



*International Society for the  
History, Philosophy and  
Social Studies of Biology*

Spring 2016

Volume 27 | Number 1 | Issue 50

## Contents

### **President's Report**

*Michel Morange*

### **2016 ISHPSSB Off-year Workshops**

*Off-Year Workshop Committee & Workshop Organizers*

### **Toward the 2017 ISHPSSB Meeting**

*Maria Elice Prestes, Charbel El-Hani & Roberto de  
Andrade Martins*

### **Call for Proposals to Host the 2019 and 2021 Meetings**

*Marsha Richmond*

### **Membership Development Committee Report**

*Alan Love & Emily Schultz*

### **Education Committee Report**

*Gregory Radick*

### **William Provine (1942-2015)**

*Richard Burian*

### **Evolution is more than Petunia colors: Eric H. Davidson (1937-2015): in memoriam**

*Manfred Laublicher*

### **Call to Organize an ISHPSSB Session at the 2016 Philosophy of Science Association Meeting**

*C. Kenneth Waters*

### **The Backpage**

Officers and Council Members 2015-2017  
List-serv subscription  
Renew your membership  
Credits

## President's Corner

Even years are apparently quieter for our Society, as there is no biennial meeting, but now is the perfect time to prepare future events. In this issue, you will find such news and I simply want to underline some important points.

Thanks to Stuart Glennan for the excellent job that he did as chair of the Off-Year Workshop Committee, which generated proposals. The Committee decided to support two different workshops in 2016, one hosted at the Konrad Lorenz Institute in Austria and the other at Clemson University in South Carolina. These workshops will address different, but equally important issues, and the Committee strove to make both of them as international and as open as possible.

For our 2017 meeting in São Paulo, Maria Elice de Brzezinski Prestes and the Local Advisory Committee report the progress made in developing the website of the meeting and the partnerships established with the Institute Butantan and the Brazilian Society of Genetics. The energy exerted by our Brazilian colleagues bodes well for the success of this meeting. I remind you that the ISHPSSB 2017 meeting will be followed two days later by the 25<sup>th</sup> *International Congress of History of Science and Technology* in Rio de Janeiro. So, start preparing your schedule and journey for attendance at both meetings!

It is already time for us to start planning the 2019 and 2021 meetings. Marsha Richmond and the Site Selection Committee have included in this newsletter a call for proposals for the 2019 meeting. Initial expression of interest will have to be submitted by May 2016, and the full proposal is due by 30 November 2016. But Marsha also rightly wants to initiate preparations for the 2021 meeting. Expressions of interest for the 2021 meeting will also have to be submitted by May 2016 and, depending upon these, the final date of the call for the 2021 proposals will be determined.

The Membership Development Committee and the Education Committee have already started planning their activities for the São Paulo meeting, but they also want to schedule their work plan on a longer term.

Many of you participated in the survey organized by Chantelle Marlor and Michelle Riedlinger on interdisciplinarity, under the attractive title “Producing

Loveable Monsters.” Chantelle sent us a preliminary report appended to this newsletter, and my feeling is that this external view of our Society and the interdisciplinarity that lies at its heart has yielded highly interesting results. The survey results support some of the observations that we have already discussed, such as the unequal contribution of our three disciplines—history, philosophy, and social sciences—, and some reasons for this are proposed. There are other more positive observations, such as a good distribution of ages among our members. The main value of the survey probably lies in the help it affords our younger members in successfully developing their interdisciplinary projects. Not all projects are ripe for an interdisciplinary approach—the choice is crucial—and it is often best to do the job alone, after acquisition of knowledge of a second “culture” by complete immersion in a discipline other than one’s own. There is more in this report than the limited conclusions that I have discussed, and I warmly urge you all to read it carefully.

It has not been in the tradition of the Society to include obituaries in our newsletter. But two recent sad events deserve comment. The first was the death of William Provine, who in 2011 received the first David L. Hull Prize. He was the main historian of the development of population genetics and the Modern Synthesis, and probably for many of us the guide in these complex areas of research that have been so important for philosophical studies of biology in recent decades. We have included a description of his contribution written for his receipt of the 2011 prize.

The second loss was that of Eric Davidson. He was one of the main participants in the alliance between molecular biology and embryology that generated developmental biology at the beginning of the 1970s. His 1968 book *Gene Activity in Early Development* had a huge impact. More recently, without abandoning his model organism, the sea urchin, he developed a systemic approach to gene regulatory networks. Interestingly, he was not so fond of the Modern Synthesis! His work is emblematic of the possibilities generated by circulation between different disciplines, as well as of the difficulties that may be encountered: a lesson for ISHPSSB members that the beautiful contribution of Manfred Laubichler, who closely collaborated with Davidson, will help us to understand.

Finally, Kenneth Waters suggests that members of our Society should organize a session during the next PSA

Biennial Meeting in Atlanta, Georgia (3-5 November 2016). You will find details in the description given by Ken. We strongly encourage you to submit us proposals. Before submission to the PSA, we will check that the proposal embodies the spirit of the ISHPSSB, with a view to raising awareness of our activities among the members of other societies.

*Michel Morange*  
President

## 2016 ISHPSSB Off-year Workshops

Off-Year Workshops offer an opportunity to ISHPSSB members to meet and discuss particular topics both in traditional and also in unconventional formats. It is also a way to encourage our youngest members to organize discussions on issues which promote their research career. For 2016, the ISHPSSB Off-Year Workshop Committee selected two reunions, one devoted to extra-scientific issues in astrobiology and the other to the debate on function and malfunction in biological, biomedical and social sciences.

The complete information about the schedules and the application procedure can be found at the respective websites (see below for details and links).

Graduate student members of ISHPSSB are eligible for subsidies to offset the costs of travel and accommodation. Send applications and supporting documentation to Laura Perini, ISHPSSB Treasurer, via email attachment (to [laura.perini@pomona.edu](mailto:laura.perini@pomona.edu)).

### *SoCIA 2016: Social and Conceptual Issues in Astrobiology*

This workshop will be a place to discuss conceptual, ethical and meta-scientific issues about the emerging field of astrobiology. It is designed to promote discussion in an area that will probably become more important and which will offer very complex challenges in the coming years. It is open to researchers in any discipline interested in applying their expertise to thinking about astrobiology. The meeting will take place on 24-25 September at Clemson University in Clemson, South Carolina, USA. The deadline for applications is June 1<sup>st</sup>. See the [Call for Applications](http://kcs098.wix.com/socia) (<http://kcs098.wix.com/socia>).

### *Function and Malfunction in the Biological and Biomedical Sciences, and the Social Sciences*

This workshop will reassess the modern philosophical debate on function in the dual perspective of (1) malfunction (or dysfunction), and (2) with respect to the use of such concepts in both the biological and the social sciences. Early-career scholars in the history and philosophy of the life sciences (including medicine) and early-career social scientists are invited to apply. The meeting will take place on 5-9 September 2016 at the Konrad Lorenz Institute for Evolution and Cognition Research in Klosterneuburg near Vienna, Austria. The deadline for applications has been extended to 15 April. See the [Call for Papers](https://www.easpls2016.kli.ac.at) (<https://www.easpls2016.kli.ac.at>).

*Off-Year Workshop Committee and Workshop Organizers*

## Toward the 2017 ISHPSSB Meeting

We are deeply involved with the development of [ISHPSSB 2017 website](http://ishpssb2017.abfhib.org/) (<http://ishpssb2017.abfhib.org/>). Now we have a functional site, to which we will progressively add all the relevant information. Please visit it and start checking what we are preparing for next year. We particularly recommend that you check the “General information” and “Plan your trip” sections. In the latter, you will find important information about the Visa requirements, in case you need it to visit Brazil.

Meanwhile, we have been working to seek partnerships with prestigious Brazilian scientific institutions to support the meeting, and we have already made agreements with the Butantan Institute and the Brazilian Society of Genetics (SBG).

Created in 1901, the Butantan Institute is the main Brazilian producer of immunobiological products for public health purposes and is responsible for the majority of vaccines and sera produced in the country through its Technological Development and Production Division. The Cultural Development Center of the Institute sustains the Special Laboratory for the History of Science (LEHC), giving continuing education courses on the history of sanitary practices and publishing the journal *Cadernos de História da Ciência* (Notebooks on History of Science), available only in Portuguese. Besides that, the Institute develops studies and basic research in 17 different fields of

Biology and Biomedicine directly or indirectly related to public health.

The Butantan Institute is located within the campus of the University of São Paulo. Together with the LEHC team, we are planning cooperation and some activities for the ISHPSSB attendants, such as guided visits to the scientific zoological collections and to its four Museums—Biological, Historical, of Microbiology and the Emilio Ribas Public Health Museum. To learn more about the Butantan Institute, please visit its [website](http://www.butantan.gov.br/) (<http://www.butantan.gov.br/>).

The Brazilian Society of Genetics (SBG) was founded in 1955 at Campinas, São Paulo, in a session chaired by the geneticist Frederico Gustavo Brieger. Besides its annual meetings, the society publishes the journal *Genetics and Molecular Biology* and *Genética na Escola* (Genetics in the School). The latter journal aims to disseminate educational experiences in the field of genetics, to provide reflections on genetic concepts, to discuss developments in technology related to the quality of life of the population, as well as to provide materials for classroom work, including the use of historical and philosophical approaches to the fields of Genetics, Molecular Biology and related areas.

SBG will support the ISHPSSB 2017 Meeting, assisting with advertising of the congress and promoting exchanges with its affiliates working with historical and/or philosophical references (as distinguished from theoretical or empirical genetic research itself). To learn more about SBG, please visit the [website](http://www.sbg.org.br/) (<http://www.sbg.org.br/>), only in Portuguese).

The Local Organizing Committee is looking forward to see you all in São Paulo!

*Maria Elice Prestes, Charbel El-Hani and Roberto de Andrade Martins*  
Chairs of Program and Local Arrangements Committees



*The Butantan Institute, São Paulo.*

## Call for Proposals to Host the 2019 and 2021 Meetings

While our Brazilian colleagues are preparing for what will undoubtedly be a successful meeting in São Paulo in July 2017 (followed the next week

by the 25<sup>th</sup> *International Congress for the History of Science and Technology* in Rio de Janeiro), the Site Selection Committee cordially invites ISHPSSB members to propose potential sites for the July 2019 meeting.

Our tradition of alternating between continents would suggest that the 2019 meeting should be held in Europe, given that our 2015 meeting was in Canada and we will be in South America in 2017. But it has also been several years (2011) since we've had an ISH meeting in the United States, whereas we met in France in 2013. So we particularly welcome proposals from other European venues as well as American sites.

Proposers should bear in mind that the Society prefers to meet in places that are appealing destinations, given that for many participants the meeting is a welcome occasion to combine work with some well-deserved holidays. It is also important that the site offer convenient travel infrastructure and affordable housing. More detailed guidelines about hosting are available from the [ISH website](http://www.ishpssb.org/about/operations-manual/committees/site-selection-committee) (<http://www.ishpssb.org/about/operations-manual/committees/site-selection-committee>).

We welcome an initial expression of interest by 31 May 2016. The full proposal for the 2019 meeting is due by 30 November 2016.

It is, of course, impossible to anticipate what the future holds in terms of economic and social fluctuations, but we will certainly take this all into account when we evaluate proposals for ISH 2019, which will be presented at the Members' Meeting in São Paulo.

And it is not too early to begin thinking ahead to the 2021 meeting! If you might be interested in the possibility of hosting an ISH meeting at your institution, please let me know. The Site Selection

Committee will be happy to provide you with information about the process of putting a proposal together.

Expressions of interest for the 2021 meeting must also be received by May 2016.

Proposals must be sent to Marsha Richmond ([marsha.richmond@wayne.edu](mailto:marsha.richmond@wayne.edu)).

*Marsha Richmond*

*Chair of the Site Selection Committee*

## **Membership Development Committee Report**

The Membership Development Committee grew recently from 4 to 14 members after Montreal (see <http://www.ishpssb.org/about/present-committees>). This reflects awareness that the tasks of this committee are increasingly salient to ISHPSSB members. Those of us on the committee between Montpellier and Montreal were unsuccessful with several piecemeal activities designed to stir up interest in ISHPSSB membership. Therefore, we are adopting a new approach that operates over a longer time horizon and is broader in scope.

Changes in the composition of the ISHPSSB council (and of our committee in particular) have meant that membership development efforts have not been sustained over more than a two-year cycle of biennial meetings. Given that ISHPSSB is creeping up on its thirtieth birthday, we are beginning to formulate a multi-year plan that will have short range goals, longer-term objectives, and a vision for what we want to look like as a society in 8-10 years. To that end, a number of our committee members are committing to stay involved beyond the 2017 São Paulo.

Regarding a broader scope, we want to think bigger than increasing our numbers in underrepresented disciplinary categories. Though this is clearly important, and remains a key component of our task—e.g., identifying and recruiting more social science scholars of biology—we are thinking hard about the global regions represented in ISHPSSB, especially Latin America and East Asia. In this regard, our committee's diverse membership will be an asset. Additionally, we want to better represent those not employed in standard academic positions, and to attend to issues that confront scholars at different

stages of their careers. Our society needs to more intentionally reach out to a diversity of scholars and build ISHPSSB for the 21<sup>st</sup> century.

There are more plans to share, but not enough space to do so (e.g., working together with other ISHPSSB committees to develop membership). Our current aim is to have a concrete proposal for circulation and discussion next year in Brazil. So, if you are interested, we're looking for more help and would be delighted for more members to participate in this endeavor. Just send a note to Alan Love ([aclove@umn.edu](mailto:aclove@umn.edu)) and Emily ([eschultz@stcloudstate.edu](mailto:eschultz@stcloudstate.edu)) to join the conversation.

*Alan Love and Emily Schultz*

*Chairs of the Membership Development Committee*

## **Education Committee Report**

For the São Paulo 2017 meeting, the ISH Education Committee plans to organize one or more sessions under the provisional title 'New developments at the HPSSBio/Education frontier'. Anyone who would like to contribute a paper is invited to contact the Chair of the Committee, Greg Radick, at [G.M.Radick@leeds.ac.uk](mailto:G.M.Radick@leeds.ac.uk), indicating paper title and abstract if possible.

*Gregory Radick*

*Chair of the Education Committee*

### **Remember to Visit the ISHPSSB Website**

Have a look at all the information now available at our new webpage! If you search for our society (e.g. via google), you should now immediately find the one official website (rather than a variety of older sites)! It is an ongoing process and you can add to it, by suggesting further archival material, links, etc.

<http://www.ishpssb.org>

**William Provine (1942-2015)**

*We historians of science have a tendency, following the evidence, to blur or even to reject wonderful stories that have been handed down for decades or generations. I have found it necessary to understand the history of science that is so real to scientists themselves.*

Will Provine, "No Free Will," *Isis*, 1999

At its meeting in 2011, the International Society for History, Philosophy, and Social Studies of Biology awarded the first David L. Hull Prize to William B. Provine for his extraordinary contributions to scholarship and service in ways that promoted interdisciplinary connections between history, philosophy, social studies, and biology and that fostered the careers of younger scholars. Below we reproduce a text excerpt written for that occasion and originally published in the issue 43 of this Newsletter (Fall 2011) which can communicate some of the traits and virtues of this scholar so important to many of our members.

*It is entirely fitting that we honor David Hull by recognizing Will Provine, whose teaching, mentoring, research, and engagement have won admiration and respect among biologists, historians, philosophers and social scientists who study biology. His teaching commitments at the undergraduate level include "Biology and Society," a formal undergraduate major he helped to institute that has inspired other similar programs around the world. His mentoring of students has been accorded exceptional praise by many of his former students, some of whom are well known in the wider world. These qualities and accomplishments were honored by Cornell University when they bestowed on him the prestigious Clark Teaching Award in 1989.*

*Provine's early work on the history—and sociology—of population genetics helped to create the historiography for that discipline, especially with regard to its contributions to the "modern synthesis." Provine's approach to the writing of history through close relationships with living subjects is especially*

*striking. Once he abandoned classical Greek science, his formal area of study, he furthered his own training by interacting with biological scientists, treating them both as mentors and as subjects for analytical study. Studying closely with Richard Lewontin, then at the University of Chicago, Provine drew on his strong mathematical background to sharpen our historical understanding of the origins of theoretical population genetics with a doctoral dissertation that became his 1971 book, *The Origins of Theoretical Population Genetics*. Provine's monumental introduction to the republication of the 43 papers on the "Genetics of Natural Populations" written by Theodosius Dobzhansky and colleagues between 1935 and 1976, (edited jointly with Lewontin, John Moore, and Bruce Wallace), examines the Dobzhansky's empirical work in population genetics and his collaboration with Sewall Wright. (Five of the first fifteen papers of that series were co-authored by Wright.) Provine's introduction remains indispensable reading for anyone seeking to understand Dobzhansky's work on *Drosophila* and the internal dynamic of the "fly-room" during a critical formative period of the new field of evolutionary genetics, but it also highlights the role played by Wright. Another of Provine's projects (published in *Studies in the History of Biology*) focused on Frances Sumner; introduced scholars not only to an important biologist, but also to the importance of the deer mouse, *Peromyscus*, and to the combination of laboratory and field studies that played an integral role in the "new systematics."*

*Provine's most celebrated relationship was perhaps with the late Ernst Mayr, with whom he sparred publically as well as behind the scenes over a number of critical interpretive points that now undergird our understanding of the history of evolutionary biology. Their co-edited collection *The Evolutionary Synthesis: Perspectives on the Unification of Biology*, stemming from a 1974 conference, remains the entry point for all scholars interested in exploring the subject, even though it was published over 30 years ago. But the crowning achievement of Provine's*

*novel methodology, flair for personality, and commitment to deep research and exactitude in scientific explication was his monumental 1986 book, Sewall Wright and Evolutionary Biology. This book reset the standard in the genre known of “scientific biography.” The book has earned high praise from biologists, historians of biology, and philosophers of biology. As one example, in a 1989 review, Stephen Jay Gould—no fan of the “evolutionary synthesis” or the reductionist tendencies of microevolution—called it “the finest intellectual biography available for any twentieth century evolutionist.” “In its wealth of detail and richness of insight,” Gould wrote, “it has established a standard for historical work in this field.”*

*Provine entered another arena, the exploration of “biology as ideology,” with two foundational articles that appeared in Science (1973) and American Zoologist (1986) demonstrating how race figured prominently in geneticists’ and biologists’ thinking in a critical early period of twentieth century biology. Both articles are extensively cited by historians, sociologists, anthropologists and other scholars of the social study of the biological sciences to this day.*

*Other close relationships with scientists included L. C. Dunn, Motoo Kimura, Tomoko Ohta, Tom Jukes, Jim Crow and especially Arthur J. Cain, with whom he published a number of papers. The trust that developed in these relationships led to their support of the historical and philosophical study of biology and led many of them to leave behind their own papers, libraries or substantive interviews that have subsequently enriched the work of other scholars.*

*Will Provine has an unflinching interest in getting others to appreciate the substance or the sciences he studies. He will talk to anyone about science—in the classroom, at the seminar table, but also in more unlikely places—for example in debates in front of sometimes unfriendly public audiences. He participates in such interchanges with unflinching respect and good humor. Thus, his*

*numerous debates with creationists and anti-evolutionists, beginning with Philip Johnson in the early 1990s, established Provine’s leading position in this enduring contest and culminated with his appearance in Ben Stein’s notorious Expelled. But even before then, Provine’s engagement with dissenting opinions had become a hallmark of his personal style, which combines an unusual mixture of respect, curiosity, contrarianism and tolerance with respect to different views and perspectives.*

*Provine’s service to the community is therefore extensive, and far from traditional. Not one for formal offices or organizations, he has instead been a facilitator for people and has been especially encouraging to junior scholars. Early on he began to undertake oral history interviews with major figures reluctant to accept such attention, like Barbara McClintock before she got the Nobel Prize, sharing the results freely with other scholars. His famous library of reprint collections—approximately four-hundred-thousand in all, garnered from the trusted friendships with scientists like Ernst Caspari, Norman Giles, Charles Uhl—and over 15,000 rare books, a number of which he obtained as a young man while he was a collector and bookseller of scientific works. He has shared these collegially with an international community of scholars with great ease, following up with helpful conversation, and, more than occasionally, a gourmet meal. All this treasured material for intellectual history has been donated to the Cornell Rare Book and Manuscript collections along with a bequest from Provine, to ensure that they continue to enable scholarly study and draw together scholars from several distinct communities.*

*A pioneering body of impeccable scholarship that has stood the test of time, a generosity of spirit balanced with a healthy dose of contrarianism, a tireless advocacy of interdisciplinarity and of academic freedom, and a record of public service in defense of evolution and its teaching, all characterize Will Provine’s life-work and serve as powerful reminders of the life and legacy of*

*David Hull. The two were good friends working to enable interdisciplinary interactions and scholarship that are the mainstay of ISHPSSB. It is thus especially fitting that Will Provine is the first recipient of the David L. Hull Prize.*

Richard Burian

Chair of David L. Hull Prize Committee 2009-2011

## **Evolution is more than Petunia colors: Eric H. Davidson (1937-2015): in memoriam**

Eric Davidson's last book *Genomic Control Process: Development and Evolution*, co-authored with Isabelle Peter, was published half a year before his untimely death on September 1<sup>st</sup> 2015. In retrospect it can be seen as his scientific testament. In this book, Eric and Isabelle summarize decades of work on gene regulatory networks, their structure and function, and their role in explaining development and evolution. Compared to earlier syntheses—Eric had written five books before, each of them a concise argument based on the best available evidence at the time—*Genomic Control Process* adds two important dimensions: (1) the demonstration that the logic of developmental gene regulatory networks lends itself to computational approaches that also allow for in silico experimentation and (2) the implicit statement that traditional evolutionary theory is incomplete, as it is mainly a theory about the dynamics of change and, as such, does not offer a generative account of evolutionary stability. These two points should be of special interest to ISHPSSB members, as they challenge the theoretical foundations and epistemological assumptions of evolutionary and developmental biology.

Eric's whole career was devoted to the most fundamental problems in development and evolution. His driving question was how we can explain mechanistically the differentiation into different cell types within an embryo and subsequently how our understanding of development explains the evolution of phenotypes? His life-long investigative pathway led, with a few detours, from his first publication in 1953 (at age 16, the result of a summer internship at the Marine Biological Laboratory) to his final synthetic accounts. It is a pathway rich with milestones, such as his first book *Gene Activity in Early Development*, published in 1968, which was one of the first overviews of what would soon become molecular

developmental biology, the collaboration with Roy Britten and the famous Britten-Davidson model of developmental regulation, "Gene regulation for higher cells: a theory", published in 1969 in *Science*, to his role in sequencing the sea-urchin genome, the analysis of what is still the best documented gene regulatory network (the endo-mesoderm network of *Strongylocentrotus purpuratus*, the purple sea urchin), the development of specialized software for the analysis, visualization and finally also simulation of gene regulatory networks. Along the way we find also contributions to paleontology, evolutionary theory and the history of science.

Another one of his lasting accomplishments was his contribution to education. It included his books, especially the evolving series of eventually six synthetic volumes, and his involvement with the Marine Biological Laboratory, where he was one of the longest serving directors of the famous embryology course and, more recently, the creator of a new special topics course on Gene Regulatory Networks. The importance of these courses cannot be underestimated. Eric was the first who systematically applied principles and methods of molecular biology to the study of developmental processes. This was rooted in his firm epistemological conviction that development needs to be explained mechanistically and that the appropriate level for mechanistic explanations are molecular interactions. His emphasis on molecular mechanisms was paired with his conceptual vision that the genome is a complex regulatory system, a key insight that is the core of the Britten-Davidson model, one that has itself a long history in developmental biology, going back to Boveri, Goldschmidt and Kühn, all of whom championed versions of this idea. In the mid-1970s, when Eric was changing the embryology course curriculum at the MBL, these ideas were perceived as challenges to mainstream developmental biology and young students and post-docs were attracted to this new science (as well as to Eric's unique personality) thus forming a new cohort of molecular developmental biologists.

There are so many additional aspects to Eric's unique personality and his science. But one, in particular, resonates with the mission of ISHPSSB: his immersion in and knowledge of the history of his field and how this knowledge guided his most innovative cutting-edge research program. Eric was a unique bridge-builder; between different areas of science as well as between the past, present and the future of his scientific field. It

all began, appropriately enough, at the MBL, where Eric spent a summer as teenager in L.V. Heilbrunn's lab. He later joined Heilbrunn at the University of Pennsylvania as an undergraduate and, during his senior year was given one task: to review and study all there is to know about classical embryology and Entwicklungsmechanik. The best source about this tradition was, of course, E.B. Wilson's third edition of *The Cell in Development and Heredity*. So Eric worked his way through this book and many of its sources, thus becoming, until his death, a walking encyclopedia of the problems and results of several decades of work. This allowed him later to bring new methods to old problems, which was one of the defining features of his investigative pathway. Even though Eric was never a member, his whole approach to science, history and epistemology captures the essence of what we try to do at ISHPSSB. With Eric we all have lost a role model and this author has lost a dear friend and collaborator.

*Manfred Laublicher*

### **Call to Organize an ISHPSSB Session at the 2016 Philosophy of Science Association Meeting**

The PSA Governing Board is inviting selected cognate societies to submit one proposal apiece for a special session during our upcoming biennial meeting in Atlanta (3-5 November 2016). The idea is to seek a broader representation of work in philosophy of science than has traditionally been represented on the regular program of our conference. We experimented with this at our 2014 conference, and based on the number of cognate societies that organized sessions (see list below), audience sizes, and feedback on surveys, we have concluded that it was very successful. We are planning to improve upon this success in 2016.

We have set aside half a day of programming for cognate societies. The surveys from our last biennial conference indicated that Sunday morning might not have been the best time for the cognate sessions. So this year, we have set aside the first morning of our conference, Thursday morning (3 November), for cognate society sessions. We plan to schedule two ninety minute periods for these sessions (starting at 9 am and 10:45 am). Each period will have approximately eight to ten parallel sessions (we will schedule ten parallel sessions during the main conference program). PSA will provide meeting rooms and AV equipment (as we do for our main conference

program). Sessions and participants will be listed on the official conference program and on-line schedules. Of course participants must register for the conference.

We are inviting ISHPSSB to submit a proposal. We will accept such proposals only when submitted by officers or governing or executive boards of the societies on behalf of the societies. We will not consider proposals submitted by individual members. Proposals should include information as described below. We will consider detailed proposals for sessions with structures different than those of traditional PSA symposia (e.g. panels).

No one is permitted to present more than once at PSA2016 (excluding presentations at the poster forum). Thus, your proposal for a cognate session cannot include anyone as a presenter, commentator, or panelist who has been listed as a presenting author or commentator on a symposium or contributed paper submission accepted by the regular program committee. The regular program committee is expected to make its decisions before the July 1<sup>st</sup> deadline for cognate society proposals (and if decisions are delayed, we will extend the deadline for cognate societies).

PSA will only lightly vet (for appropriateness of content, conformation with once on the program rule).

We hope that ISHPSSB will help us make PSA 2016 a diverse and inclusive meeting by submitting a proposal.

Sincerely,

*C. Kenneth Waters*

*President, Philosophy of Science Association*

#### ***Instructions for proposals from cognate societies:***

Proposals must include:

- The title of the proposed session
- A short descriptive summary of the proposal (100-200 words)
- A description of the topic and a justification of its current importance to the discipline (up to 1000 words)
- Titles and abstracts of all papers, with up to 500 words for the title and abstract of each paper (or equivalent information for alternative formats)
- A list of participants and either an abbreviated curriculum vitae or short biographical description

(not to exceed 1 page) for each participant, including any non-presenting co-authors.

- Institutional affiliation and e-mail addresses for all participants, including any non-presenting co-authors.

Please note that in accordance with current PSA policy:

- No previously published paper may be presented at the PSA meeting.
- No one will be permitted to present more than once at PSA2016. Thus, if a symposium proposal in which you are a presenting author is accepted, you cannot submit a contributed paper for which you are the presenting author. A scholar may appear as co-author on more than one paper or symposium talk, but may present at PSA2016 only once (excluding presentations at the poster forum).
- Any individual can be part of only one symposium proposal in which he or she is a presenting author.
- If an approved symposium subsequently loses participants, the cognate society should inform the PSA and send alternates to maintain the quality and coherence of the session and adherence to PSA policies including the once on the program.

***List of Cognate Societies that Organized Sessions for PSA 2014***

- FEMMSS (Feminist Epistemologies, Methodologies, Metaphysics and Science Studies)
- History of Philosophy of Science
- International History, Philosophy, and Science Teaching Group
- International Philosophy of Mathematics Association
- International Society for Philosophy of Chemistry
- Philosophy of Medicine Roundtable
- Philosophy of Social Science Roundtable
- Society for Philosophy of Technology
- Society for the Philosophy of Science in Practice
- SRPo/iSE: Socially Relevant Philosophy of/in Science and Engineering

# The Backpage

## ISHPSSB Council 2015-2017

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## **Credits**

This newsletter was edited by David Suarez Pascal. I thank Maria Kronfeldner, Michel Morange and Sean Valles for their help, as well as to all the members who contributed with their texts to this newsletter.

**Producing Loveable  
Monsters: Initial Analysis  
from the survey of  
ISHPSSB conference  
attendees'  
interdisciplinary research  
activities**

**A report for the International  
Society for the History, Philosophy  
and Social Studies of Biology  
(ISHPSSB)**

**February 2016**

**Chantelle Marlor, Michelle Riedlinger  
and Aaron Penner**

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## Table of Contents

Introduction.....	2
Our Approach.....	2
Results and Discussion .....	3
Membership in ISHPSSB .....	3
Disciplinary training .....	3
Career stage.....	4
Approach to conducting interdisciplinary research .....	5
Self-classification as a scholar .....	6
Main discipline of training compared to disciplinary self-classifications .....	8
Receptivity of interdisciplinary work .....	8
Publishing interdisciplinary work.....	10
Advice for interdisciplinary scholars .....	12
Become part of a supportive network .....	12
Learn more about other disciplines.....	13
Identify overlaps .....	14
Consider the community of readers .....	14
Study the journals .....	16
Explore alternative publishing outlets .....	17
Be patient and persistent .....	17
Additional advice regarding career strategies and pitfalls .....	17
Acknowledgements .....	18

## Introduction

The following report contains our initial analysis of data from the survey of participants at the International Society of History, Philosophy and Social Studies of Biology's (ISHPSSB) biannual conference in Montreal, Canada. The work reported here are the preliminary findings from the survey; the presented findings are neither contextualized in relation to previous academic studies of interdisciplinary scholarship nor are they a presentation of all the data analysis we plan to do.

## Our Approach

The research originates from Drs. Chantelle Marlor and Michelle Riedlinger interest in how scholars navigate the challenges and opportunities associated with interdisciplinarity research, especially as it relates to the publication of academic writing. We have adopted Dr Inger Mewburn's term "Loveable Monsters" for the title of this project: Mewburn uses the word "monster" to describe interdisciplinary output because, like Frankenstein, interdisciplinary writing is cobbled together from various different sources; and "loveable" because, like ugly monster toys, the idea is to make the monsters loveable so that they will be accepted by others, and therefore successfully communicate to others. Using Mewburn's metaphor, we are interested in developing a better understanding of how interdisciplinary "monsters" become "loveable". In doing so, we are also interested in the larger social context in which interdisciplinary scholars work. Loveable monsters arise out of scholars working alongside other scholars, and the need to communicate to others.

In Fall 2015, Drs Chantelle Marlor and Michelle Riedlinger conducted a short survey on interdisciplinarity, with the assistance of our research assistant Aaron Penner. Assisted by the ISHPSSB Council, invitations to participate were sent via the International Society of History, Philosophy and Social Studies of Biology's (ISHPSSB) conference listserv to conference participants from ISHPSSB's 2015 biannual conference in Montreal, Canada. The email survey invitation was sent by ISHPSSB to six hundred and nineteen participants. The questions in the survey related to ISHPSSB conference attendees' academic training, the way in which they classify themselves, the audiences they find most receptive to their work, where they publish their work, and any advice they have for other interdisciplinary scholars.

The survey was conducted through the Survey Monkey platform. A total of one hundred and sixty-six responses were received (a 26.8% response rate). Both quantitative and qualitative data analysis was conducted, with quantitative analysis being performed using IBM SPSS statistics software, and qualitative analysis conducted through NVivo software.

# Results and Discussion<sup>1</sup>

## Membership in ISHPSSB

The majority of survey respondents were ISHPSSB members. Out of one hundred sixty-six respondents, one hundred thirty-nine respondents (eighty-six percent) indicated that they were members of ISHPSSB. Twenty-two (fourteen percent) indicated that they were not members. Five did not respond.

## Disciplinary training

Participants were asked to specify the main discipline in which they completed their training. The disciplinary categories provided were: History, Philosophy, Biology, Psychology, Sociology, Anthropology, and Other.

Figure 1 presents findings associated with the main discipline(s) in which respondents completed the majority of their academic training. The largest proportion<sup>2</sup> of our survey respondents had the majority of their academic training in Philosophy (n=91 or 54.8%), followed by Biology (n=44 or 26.5%), Other (n=26 or 15.6%), History (n=16 or 9.6%), Psychology (n=7 or 4.2%), Sociology (n=4 or 2.4%), and Anthropology (n=2 or 1.2%).

We note that respondents were permitted to provide more than one response to this question. For this reason, the total number of responses to this question total 190 instead of 166. We also note that 24 out of 166 respondents (6.9%) indicated that their main discipline of training was in two or more disciplines. The question about disciplinary training was worded in a way that suggested a single response was requested, thus making the number of respondents who provided multiple responses a conservative figure. Three respondents completed (or were in the process of completing) two doctoral degrees as a means to facilitate their interdisciplinary work. For example, one respondent had already completed a Ph.D. in Biology and was presently completing a Ph.D. in Philosophy.

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<sup>1</sup> Several of our questions allowed for multiple responses. This means that not all the numbers presented in the tables total 166 (the total number of respondents) or the total number of responses we received for each question. Please consult the notes below the tables for more information on how we calculated specific percentages.

<sup>2</sup> These percentages are based on the total number of respondents, not the total number of responses to this question.

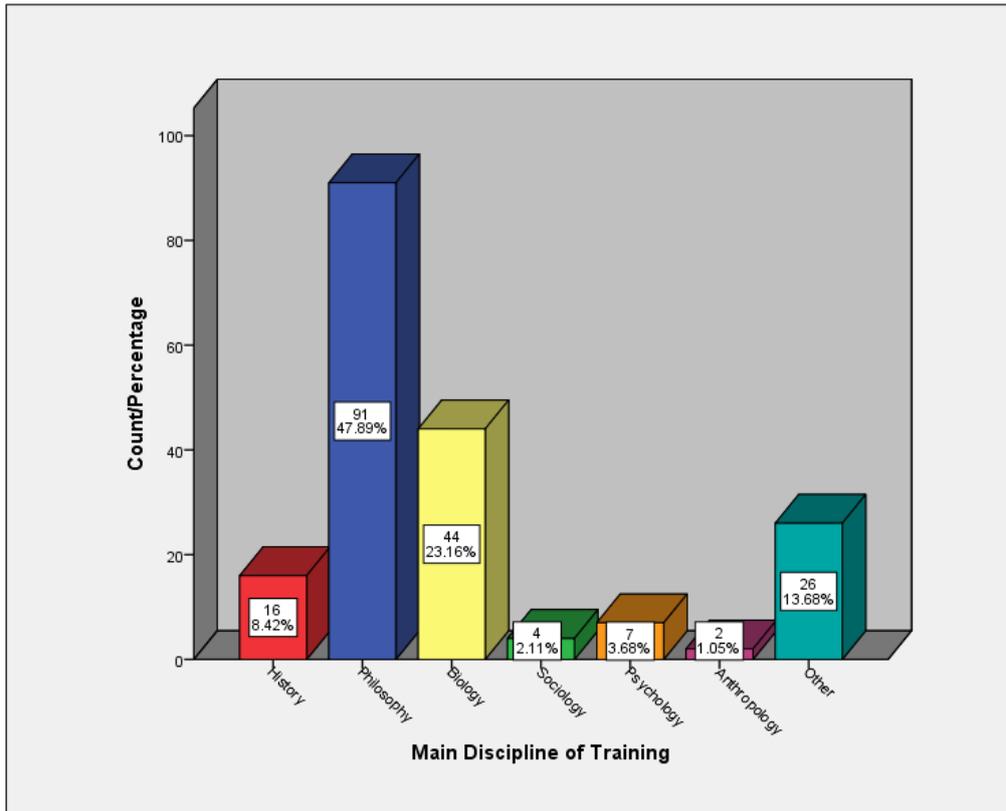


Figure 1: Main discipline in which respondent received training

Respondents were provided with an open-ended comment box to clarify their response regarding their main discipline of training. Many respondents answering “Other” used this as opportunity to identify what they meant by “Other.” Some participants used it as an opportunity to clarify their answer in relation to the discipline they selected. The disciplines or areas identified most frequently in this open-ended space were a combination of History and Philosophy of Biology, History of Science, and/or History of Biology and Medicine (n=6). Other disciplines/areas listed once or twice, include:

- Chemistry
- Classics
- Cognitive Science
- Communication
- Critical and Cultural Theory
- Education
- English/Literature
- Linguistics
- Mathematics
- Medicine
- Paleobiology
- Physics
- Political Science
- Science and Technology Studies

## Career stage

Survey respondents were asked to identify their stage of career. Specifically, they were asked how far they were from having completed their final level of training in terms of years. “Graduate student” was listed as the first of these career stages and “21 years or more after completion of Ph.D. or other final degree” was the last. Respondents who did not easily fit into any of these categories were provided with an “Other” option. Based on responses to the “Other” category, academic career stages

of respondents included undergraduate students and those completing their Masters degrees as well as doctoral students. Respondents were only allowed to select one response.

Figure 2 presents the results from this question. The most prevalent career stage of respondents in the sample was Graduate Student (n=48 or 29%), followed by those who had completed their Ph.D. or other final degree twenty-one or more years prior to the study (n=30 or 18%), and those who had completed their Ph.D. or other final degree eleven to twenty years prior to the study (n=28 or 17%). “Other” represented the smallest group (n=8 or 4.8%). This group included undergraduates, Master’s students and those working on their second doctorate degree.

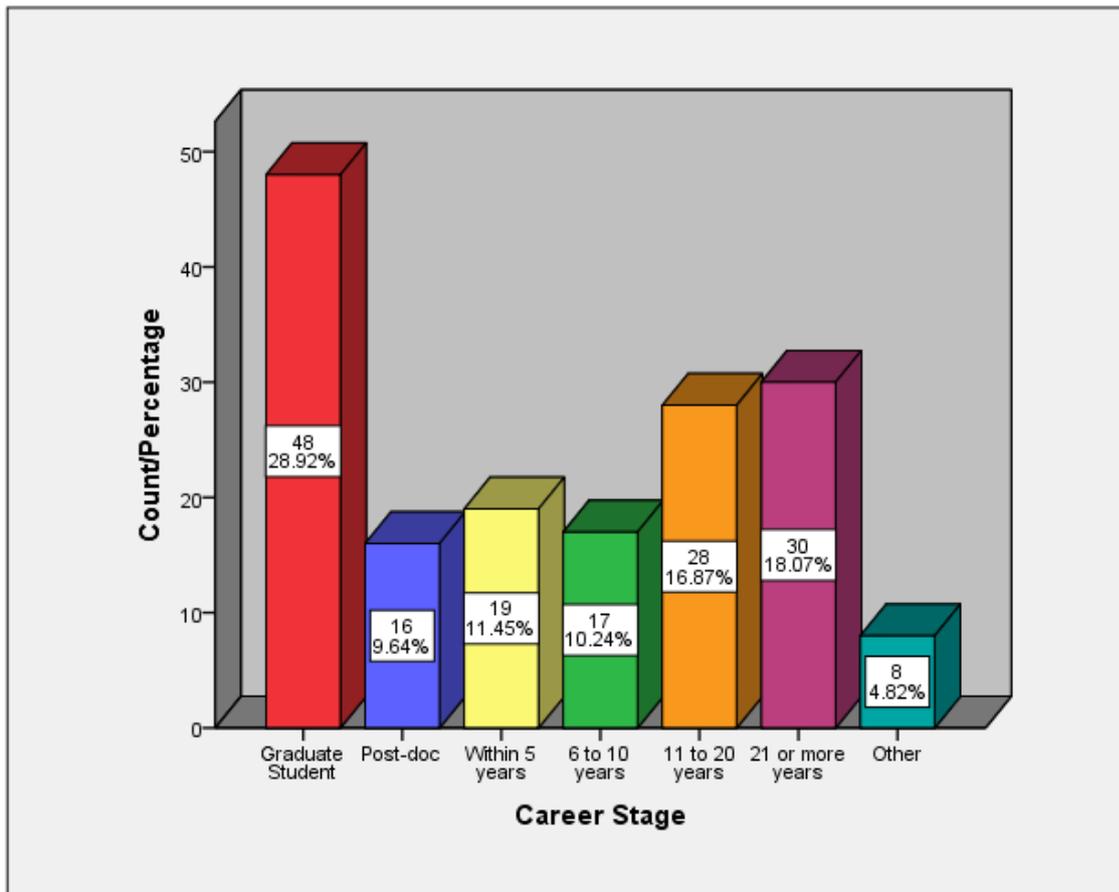


Figure 2: Career stage

## Approach to conducting interdisciplinary research

Survey participants were asked about the type of interdisciplinary work they conducted. The options provided were:

- 1) Mostly a collaborative effort, in which I contribute my expertise as a representative of my field/discipline and other team member(s) contribute their expertise as a representative of their field/discipline
- 2) Mostly individually based, in which I am personally involved in drawing ideas and evidence from multiple fields/disciplines
- 3) Other

Survey respondents were only allowed to select one response.

Figure 3 presents the results from this question. Out of the 166 respondents, 71% (n=118) described their interdisciplinary work as individually-based (Option 2), 18.7% (n=31) described their interdisciplinary work primarily as a member of a team (Option 1), and 10.2% (n=17) described their work as “Other.”<sup>3</sup>

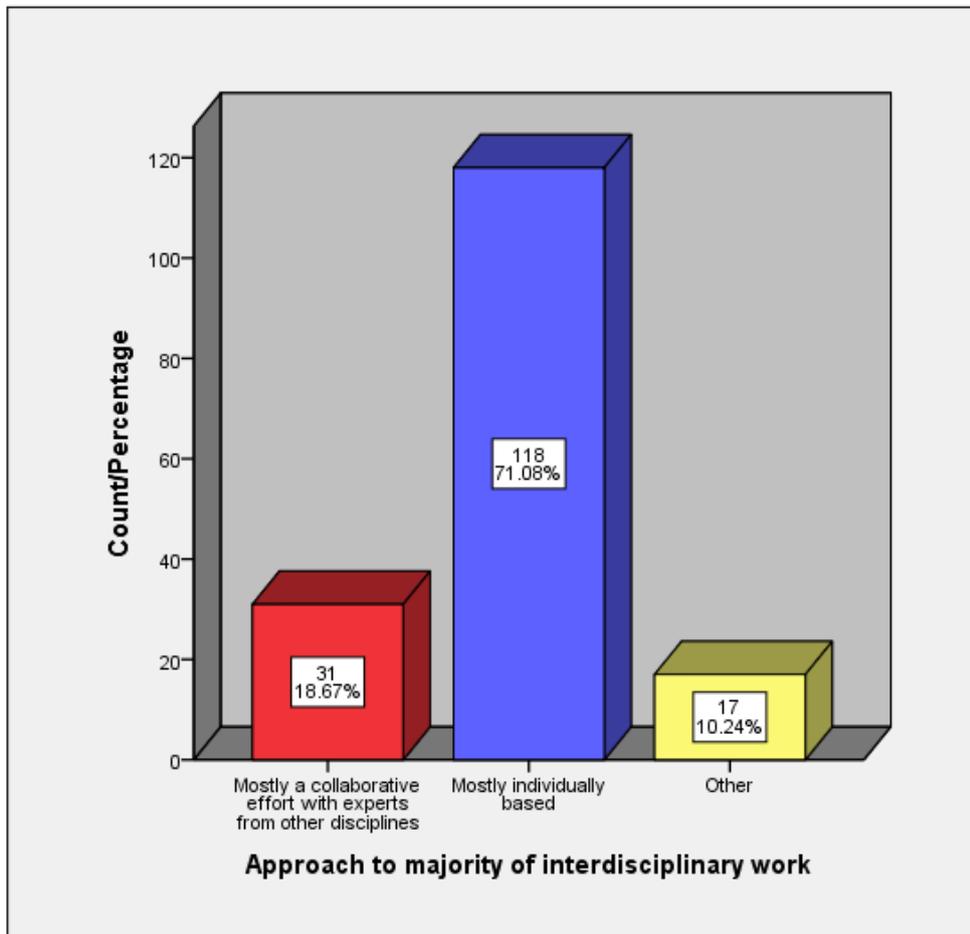


Figure 3: Approach to the conducting interdisciplinary research

For this question, respondents had the option to comment on their response. Of the respondents that choose “Other,” eight indicated that they used both Options 1 and 2 (individual and team) approaches to interdisciplinary in their work. Five respondents indicated that they collaborate with other interdisciplinary scholars.

## Self-classification as a scholar

Respondents were asked to describe themselves in relationship to both conventional disciplinary boundaries (Philosophy, Biology, History, Psychology, Sociology, and Anthropology) and three interdisciplinary categories (a scholar working in a specific field or sub-discipline; a scholar that bridges two or more disciplines; a scholar who explores the intersections between two or more disciplines). Respondents were allowed to provide more than one answer to this question. We have

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<sup>3</sup> These percentages are based on the total number of respondents, not the total number of responses to this question.

organized our discussion of responses to this question around two tables. The first organises responses related to conventional disciplinary categories (Table 1). The second organises responses to the three interdisciplinary categories (Table 2).

Table 1 indicates that the largest proportion of our respondents self-classified in the conventional disciplinary categories as a philosopher (n=79 or 47.6%), the second largest as a biologist (n=30 or 18.1%), and the third as a historian (n=19 or 11.5%). The smallest proportion of respondents self-classified as anthropologists (n=1 or 0.6%). Respondents' disciplinary self-classifications are similar to but not identical with, their main form of disciplinary training. This relationship is examined more closely in the next section below.

Category	Number	Percent
A philosopher	79	47.6 %
A biologist	30	18.1 %
An historian	19	11.5 %
A sociologist	9	5.4 %
A psychologist	3	1.8 %
An anthropologist	1	0.6 %

Table 1: Conventional disciplinary self-classifications (n=166)

Table note: Percentages are calculated based on the total number of respondents to the survey (n= 166). No totals are listed in the table, however, because respondents were allowed to provide multiple responses. The result of this was that the total number of responses exceeds the total number of respondents.

	Number	Percent
A scholar working in a specific field or sub-discipline	49	29.5 %
A scholar that bridges two or more disciplines	91	54.8 %
A scholar who explores the intersections between two or more disciplines	68	41 %

Table 2: Interdisciplinary and other self-classifications (N=166)

Table note: Percentages are based on comparison to the total number of survey respondents, not the total number of responses to this question.

In terms of the interdisciplinary categories, the most frequent response from participants was that they were “A scholar that bridges two or more disciplines” (n=91 or 54.8%). The second most-frequently selected self-classification was “A scholar who explores the intersections between two or more disciplines” (n=68 or 41%), and the third was “A scholar working in a specific field or sub-discipline” (n=49 or 29.5%).

Respondents were also given the option of saying they were “Unsure” in relation to how they self-classified, and/or to classify themselves as “Other.” Only a small number of respondents selected either of these two categories (n=4 or 2.4% for both these self-classification options). We found this somewhat surprising, given the way in which interdisciplinary scholars often do not fit neatly into prescribed boxes. However, while we expected more responses along these lines, only one respondent explained his/her selection of the “unsure” response in this way:

Trained in ecology / evolution, explored geography, education sciences, philosophy also. Did a theoretical / conceptual PhD in an experimental lab. Ended up collaborating with philosophers of biology. Am I an ecologist / evolutionary biologist? difficult to say :-)

The low number of participants self-classifying as “unsure” is interesting to note. It suggests that, for the most part, interdisciplinary scholars do not have a difficult time self-classifying. Instead, a large number of respondents opt to self-classify in multiple ways. For example, 16.8% of respondents (n=28) selected four or more self-classification categories with which they identify, including both conventional disciplines and/or the three interdisciplinary categories and only 16.8% (n=28) of respondents selected only one response to this question. This suggests that interdisciplinary scholars were opting to (decisively) classify themselves in multiple ways as opposed to defining themselves as unclassified or unclassifiable.

### Main discipline of training compared to disciplinary self-classifications

Although we generally found consistency between the main discipline in which an interdisciplinary scholar received his or her training and the way in which they self-classified, ISHPSSB scholars describe themselves in ways that were not entirely dependent on the academic training they received. For example, although our sample contained only four respondents with Sociology as their main discipline of training, nine respondents described themselves as sociologists (see Table 3). Likewise, twelve respondents described their main form of academic training in History, but nineteen respondents describe themselves as historians.

The relationship between main training discipline and self-classification is asymmetrical. However, unlike the first two examples suggest, not all disciplines were populated with more respondents than those who did the majority of their training within that discipline. For example, in the cases of Philosophy and Biology, more participants trained within these disciplines than who self-classified themselves as representatives of that discipline. If this occurred only within Biology or with biologists, it could be argued that the social context of this survey—a survey associated with a Humanities and/or social scientific approach to the study of Biology—may encourage biologists to associate more strongly with a Humanities or Social Science discipline. However, given this also occurred with Philosophy and philosophers, social context is less likely to be playing a role in these results. Instead, there may be other reasons why interdisciplinary scholars choose to self-classify into disciplinary identities with which they did not receive their main academic training and/or away from disciplinary identities in which they did receive the majority of their training.

Main discipline of training			Self-classified as		
	Number	Percent		Number	Percent
Philosophy	91	55.1%	A philosopher	79	47.6 %
Biology	44	26.7%	A biologist	30	18.1 %
Historian	16	9.7%	An historian	19	11.5 %
Sociology	4	2.4%	A sociologist	9	5.4 %
Psychology	7	4.2%	A psychologist	3	1.8 %
Anthropology	2	1.2%	An anthropologist	1	0.6 %
Other	26	15.8%	Other	4	2.5%

Table 3: Main discipline of training compared to disciplinary self-classification

Table note: Percentages are based on a comparison to the total number of survey respondents (N=166)

### Receptivity of interdisciplinary work

Survey participants were asked which audience(s) they consider to be the most responsive to their interdisciplinary work. The options listed in the questionnaire were: those with the same disciplinary training as yourself; interdisciplinary audiences like ISHPSSB; depends on which research project is

being discussed; unsure, not applicable or do not know; and, other. Respondents were not allowed to select more than one response.

Figure 4 presents respondents answers to this question. The greatest number of respondents (n=80 or 47.9%) indicated that responsiveness to their work depended upon the particular research project being discussed. The second most frequently-selected response was that interdisciplinary audiences were more receptive to their work (n=58 or 34.7%). Only 7.8% (n=13) said that audiences with the same disciplinary training as themselves were most responsive to their interdisciplinary scholarship.

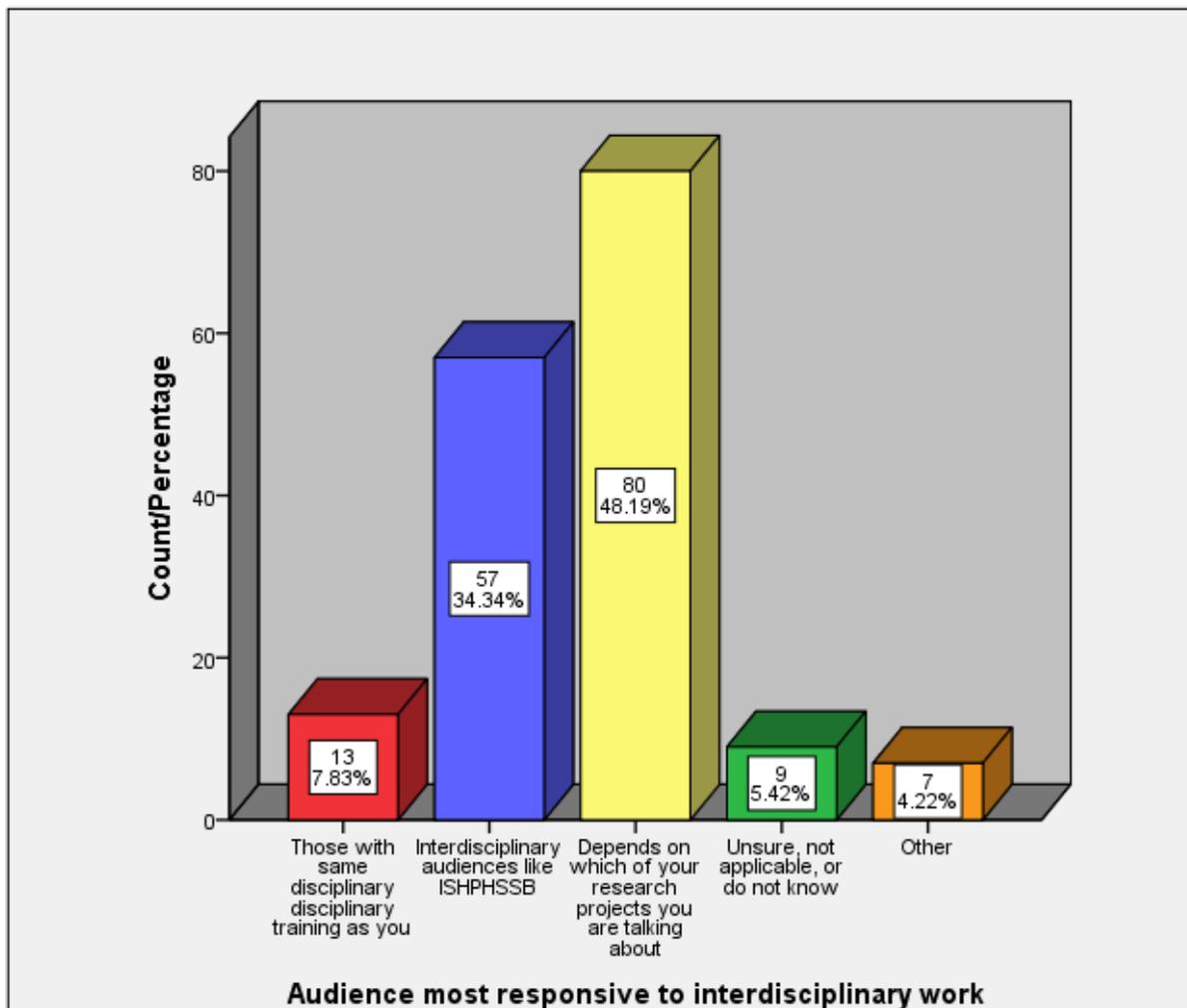


Figure 4: Audience responsiveness to interdisciplinary work

Participants were provided with the opportunity to add additional comments in relation to this question. The responses we received included descriptions of two or more different fields that a researcher targets in their work, difficulties researchers face when presenting their work to different types of discipline-based audiences (e.g. differences in receptivity between Philosophy and Biology, or between different sub-fields within two disciplines), and difficulties being accepted by any field or discipline.

## Publishing interdisciplinary work

Survey participants were asked where they publish the majority of their interdisciplinary writing and research. Response options were: Philosophy journals; Biology journals; History journals; Psychology journals; Sociology journals; Anthropology journals; field-specific interdisciplinary journals; general science, Social Science and/or Humanities journals; Other; Not applicable; and the option to say “I have not been able to publish much of my interdisciplinary work.” Respondents were allowed to select only one response. Figure 5 presents the results from this question.

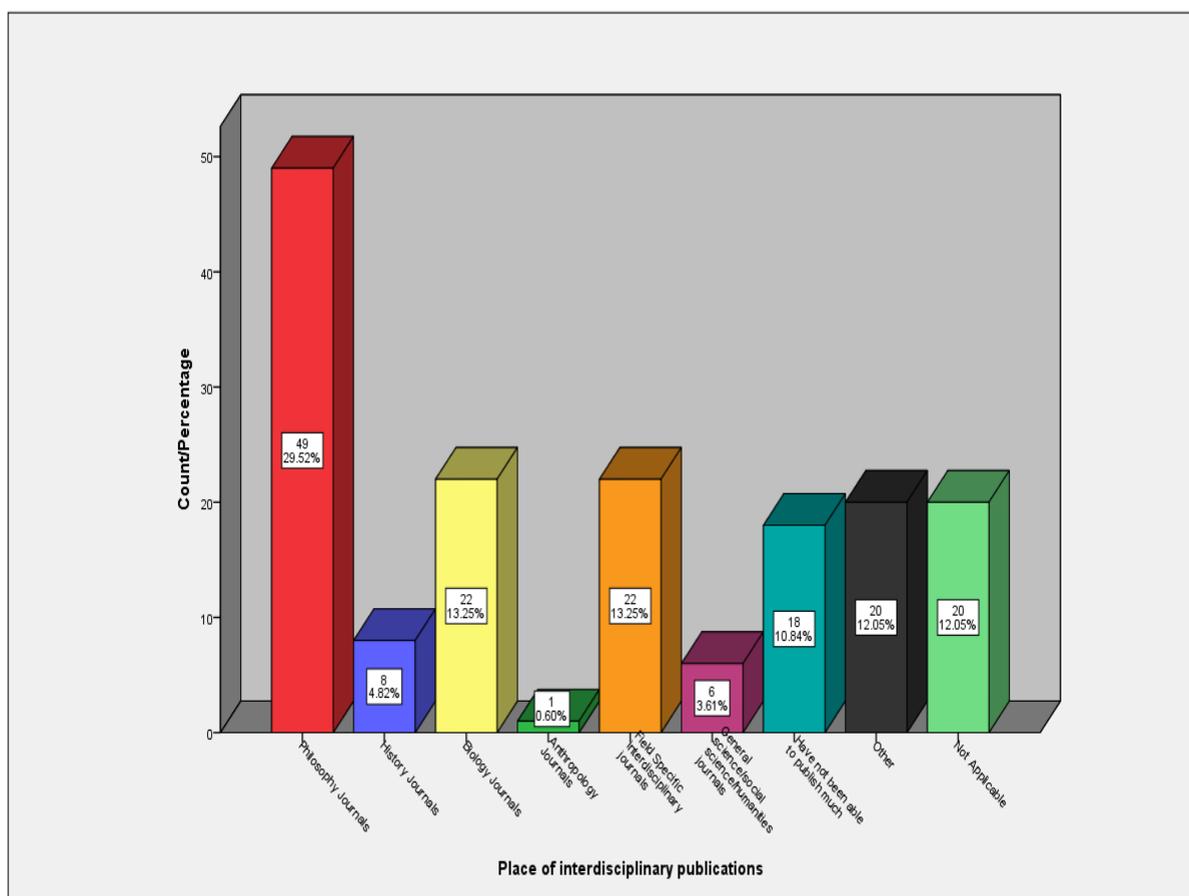


Figure 5: Place of publication of majority of interdisciplinary writing and research

The most frequent response given by respondents to this question was Philosophy journals (n=49 or 29.5%). With the exception of History journals (n=8 or 4.8%), Anthropology journals (n=1 or 0.6%), and general science, Social Science and/or Humanities journals (n=6 or 3.6%), all other types of publication ranged from 10.8% to 13.3% (n=18 to 22). Also of note is the absence of Psychology and Sociology journals from this list. Despite listing both these as potential answers, no respondent indicated they published the majority of their interdisciplinary research in either Psychology or Sociology journals.

Given that our sample was composed largely of respondents with training in Philosophy (54.8% of respondents) and that “philosopher” is the most frequently-selected discipline in which respondents self-classify (n=79 or 47.6%), it is perhaps not surprising that this was the most common type of journal in which respondents are publishing their interdisciplinary research. Surprisingly, no respondents in the sample published the majority of their work in Sociology or Psychology journals,

even though 11 respondents (four and seven respectively) had the majority of their academic training in these disciplines and 12 self-classified as sociologists and psychologists (9 and 3 respondents respectively). A number of individuals chose to self-classify as sociologists despite not having had the majority of their training in Sociology. Identifying as a sociologist may be useful for self-classification, but this identification does include the activity of publishing interdisciplinary scholarship within disciplinary journals. These scholars may be finding more opportunities to publish in specialized journals associated with these disciplines, like Science and Technology Studies. Regardless, this suggests that the way in which scholars navigate their identities and careers as interdisciplinary scholars can be complicated by the publishing opportunities available to them.

Our proportional analysis and comparisons here are influenced by a number of factors: 1) the large number of respondents who self-classified as philosophers and/or had their main form of training in Philosophy, 2) the large number of graduate students who participated in the study who have not yet published interdisciplinary research (n=14 out of 48 respondents, or 29.1%). The response options for this question included “have not been able to publish much interdisciplinary work”. Therefore, we opted to present an additional statistical breakdown that excluded graduate students and examined responses based on respondents’ main form of training in Philosophy, History and Biology—the groups with the largest numbers for detailed analysis. The other disciplines of training are excluded due to the small number of respondents fitting into these categories, thus making for too many 0’s in this analytical breakdown. Table 4 presents this additional analysis.

		Type of Journal											
		Philosophy	Biology	History	Psychology	Sociology	Anthropology	Field specific Interdisciplinary	General Science/Social Science/Humanities	Have not been able to publish much interdisc work	Other	Not applicable	Total
Philosophy	n	37	5	1	0	0	0	9	3	3	4	3	65
	%	56.9	7.6	1.5	0	0	0	13.8	4.6	4.6	6.1	4.6	100
History	n	1	1	5	0	0	0	3	1	1	1	1	14
	%	7.1	7.1	35.7	0	0	0	21.4	7.1	7.1	7.1	7.1	100
Biology	n	6	13	2	0	0	1	1	1	0	5	1	30
	%	20	43.3	6.6	0	0	3.3	3.3	3.3	0	16.6	3.3	100

*Table 4: Main discipline of training by place of publication of majority of interdisciplinary writing and research, excluding graduate students (N=109)*

Note: Row totals and percentages are based on the number of responses to these questions, not on the number of respondents in the survey.

The analysis presented in Table 4 allows for better insight into where interdisciplinary scholars are publishing their work without being skewed by the large number of respondents who were trained in Philosophy or the percentages being skewed by the large proportion of graduate students who have potentially not published at all.

The place of publication of interdisciplinary work presented in Table 4 does differ from the data presented in Figure 5 however, the main discipline in which scholars were trained does provide a different picture. In all three cases, respondents were most likely to publish their interdisciplinary work in journals associated with the main discipline in which they received their training: 56.9% of Philosophy-trained scholars published their interdisciplinary work in Philosophy journals; 35% of History-trained scholars published their interdisciplinary work in History journals; and 43.3% of Biology-trained scholars published their interdisciplinary work in Biology journals. Despite this, it should be noted that this tendency differed in degree among the three disciplines. For example, Philosophy-trained scholars have a stronger tendency to publish their interdisciplinary work in Philosophy journals than History-trained scholars to publish in History journals. Due to small numbers of History-trained scholars in our sample we cannot determine whether this finding could be generalised to History-trained interdisciplinary scholars in general or just this particular pool of respondents.

It should also be noted that the tendency for scholars to publish their interdisciplinary work in journals associated with their main discipline of training did not generalise to those trained in Psychology or Sociology. Scholars in these fields are *not* publishing their interdisciplinary work in Psychology or Sociology journals.

## Advice for interdisciplinary scholars

Respondents were asked if they had any advice they could give scholars wanting to publish interdisciplinary work. Respondents were also offered a place to add additional comments at the end of the questionnaire, and several respondents used this space to add additional advice for others. The advice provided by respondents in both areas is provided below, organized by theme.

The major advice themes were for interdisciplinary scholars to become part of supportive networks, learn more about the other disciplines, identify overlaps, and consider their community of readers. In terms of specific writing advice, respondents advised interdisciplinary scholars to study the journals, explore alternative publishing avenues and to be patient and persistent.

### Become part of a supportive network

Respondents to the survey strongly advocated for interdisciplinary scholars to seek out support from others. This support included making connections with other interdisciplinary scholars at conferences, having a mentor who also does interdisciplinary scholarship, and joining institutionalized networks of individuals or organizations working in a similar general area (e.g. scientists, policy-makers, and cultural organizations all interested in History and Philosophy of Science and Science and Technology Studies). Respondents advised interdisciplinary scholars to expose themselves to anyone and everyone who could inspire their ability to be interdisciplinary (e.g. artists, designers, philosophers, scientists, etc.).

They indicated that supportive networks could provide a range of resources and opportunities, including both a place to find support when presented with challenges associated with interdisciplinarity as well as a place to find collaborators and generate new ideas. Respondents indicated that interdisciplinary work can be more time consuming and intellectually challenging than disciplinary work because multiple disciplinary standards and ideas need to be understood, navigated and/or synthesized. Another respondent suggested that collaborating with others can be a pragmatic approach to reducing the time and effort required by a single scholar when doing this type of work.

## Learn more about other disciplines

An analysis of respondents' comments indicated that interdisciplinary work was considered to be like working in a cross-cultural context; success requires familiarity with more than one disciplinary "culture." Respondents strongly advocated for learning about the fields or disciplines that were most foreign for interdisciplinary scholars. They suggested taking courses, reading books and journal articles, identifying the main players or figures, locating the key issues or positions in the disciplines, attending laboratory meetings, working in a laboratory, attending conferences, and making presentations in front of scholars who are grounded in other disciplines. As one respondent said:

Work (collaborate) with scholars mostly trained in disciplines other than your main area of training. Disciplines have a lot of implicit training that can only be obtained through immersion in the discipline. You can't get this merely from observation, since it is practice based, like learning to drive a car as opposed to classroom study of principles of driving.

Many respondents argued for the importance of cultivating connections with those outside their own discipline and seeking feedback from (if not full-on collaboration with) these connections as a means to learn more about their discipline. Moreover, several respondents made it clear that contact with those in other disciplines should be more than superficial. Cultivating connections meant, among other things, developing a deep appreciation of these scholars, i.e. becoming familiar with their research, training, teachers, and personal history. As one respondent indicated:

My forays into history and philosophy of biology have been successful because of the willingness of collaborators in those fields to actually work WITH a scientist, not merely to study scientists or write about them.

Respondents also made it clear that interdisciplinary scholars need to listen carefully to what scholars in other disciplines talk about to determine what they consider interesting, what they consider to be points of contention, what assumptions they make, and the nuances of the perspectives they have about their subject matter. In addition, respondents suggested asking these connections and collaborators from other disciplines for advice on what literature to read, and to explain to scholars what is currently considered important in their discipline. One respondent framed this general need to listen carefully while working with scholars from other disciplines by saying interdisciplinary scholars need to think of others as "local guides" to a new culture that they need to learn about.

In sum, in order to meaningfully understand two (or more) disciplines, interdisciplinary scholars need to be able to do more than just be obvious and apparent tourists. The importance of becoming bi-cultural competence cannot be overstated. In not gaining this competence, scholars run the risk of being considered irrelevant or, perhaps worse, re-inventing a wheel that was invented long ago in that discipline—a wheel that has been remodeled and rearticulated many times. As one respondent said about collaboration:

I've found collaboration to be crucial. I've met people in many different areas of the university. These collaborators not only have been able to add to my ideas, they have also stopped me from writing things that people in their discipline would think of as outdated or unproved.

Another respondent emphasised the importance of working closely with others:

I have spent very fruitful time in a biological laboratory (attending lab meetings, not performing experiments). I have found discussion with the members of the lab invaluable for sorting genuine philosophical issues in biology from spurious non-issues.

## **Identify overlaps**

Respondents also indicated that becoming more familiar with the culture of the other discipline(s) had many other advantages, giving scholars the ability to: identify the points of affinity between the two disciplines; explain why a cross-disciplinary conversation is useful; carefully use terms and concepts; and understand that scholars in different disciplines will read the same piece of scholarly work differently.

A few respondents suggested that it was important to select topics that appealed to scholars in both disciplines. As one respondent said:

The choice of the subject is crucial. Some interdisciplinary subjects are well received by the two disciplines, some others are not.

Respondents frequently advocated for care in relation to the use of terms, language more generally, and concepts; different disciplines can use the same term to mean different things. Respondents indicated that this could occur at gross and minute levels. As one respondent described it “finding the common language is tricky.”

Respondents recommended carefully selecting terms (i.e. avoiding terms that would confuse and/or irritate their readers) and clearly explaining what scholars mean by the terms that are used. One respondent suggested that “one must not use too many technical words from his own discipline, but be able to use the specialized words of the discipline for which he is an outsider.”

Scholars were advised to also be careful when choosing key concepts. Being able to strip concepts to their core as a means to communicate them to others was identified as a useful skill. Respondents indicated that interdisciplinary scholars should be aware that scholars in different disciplines interpret what they read in different ways. In other words, they take different messages from interdisciplinary. According to some respondents, these multiple interpretations are inevitable, so scholars should not worry about trying to eradicate this possibility. Instead, respondents made it clear that scholars should expect this to occur.

## **Consider the community of readers**

Respondents in this study indicated a need for interdisciplinary scholars to figure out who they are writing a particular piece of interdisciplinary work for. As one respondent said, “figure out who you want to reach and then publish in journals that those people read”. Respondents stressed that identifying a readership for interdisciplinary work was not always an easy task. Knowing who will find a topic interesting requires understanding what the members of various fields or disciplines consider to be interesting questions. Everything from word choice to formatting needs to be considered, as one respondent wrote:

Writing styles differ enormously between papers published in biological versus philosophical journals. Make sure to adjust your manuscript according to the readership.

If the reader is not immediately apparent, one respondent suggested that interdisciplinary scholars look at their own bibliography to see what journals the majority of their articles originate from and consider the readers of these journals.

Respondents indicated that interdisciplinary scholars who know who their readers are will be in a much better position when disciplines are combined because they can more easily identify conflicting terminology, interests, concepts, and presentation styles. From analyzing respondents' advice, it appears there are two directions in which reader-tailoring can proceed. The first is making interdisciplinary work acceptable to one particular discipline. The second involves communicating to multi-disciplinary readers. These choices inspired different kinds of advice from respondents.

In some cases, respondents indicated that scholars must adhere to the preferences of one discipline over another. Respondents indicated that this was particularly the case when submitting to journals that were clearly associated with a particular discipline, but was also applicable when submitting work to interdisciplinary journals. As several respondents pointed out, peer-reviewers can be less interdisciplinary in orientation than the authors of submitted manuscripts, regardless of whether a journal is classified as discipline-based or interdisciplinary. As one respondent wrote:

From my experience, most interdisciplinary papers & projects get rejected, because the reviewers are usually experts in only one of the disciplines addressed. As a result they either abstain from evaluating parts or the whole manuscript/project or they evaluate the part they are not familiar with more negatively!!!

Being reviewed by a scholar who is not as familiar with anything other than their own discipline can result in several problems as one respondent describes:

Primarily the issue seems to be researchers expect a discrete research agenda for each of the disciplines represented in your work e.g. your final product must be able to be discretely separated into stand-alone work in, for example, History, Sociology and Philosophy. Experts in those respective areas may still reject the other elements of your work because it should be "focused" on the area of their expertise.

For scholars whose audiences appear to be more firmly in one discipline or another, respondents advised these scholars to follow the "unwritten rules" of the discipline. The following advice (in this case specifically addressing Biology and Philosophy) is useful to consider here:

Writing styles differ enormously between papers published in biological versus philosophical journals. Make sure to adjust your manuscript according to the readership. (e.g., do never and under no circumstances include an interpretation [= discussion] in the results section when submitting to a journal addressing biologists). (e.g., avoid using the passive voice in philosophical papers [while this is most frequently used in biological papers]) Avoid footnotes and quotations (a single quotation is acceptable) in biological journals.

In the case of multi-disciplinary audiences (and therefore mixed expectations), respondents indicated that scholars are confronted by the problem of having to meet different disciplinary standards and expectations. In this case, one respondent suggested writing in as "neutral terms" if possible. Another respondent warned that scholars need to be wary of alienating and/or boring readers when writing in cross-disciplinary contexts; each body of scholars will be interested in (or annoyed by) too much detail and/or particular kinds of arguments.

Some respondents suggested that the dichotomy described above does not exist—that all scholarly work is judged through a disciplinary lens of some sort. One individual’s advice in relation to this was to downplay the interdisciplinary nature of the scholar’s work:

I have found it difficult to publish or find funding for research that is explicitly interdisciplinary. Where it has been successful, it is usually because I don't flag the work as interdisciplinary and just include the interdisciplinary material in a project that is targeted at one discipline or the other.

Another respondent advised scholars to be clear about the standards they are using—and why:

Producing interdisciplinary work does not mean that you don't have to be responsive to the norms of the disciplines from which you draw. Interdisciplinarity requires disciplines to be "inter," between. It often requires violating the standards and norms of those disciplines, yes, but you need to know those standards and have good reasons for violating them. Work that is not responsive to the standard of ANY field is work without an audience.

In terms of the nuts-and-bolts of crafting interdisciplinary writing, respondents provided a variety of suggestions. For example, some respondents suggested that scholars show that they are familiar with both disciplines and bring their readers up to speed in terms of what they would need to know (e.g. from the other discipline) to be able to understand what they were saying. Along these lines, one respondent suggested:

Acknowledge existing research before elaborating on how a different perspective can productively complicate it.

Another respondent particularly emphasised the debates happening within the journal:

Be clear about how existing debates have unfolded within your given journal, and how the new disciplinary perspective you're introducing can enhance these on-going debates.

Still along these lines, respondents advised being clear about what scholars were doing and why they were doing it. This including having clarity over why an interdisciplinary approach was most useful and what new insights an interdisciplinary approach could provide. For example, an interdisciplinary scholar may be solving a problem in one field or discipline by importing ideas from another, solving a general problem that could not be answered by a single discipline alone (i.e. a “problem-centered” inquiry), or translating relevant ideas or research findings from one discipline to another. Respondents advised scholars to figure out which of these approaches they were taking so they could know what they offer to their readers.

## **Study the journals**

Respondents also noted that interdisciplinary scholars must make careful study of the specific characteristics of the journal where they were submitting their work. This extended beyond issues of readership. Specifically, interdisciplinary scholars need to be cognizant of how different journals approach interdisciplinarity. Scholars need to find out who is on the editorial board, as this will give them a better idea of the degree to which it is interdisciplinary. Respondents also indicated that

scholars need to determine if a journal is open to interdisciplinary work and determine the way in which interdisciplinarity is conceived by the journal.

Interdisciplinary scholars should also be aware that interdisciplinary journals and book series can target very specialized audiences, and that these audiences may be narrower than the work a scholar is doing. One respondent stated that this did not mean that a scholar should avoid these publishing venues, but that they needed to be aware that this occurs. Under these circumstances, a scholar may feel compelled to revise their work to address a smaller audience more directly before submitting their work. This respondent suggested otherwise; they suggested it was important for scholars to have something in the work that indicated how it is relevant beyond the intended audience of that journal or book series.

## **Explore alternative publishing outlets**

A selection of respondents made it clear that journals should not be the only venue in which interdisciplinary scholars should direct their written work. A variety of other platforms were recommended as good places for interdisciplinary work. These included conference volumes, books, book chapters and blogs. Remaining within journals, one respondent suggested that review articles provided a different kind of writing space compared to research articles, and that interdisciplinary material could be included in these forums; the key was to be invited to write a review article.

## **Be patient and persistent**

We also noticed a theme of avoidance towards publishing interdisciplinary research in some open-ended responses in the survey. According to one respondent, the best advice an interdisciplinary scholar could give to others was to “Run!” While we could assume that this was partially said in jest, another respondent said:

If you can't decide between disciplinary or interdisciplinary, choose disciplinary.

While avoiding interdisciplinary was a definite theme for some, many other respondents encouraged interdisciplinary scholars to have patience and be persistence in order to succeed. As one scholar put it:

Be persistent. It's not going to be easy as universities continue their neo-liberal and corporatist agendas making positions precarious and research not tied to industry ill-supported.

And as another said:

Keep at it. Don't give up! :)

## **Additional advice regarding career strategies and pitfalls**

In addition to advice about publishing interdisciplinary work, a number of respondents made suggestions related to pitfalls associated with interdisciplinary-oriented careers and possible strategies for surviving those pitfalls. This advice included being familiar with the official and unofficial rules of tenure, including whether a scholar needed to have discipline-specific achievements first before working on their interdisciplinary work. Liberal arts colleges were identified as often more welcoming of interdisciplinarity than research-oriented universities. In some disciplines (e.g.

Biology), interdisciplinary research was not considered “proper” research and therefore would not be considered equivalent to disciplinary academic productivity. Respondents also indicated that job panels and grant panels were conservative and tended to err towards the traditional. Consequently, jobs and grants were much harder to get when scholars didn’t look like conventional members of a particular discipline.

Respondents suggested that scholars also talk to someone in a position of authority at their institution about how they would be evaluated in relation to their interdisciplinary work, and have this written down and signed by an official. They also suggested that scholars find someone in their academic institution to record the fact that they were doing interdisciplinary work (including publishing in non-traditional journals, non-traditional venues, and collaborating with scholars outside of their discipline). These activities could be written into job contracts, responsibility statements, and/or a letter for an official employee file. One respondent recommended that scholars do this even if administrators say it cannot be done or is not routinely done. They also suggested that scholars keep a copy of any documentation for themselves as well.

## Acknowledgements

We would like to thank the ISHPSSB Council for their support and assistance with this project. We would also like to thank everyone who participated in the survey. Without you, we would have nothing to present here. Your contribution to this project is extremely appreciated.

We will be writing additional papers based on analysis of the data collected from this survey. If you are interested in seeing this future work, please consult Chantelle Marlors and/or Michelle Riedlinger’s Research Gate and Academia.com pages, as we will make sure to publish the materials in those spaces.