a humanities background and project management skills. This combination was difficult to find because humanities students are not often trained for project management, from either the "expertise or mindset" perspective (AL3Y2). Lastly, INKE found challenges incorporating GRAs and postdocs quickly. While many INKE researchers are from English-oriented perspectives, the GRAs and postdocs often come from other disciplinary backgrounds, including computer science, philosophy, book history, design and others and lacked an understanding of INKE's theoretical framework, associated collaborative work practices and pre-existing relationships (PD1Y4). It took a while for GRAs and PDs to get "up to speed". This remained a perennial issue due to the high turnover among students and postdocs, an anticipated but yet potentially disruptive occurrence.

The need to adjust to change and transition in several different areas was a constant for INKE. First, as highlighted above, INKE has been reorganized several times as sub-research areas were structured in four areas, then to three and finally to two. These changes also led to a subsequent reallocation of funds, researchers and partners as well as the addition of several new researchers and administrative area leads [45,47]. As a result, INKE had to find ways to incorporate new team members quickly and develop the necessary working relationships while still ensuring that the required research continued. As part of this process, several administrative leads (AL2Y3, AL3Y3) remarked on the need to orientate new members to the team's culture, work patterns, processes and roles without necessarily dictating specific actions to achieve this goal. The fact that no "authoritative" record of roles, tasks, outcomes and relationships existed complicated this process as noted by one researcher (R4Y5),

though the combination of the INKE website [13], midterm report, governance documents [63], and publications [60,61] helped.

Finally, INKE experienced challenges associated with academic credit and authorship conventions that held implications for students and early career scholars. Given its collaborative nature, INKE negotiated the authorship convention "and INKE Research Group" before starting the grant-funded research [63]. However, this collaborative work must still be balanced against the often-required monograph and other single authored work, as one self-identified early career scholar noted (R3Y5). They suggested the need for support from administrators as well as clarity on the ways that multiple authorship outputs would be counted for advancement. Another researcher (R2Y5) echoed this by highlighting that students still need to do solo work to build their *curriculum vitae* in order to be hired. This tension reinforces the need to be named first author in order to get recognition (AL2Y5). Ultimately, students need to talk to their supervisor to ensure that they understand the ways that academic credit will be allocated within collaborative projects (R3Y5). An administrative lead (AL2Y5) echoed this with a caution to students who are considering whether to bring their own research into a team setting such as this one, a warning that could be extended to early career scholars as well.

5.3. Strategies to Support Collaboration

INKE has devised several strategies to mitigate the above challenges and maximize the benefits associated with the collaboration. Building on an earlier project charter, the administrative team co-developed governance documents to guide the relationships between the various levels within the grant, including researcher, sub-area research groups, administrative, executive, and partner committees, and the international advisory board. These documents articulated a framework for a positive relationship while anticipating potential problems and/or changes and included issues such as:

- Process for the inclusion of new partners and researchers;
- An authorship convention which included the listing of individual authors along with the "INKE Research Group" to reflect the collaboration
- Process for planning and resource allocation, decision-making, and dispute resolution; and
- An articulation of a clear relationship between planning, agency and accountability [44,63].

In year two, the team found that these documents provided the necessary mechanisms for facilitating transition and change in a way that preserved existing relationships and overall research focus while making allowances for new interactions, collaborations and ideas. In effect, they provided a "safety net" to the larger team that allowed it to take risks and make changes (AL1Y2). Further, new team members could read these documents and gain an understanding of the INKE's working culture since they made the tacit more explicit. In other words, the documents were a necessary way to ensure that everyone was "on the same page" (AL3Y5).

INKE uses several communication channels to facilitate interactions and coordination, including face-to-face meetings, conference calls, online collaborative tools, project website and others. First, team members discovered the value of intensive and extended formal and informal face-to-face meetings to talk about the larger research project and associated joint activities. By way of example,

the INKE conference held in The Hague proved to be productive in the second year. The team first met in formal conference setting and then continued conversations with coffee, meals, museum visits and walks over several subsequent days. This created "dedicated" time for interruption-free discussions, not often possible at conferences where research conversations might be limited to standard question and answer period (AL2Y2) or short lunch and coffee times (AL1Y2). These meetings helped confirm the desire to work as a team and a chance to get the "motor fired up" for the research (AL2Y2). Duplicated in Japan, Cuba and Australia, these meetings also create a forum for those discussions that can be difficult over email and as well as for research and planning next stages. These encounters provide a different type of engagement around research than is possible through document exchange and online collaborative writing spaces (R1Y5). Another researcher (R3Y5) commented that these are key for accessing knowledge and expertise needed for projects. One administrative lead (AL1Y3) suggested these "informal engagements" over walks and meals in Kyoto took on a "spontaneous nature" that led to exciting discussions about new research directions, which ultimately resulted in a project and publication. Another administrative lead (AL2Y3) suggested that the three day planning meeting, conducted by walking through the streets of Kyoto was one of the "most exciting, more collaborative" events in which they had taken part.

These very intensive interactions are then supplemented with regular conference calls, emails, and online project spaces where researchers participate in more than one area. In this way, researchers are familiar with what is happening in the other sub-research area. Further, the project website was important for seeing "what the other projects were about" which could inform one's own work (GRA1Y3). An administrative lead (AL4Y3) commented that the website allowed them to see at a glance what the other sub-research area was doing.

6. Discussion

Despite a reputation to the contrary, INKE has shown that humanists can collaborate within a targeted and goal-oriented research project. This one has been successful by a variety of measures. First, it passed its midterm review given its demonstrated research productivity and collaboration. Second, in terms of traditional academic outputs, INKE has a long list of publications and conference papers in traditional humanities disciplinary outlets such as the Canadian Association for the Study of Book Culture [64] and the Bibliographic Society of Canada [56] and beyond into Digital Humanities and other venues (For a complete list of publications, see [60]). The project has also been successful in producing non-traditional humanities-oriented outputs with several interfaces and prototypes [61]. At the interpersonal level, the interviewees have accepted the desire and need to work together to achieve the INKE's research objectives and thus achieve benefits such as research productivity, ideas, support and encouragement and the desire to continue to work together on another large scale research project [59]. It is a nod to the strength of the collaboration that this ongoing productivity has been sustained through the inevitable change, transition, and new team members within INKE itself and the members' other professional and personal obligations.

However, this case study example shows that developing a productive collaboration takes time and needs mutually reinforcing networks and the right mix of people [65,66]. INKE met for over five years before writing the successful grant application. Those early years were spent developing a shared

understanding of research question and objectives, tasks and working relationships [67–69]. Further, potential team members got to know each other and determined who would work well within this particular collaboration [70–72]. These early stages became the time to articulate those things that might become problematic later, such as authorship, credit and distribution of resources. INKE also found that the process of confirming commitment to a collaboration is repeated regularly as new researchers are integrated into the team with its established work patterns [73,74]. It also took time for team members to develop the necessary skills in collaboration, budgeting, reporting and project management. This reinforces the need to bring in people who are collaboration ready from the outset, who are flexible and open to collaboration and have the necessary skills [72,75]. As one administrative lead (AL4Y3) stressed, they knew of some colleagues "who would not work well within INKE" because they would not be willing to give up their independence to join this type of collaboration. This highlights the tension inherent within a collaboration–the balance between the individual and team to the benefit of the collaboration [71].

INKE has also shown that even in a now mature collaboration, formal and informal face-to-face meetings are an important part of the collaboration process. It is the time to work out potentially problematic issues and planning for next steps in ways that can be difficult over email and get to know each other on professional and personal levels [76,77]. People can more easily develop the sense of team when they can see and hear each other clearly and the potential for misunderstanding is reduced and tension can be more easily diffused [78–80]. Further, the more informal interactions, which might take place over meals, drinks, and walks, allow individuals to get to know each other on a personal, not merely professional level [81]. Taking advantage of the ideas brought forward by team members, these conversations can also lead to innovative breakthroughs and creative problem-solving, which can be more difficult in more formal meetings [16,72,77]. These interactions can then be supplemented by email, online project spaces, conference calls and other virtual communication channels. Combined, they are important for the exchange of ideas, building trust and mutually agreed upon collaboration processes and evaluating interest and commitment to working together within the larger grant objectives.

The project charter and governance documents also become important supports to the collaboration. When writing it, the administrative team focused on those issues that might create the greatest potential for conflict given the fact that the larger research team is comprised of multiple disciplines, even within the humanities, with their differing academic languages, research methodology and authorship conventions [12,17,82]. By outlining patterns of interaction, the team was better able to manage the inevitable change, transition and conflict associated with working together in such intensive ways [15,83,84]. However, this is not to say that these are static documents. Instead, the administrative team revisited the documents on a regular basis and made changes as needed. Besides providing guidance on working relationships, these documents also played a larger role with the larger stakeholder community. These documents make more explicit the often "invisible" nature of administrative work within a large scale collaboration, such as this one. It was initially accepted as an "act of faith" that the time and effort involved in developing these would pay off [44]. However, it proved its value as the team managed change and transition with team members, sub-area research groups, and other aspects while accomplishing research objectives. The fact that INKE has had relatively few major conflicts is testament to the strength of these documents and the team's commitment to them. They are serving as models for other humanities research projects [85,86].

Skills training for GRAs and PDs gained by participating in INKE is feeding into larger discussions about humanities graduate training [87,88]. There are increasing calls for graduate education to include skills such project management, research support, and technical skills as well as a discussion of the role and expectations of the "alternative academic" within research programs. Participating GRAs and PDs are better prepared for available jobs. In this capacity, the "alternative academic" includes project managers, researchers, and others who do not hold a traditional academic post [89]. This collaboration has also been successful in building project management, collaboration, communication and other skills in GRAs and PDs [49,76]. In particular, these individuals realize the unique opportunity afforded them by participating in INKE. Ultimately, the larger community will benefit when these individuals join other projects and bring these skills with them.

7. Implications for Practice and Conclusions

On a more general level, this paper contributes to efforts to understand the nature of academic collaboration generally and more specifically within the humanities and those factors that contribute to its success while minimizing potential difficulties [6,9,26,76,90]. While each academic collaboration must develop its own mechanisms and processes to support its work [84], this case study suggests some that are important to support research and the relationships that underpin that work. Just knowing about potential problems can be "half the battle" and ensures that a team discusses these in advance and draws upon established and successful processes for managing these and others that may be encountered in future projects.

First, it is clear from this case study that successful collaboration allows individuals to undertake larger and more complex projects than would otherwise be possible. However, teams need to be mindful of the associated challenges and develop strategies to mitigate these.

As one possible solution, and especially for those with geographically distributed members, teams must hold regular in-person meetings which are supplemented, but not replaced by regular conference calls, emails and online project management sites [72,91,92]. These interactions, with a combination of formal meetings and more informal gathering over meals, drinks and even walks, become important to creating the necessary innovation and creativity which is at the heart of large scale research projects. Further, these meetings facilitate discussion and accountability for research and tasks [72,91,93].

Second, change and transition is inevitable in research projects of any length. With this reality in mind, collaborations must establish processes to handle these with minimal disruption. Project charters and governance documents can be useful for outlining these.

Third, these results reinforce the need for collaboration-ready individual to participate in teams. These people are open to different perspectives, willing and able to compromise, communicate, share and receive information and advice, and be accountable to others as well as have negotiation, conflict resolution, and planning skills [70–72,94]—these are characteristics and skills that are supported through collaborative processes.

Lastly, and perhaps most importantly, the creation of successful collaborations takes time. These do not just happen, but rather they take time and consistent effort to develop the necessary relationships that sustain the actual research and creates the successes that sustain the project and any future ones.

Conflicts of Interest

The author declares no conflict of interest.

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