



Journal of Copyright in Education and Librarianship

ISSN 2473-8336 | journals.ku.edu/jcel

Volume 8, Issue 1 (2025)

Intellectual Property and Copyright Considerations for Authentic Science Film Storytelling within a University Setting

Dena K. Seidel

Seidel, D. K. (2025). Intellectual Property and Copyright Considerations for Authentic Science Film Storytelling within a University Setting. *Journal of Copyright in Education & Librarianship*. 8(1), 1-25.

<https://doi.org/10.17161/jcel.v8i1.22838>



© 2025 Dena Seidel. This open access article is distributed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International license](https://creativecommons.org/licenses/by-nc-nd/4.0/)

Intellectual Property and Copyright Considerations for Authentic Science Film Storytelling within a University Setting

Dena K. Seidel
Rutgers University

Abstract

Many federally funded research grants include requirements that scientists communicate their research to the public as a means to increase scientific literacy and overall public trust in science. To address this critical societal need, scientists and a university-based science filmmaker at Rutgers University developed a collaborative science film storytelling model that has successfully translated federally funded research to the public by way of more than a dozen high-quality science films that involve university students in the storytelling process. These interdisciplinary science film projects take place at a time when university intellectual property policies are facing new challenges as teaching, research, and collaborative creative works increasingly take place on digital platforms where products and materials can be easily duplicated and shared. Thus, the need to define the terms of creative ownership and joint copyright at the onset of these science film projects, which include narrative visualization of federally funded research processes and involve many co-creators, has become pressing. This article shares suggestions for the development of memoranda of understanding between creative collaborators working together with scientists on film projects made in university settings that document and communicate federally funded science into compelling and relatable stories for the broader public.

Intellectual Property and Copyright Considerations for Authentic Science Film Storytelling within a University Setting

Introduction

Beginning in 2008, scientists and film faculty (including this author) as well as students at Rutgers University came together to create science-in-action films as part of the English department's filmmaking-as-creative writing course curriculum and to test the following research question: *Can university scientists increase their relatability and public engagement through science-in-action video storytelling?* (Seidel et al., 2023). Over 17 years, this science-in-action film storytelling model evolved, expanded, and produced more than a dozen high-visibility narratives that successfully translated science to the public and featured scientists who were described in post-screening audience surveys as relatable people (Rockman et al., 2015). These original science stories, overseen by university faculty and co-created by undergraduate students as part of their storytelling and/or research course requirements, reached broad audiences through a variety of venues including television and online streaming platforms such as Public Broadcasting Service (PBS), Netflix, PIVOT TV, iTunes, and Kanopy. These collaborative science film projects, seen by millions of viewers, demonstrated this storytelling model's effectiveness to produce science and environmental narratives that have broad public appeal and have the ability to increase the public's understanding of science and the scientific process. Essential to this model's success is the long-term, trusting partnerships between the participating science film storytellers and the featured scientists. This article addresses the need to protect the copyright and authorship of the storytellers and scientists who spend months and often years working to make these high-quality science film stories available to the public.

Figure 1

The author presenting this science-in-action filmmaking model with 8 Rutgers students at the 2024 *Environmental Storytelling Conference* hosted by SUNY ESF/Syracuse University



Rutgers Copyright Policy includes recognition that “because the information technology environment is changing rapidly, it is impossible to envision every form of copyrightable work or the situation in which it might be created.” As a result, Rutgers describes its copyright policy as broad with an understanding that in an increasingly digitized world, copyright “implementation will require ongoing interpretation and review” (Rutgers University, 2007, §I). Storytelling products that result from this science-in-action filmmaking model are built from digital video and audio recording devices and combine the creative input of many stakeholders, including the scientists whose federally funded research and research processes are featured in the stories.

This paper considers this model’s past successes as well as its potential to be institutionalized for the positive benefit to scientists, students, STEM learning faculty, the university, and the public. It should be noted that the science-in-action film storytelling model behind the high-quality film products (Fig 1) being discussed builds upon STEM learning pedagogy to provide immersive science learning for participating students (Baram-Tsabari & Osborne, 2015; Freeman et al., 2014; Shin, 2018). Additionally, this model builds upon research regarding the best methods to support university scientists who actively seek to communicate their research processes and research findings with the broader public (Rose et al., 2020).

Figure 2

The Author Filming the Recovery of a Glider Robot in Spain for *Atlantic Crossing: A Robot’s Daring Mission* (2009)



Figure 3

Undergraduate Students Filming Scenes for *Atlantic Crossing* in Spain (2009)



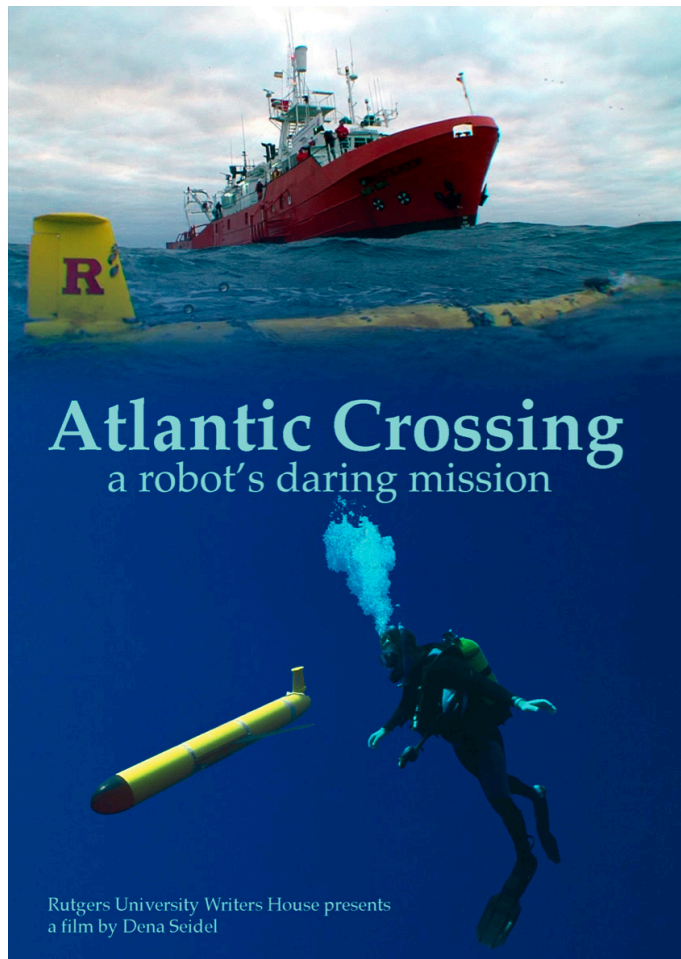
Figure 4

Atlantic Crossing as Part of a Smithsonian Sant Ocean Hall Exhibit (2010-2013)



Figure 5

Film Poster for *Atlantic Crossing: A Robot's Daring Mission* (2010)

**Figure 6**

Author Filming Scientist Oscar Schofield in Antarctica for *Antarctic Edge: 70° South* (2013)



The Value of Science-in-Action Films to Universities, Scientists, Students and the Public

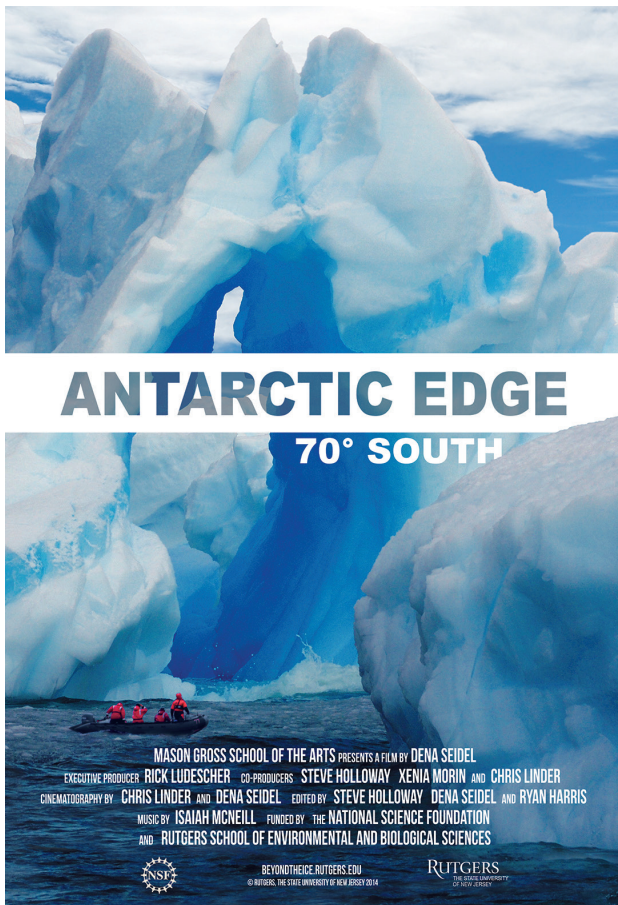
The science-in-action films produced by Rutgers faculty, researchers, and students have been able to positively share groundbreaking science with broad national and international audiences. The impact includes the three-year exhibit of the feature documentary *Atlantic Crossing: A Robot's Daring Mission* (Seidel, 2010) (Figs 2 and 3) in the Smithsonian's Sant Ocean Hall (Fig 4) as well as this film's more than 400 broadcasts on PBS stations across the country (Fig 5), reaching a potential audience of 180 million people (Seidel et al., 2023).

Thailand Untapped: The Global Reach of Engineers Without Borders (NJ PBS, 2012) sent two undergraduate storytellers to Thailand, and the resulting film was nominated for a Mid-Atlantic Emmy Award. The success and public reach of *Atlantic Crossing* and *Thailand Untapped* led to central university funding to support this model and establish the university's digital filmmaking certificate program (Hoffman, 2011).

This model's most prominent science-in-action film, *Antarctic Edge: 70° South* (Seidel, 2015), was funded by a National Science Foundation (NSF) Communicating Research to Public Audiences (CRPA) grant to oceanographer Dr. Oscar Schofield (principal investigator) and Dena Seidel (co-principal investigator) for the production of a feature documentary about climate scientists working along the West Antarctic Peninsula (Fig 6). The grant proposal described this science-in-action film storytelling model as "proven to take the time to develop relationships of trust with world-renowned scientists searching for answers to large problems relevant to all peoples." Undergraduates from a variety of majors with varying levels of vid-

Figure 7

Film Poster for *Antarctic Edge: 70° South* (2015)

**Figure 8**

Student Co-Creators Presenting *Antarctic Edge: 70° South* at the Quad Theater in New York City in 2015



eo storytelling experience were invited to engage with hundreds of hours of *Antarctic Edge* footage under Seidel's faculty supervision (Hoffman, 2013; NSF, 2013) with each of the students successfully receiving a final credit in the documentary as assistant editors and associate producers.

Antarctic Edge had theatrical releases in New York and Los Angeles (Fig 7 and 8), streamed on Netflix for three years, and was reviewed in major newspapers including the *New York Times* (Kenigsberg, 2015) and the *Los Angeles Times* (Rechtshaffen, 2015). Post-screening surveys of *Antarctic Edge* collected by external reviewers indicated an increase in STEM and climate science learning for public audiences (Rockman et al., 2015). Additionally, the NSF CRPA grant funded the STEM learning surveys of 19 undergraduates who had collaboratively participated on these science-in-action films (Schofield & Seidel, 2013).

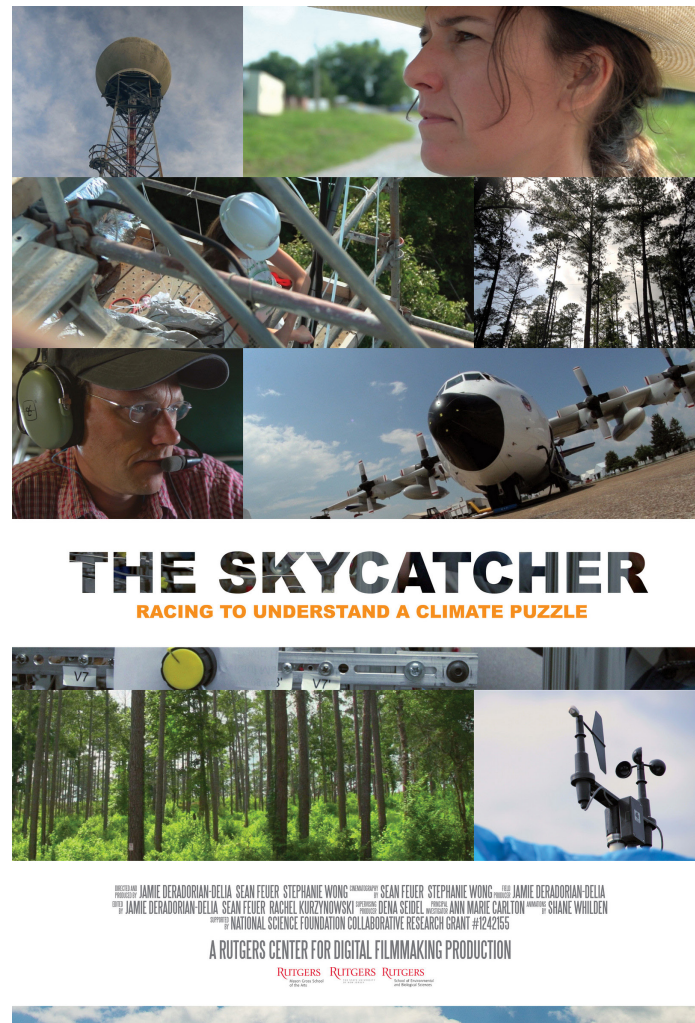
Collectively, more than a dozen original science films produced from this model have reached wide-ranging audiences and have been screened in film festivals around the world. Participating scientists reported increased science communication skills and impact (Seidel et al., 2023). Several of the student-directed science films were funded by federal grants including the NSF-supported *Skycatcher* (Fig 9 and 10) funded by the NSF (Feuer et al., 2013), and *Women of Nsongwe* (Fig 11 and 12) funded by the U.S. Agency for International Development (Isaacs, 2014; Rutgers Magazine, 2014). Researchers have embedded these science stories in grant proposals to strengthen fundraising efforts, and these films have been used by Rutgers and the featured scientists to recruit prospective students and provide greater public visibility for ongoing federally funded research. In addition, this science-in-action filmmaking mod-

Figure 9

Undergraduates Filming in Alabama for *The Skycatcher* (2009)

**Figure 10**

Film Poster for *The Skycatcher* (2013)



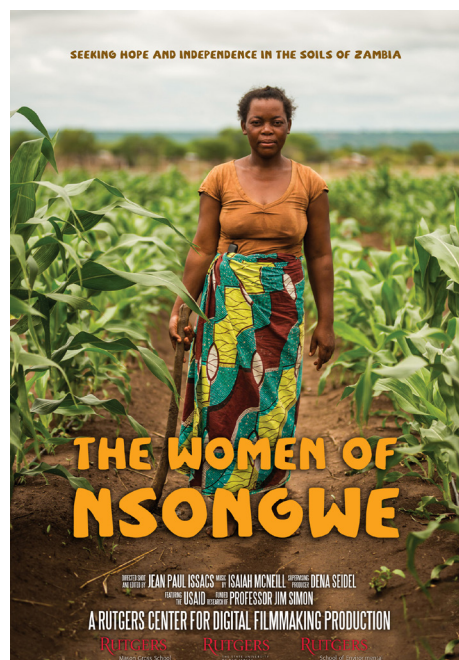
el has been adapted for high school students as part of a U.S. Department of Agriculture funded STEM learning through video storytelling after-school program supporting youth who co-create science stories in trusting partnerships with university scientists (Office of Communications, 2021; Office of Public Outreach and Communication, 2022; Seidel et al., 2025).

Beneficiaries of Science-in-Action Films Made at Rutgers University

This collaborative and final storytelling model's potential to benefit participating scientists, faculty, and students, and the university as a whole, is considerable and has demonstrated its replicability. Many benefit through the creative process by way of experiential learning and/or through the use of the story products.

Figure 11

Film Poster for *The Women of Nsongwe* (2015)

**Figure 12**

Undergraduate Student JP Isaacs Filming in Zambia in 2014



Participating Undergraduate Students

This science-in-action filmmaking model provides high-impact experiential STEM learning by facilitating undergraduates with access to, and mentorship from, research scientists in the shared co-creation of STEM-based video stories in a welcoming environment intended to increase student belonging within a science community. The National Center for Education Statistics (Chen, 2013) reported that 48% of undergraduates who began STEM programs between 2003 and 2009 had left them by spring 2009. These rates are especially troubling for STEM majors from underrepresented backgrounds. Several factors influence students' attrition, including lack of interaction with science faculty; lack of hands-on, experiential learning curriculum (Pedraza & Chen, 2021); and lack of belonging within a science community (McPherson et al., 2018; Walton & Cohen, 2007; Zaniewski & Reinholz, 2016). This science-in-action filmmaking model addresses some of these challenges by providing storytelling students with agency and purpose as respected members of university-based science teams. Additionally, these projects provide students with professional development and skills-building as co-authors of high-quality, science-rich film stories.

Participating Scientists

Preliminary data indicates that participating university scientists increased their science communication impact relative to the time they invested collaborating on these science stories (Seidel et al., 2023). As the scientists were required to explain their scientific process in first person, their communication approach became more personable, and they also found that they used more colloquial language, free from scientific jargon, to explain their work to non-science public audiences (Besley et al., 2015, 2018). In addition, these science film stories, which increased the accessibility and visibility of the scientists' research (Joubert et al., 2019), were used to strengthen grant applications while concurrently serving as a recruitment tool, attracting new students to their research programs.

Funding Agencies

Science-in-action films have proven to be an effective means to communicate federally funded research in story form to larger audiences. Federal funding agencies expect and often require grant recipients to communicate their science to the public (NSF, 2022) to foster transparency, accountability, and public understanding of how taxpayer money is being spent on research. This ensures that the public can see the value and impact of the scientific research they are funding.

The Public

In 2019, the Pew Research Center found that 66% of Americans surveyed did not fully understand the scientific method and that only 52% could correctly identify a hypothesis. The science-in-action films made at Rutgers intentionally embed the scientific method into journeys of discovery that lead with scientists asking critical questions, which are the basis of their hypotheses. Additionally, these films have been shown to effectively communicate scientific concepts (Laursen & Brickley, 2011) while sharing the human motivation and commitment behind the scientific work, thus increasing the relatability of the featured scientists (Seidel et al., 2023).

The University

Authentic science stories produced in trusting partnerships between scientists, students, and science-storytelling faculty and researchers have the potential to communicate important Rutgers research to broad audiences far beyond the reach of the university's promotional materials. Authentic science film stories are powerful tools universities can use to attract students by demonstrating the relevance, accessibility, and human element of scientific study and research (Clough, 2009). Additionally, film stories that highlight how science applies to everyday life (Dahlstrom, 2014) while featuring impactful research initiatives help prospective students see the relevance and potential of STEM fields. These films have also served to help fulfill the university's mission of community engagement (Office of Communications, 2021).

Considering the broad-ranging benefits of science-in-action films made in university settings, this paper aims to address past authorship challenges and propose paths forward to make these science storytelling partnerships replicable while ensuring proper acknowledgement and credit is maintained over time. As this paper is not intended as a legal document but rather a review to ensure copyrights and intellectual property are preserved and protected to allow such models to scale up, exact details for a university-based arrangement to support the production of high-quality, authentic science-in-action films that reach broad audiences cannot be fully articulated here. What can be suggested is that the needs and goals of all the participating parties must be considered when designing an institutionalized framework to support this interdisciplinary creativity and the associated science communication products.

Challenges to Producing Science-in-Action Films in a University Setting

There are unique challenges to supporting this model's framework for long-term trusting partnerships between many university academic participants with the shared goal of science film stories that are recognized as authentic and free of editorial control by university administration. The uniqueness of this collaborative model straddles many university intellectual property and copy-

right conventions as the intellectual property and copyright parameters and terms for scientists, artists, faculty, and students are not all the same. Some consistent challenges have to do with the ultimate control and ownership and copyright of the science video data that documents the processes of grant-funded research and has been filmed by student and faculty science filmmakers/cinematographers whose creativity goes into the framing, lighting, and technical choices of each shot. Further challenges relate to the recognized authorship and copyright of the completed and finalized science story products that have been written, directed, and edited by diverse combinations of faculty and students, as well as with the university's authority to license and distribute the final science film story products, which includes the generation of revenue returned to the university.

Importantly, all of the science films produced from this model between 2010 and 2015 are recognized as copyright of Rutgers University but were implicitly understood to also be the joint intellectual property of the films' directors, whether they be faculty (this author) or students, per university copyright policy that recognizes creative works produced by faculty and/or students to be the copyright of those content producers. However, the joint ownership of these science films was not articulated in writing and was simply an implicit understanding. Over time, these films were used by other faculty who were not involved in the original films' production to attract students to their programs without acknowledging the original filmmakers. This use of the science-in-action film stories without acknowledging the original authors appears to be in direct conflict with Rutgers copyright policy, which states that even "in cases where the university owns the copyright, the university ordinarily will recognize that faculty creators have: recognition of their contribution as creators" (Rutgers University, 2007, §III). However, when inquiries were made as to how other faculty could use these film products without acknowledging the original authors, it was suggested that the vagaries and contradictions in the Rutgers copyright policy, specifically around the terms "substantial university resources," could possibly support an argument that the university has sole copyright of these films and new faculty do not have to acknowledge the original filmmakers.

As a result of the above situation, when this author was asked to direct a new science-in-action film with researchers at Rutgers in 2020, an memorandum of understanding of joint copyright was developed with support from university council. This memorandum will be proposed in this paper as a protective measure for future project collaborations. Addressing this issue now and proposing a workable solution is particularly timely as federal funding agencies are increasingly pressed to communicate the value of taxpayer-supported research to the general public, and this collaborative film storytelling model has proven its effectiveness.

Today, more than a dozen university students are co-creating, co-directing, and directing science films at Rutgers University as part of their independent research into agriculture, aquaculture, marine science, deep-sea microbiology, and nature-based human health products. As this science-in-action film storytelling model evolves and is further applied, the need to establish rules for authorship, including copyright and co-copyright of these creative science story products, has become more evident. Without an institutionalized framework that supports creative partnerships between scientists and filmmakers, while protecting the authorship of the science storytellers as well as the intellectual property of the science processes captured in digital video form, it is difficult to fully realize the potential of this model that, by design, requires long-term trusting and interdisciplinary collaborations between many academic partners within a university setting.

Copyright Policy to Support the Co-Creation of Authentic Science-In-Action Films

To explore best steps for supporting the co-creation of the above described science-in-action films, this paper will discuss a) an overview of intellectual property and copyright law regarding creative works and their present application within university settings, with specific reference to the university's copyright protections for faculty, scientists and students; b) lessons learned during the production and distribution of university-made science films, including the necessary protection of hundreds of hours of science-in-action film footage; and finally c) how university policy might support future creative collaborative arrangements. Future collaborations should:

- protect and facilitate long-term interdisciplinary partnerships between scientists and science filmmakers;
- produce authentic and professional science-in-action video stories that translate science to broad audiences;
- immerse students in new bodies of knowledge while training them as next-generation science communicators;
- protect original science-in-action video that contains documentation of federally funded scientific processes that scientists then use as their data;
- guarantee copyright protection for faculty and student creativity; and
- provide the university with sole licensing control of final story products for the sale/rent/lease of these stories for revenue generation returned to support university science and science communication programs.

Intellectual Property Overview

Today, university intellectual property policies are facing new challenges as teaching and research increasingly takes place on digital platforms where creative works, syllabi, course materials, and original research and research products can be easily duplicated and shared. While universities across the country are promoting interdisciplinary and project-based curricula, it can be complex to agree upon ownership and authorship of a variety of collaboratively produced works and work byproducts.

Intellectual property is actually a broad term that refers to four legal categories: copyrights, patents, trademarks, and trade secrets. For the purposes of original and creative works produced in a university setting, we will explore copyright and patents, both of which are addressed in Rutgers' copyright policy.

Copyright

Copyright encompasses all original works of authorship in any tangible medium of expression. Classes of copyright-eligible subject matter include literature and other printed matter, architectural or engineering drawings, circuit diagrams, lectures and other instructional materials, musical or dramatic compositions, films, photographs, sound recordings, choreography, computer software and databases, and pictorial and sculptural works (Copyright Law, 1976).

Copyright is one of two aspects of intellectual property mentioned in the U.S. Constitution and governed by federal law. In the Constitution, copyright is understood to be the legal mechanism that allows authors to protect original ideas communicated through individual works of expression

from being copied by others. The fundamental reason for copyright, as established in the Constitution, is “to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries” (U.S. Const. art. I, §8, cl. 2). Thus, the Constitution’s intellectual property clause empowers Congress to grant copyright to the “Authors of Writings,” which is a term that has been interpreted more broadly than merely written or printed material. For instance, in 1884, the Supreme Court held in *Burrow-Giles Lithographic Co. v. Sarony* that Congress could constitutionally provide copyright to photographic works. Congress has revised and expanded U.S. copyright law many times since the first U.S. Copyright Act of 1790 when the original term of copyright protection was only 14 years, with the possibility of renewal for a subsequent 14 years. Today, for works that have an individual author and were created on or after January 1, 1978, copyrights extend for the author’s life plus 70 years. Works made for hire, or those with anonymous or pseudonymous authors, are protected for 95 years from the date of first publication or 120 years from creation, whichever is shorter (Copyright Law, 1976, §302). United States Copyright Law recognizes films as copyrightable creative expression. Section 101 states, “Motion pictures are audiovisual works consisting of a series of related images which, when shown in succession, impart an impression of motion, together with accompanying sounds, if any.” Motion pictures are typically embodied in film or videotape, and only the expression that is fixed in the motion picture (camera work, dialogue, sounds, animation, etc.) is protected under copyright. Copyright does not cover the idea or concept behind a work or any characters portrayed in a film. Film copyright is automatically secured when the work is created and “fixed” in a copy. In §102 of the Copyright Law, works of authorship are identified to fall into the following categories: literary works; musical works, including any accompanying words; dramatic works, including any accompanying music; pantomimes and choreographic works; pictorial, graphic, and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works (US Copyright Office, 2014).

It’s interesting to note that the United Nations recognizes copyright of creative works as a human right under the UN’s Universal Declaration of Human Rights where it states Article 27(2) that “everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author” (1948, Article 27(2)).

Rutgers Copyright Policy contains this paragraph:

Faculty at the university must be free to choose and pursue areas of study, to share the results of their intellectual efforts with colleagues and students, and to use and disseminate their own creations. This policy reasserts and upholds these important academic values. By longstanding academic custom and tradition, faculty are free to publish scholarly and artistic works they have created, such as books, monographs, journal articles, musical compositions, and artwork in pursuit of their research. Nothing in this policy shall be construed to override this basic academic custom and tradition. (2007, §II)

Then, Rutgers Copyright Policy continues to emphasize the rights of its faculty to protect the ownership of their creative work even when university resources have supported the creation of their work stating,

This policy reaffirms the faculty’s rights to retain copyright ownership to the scholarly and artistic works they create, such as books, monographs, journal articles, musical compositions, and artwork, in whatever format they are created, print or electronic, without regard to the extent of university resources involved in the creation of these works. (2007, §III).

However, Rutgers Copyright Policy states that

Subject to the traditional freedom to publish scholarly and artistic works the university owns copyright to:

- Works created at the university's direction, unless the university enters into a written agreement that provides otherwise
- Works created by staff within the scope of their employment
- Works created by students in their capacity as employees of the university
- Works created as a result of external funding where the terms of the funding require that copyright be in the name of the university (2007, §III).

Importantly, Rutgers Copyright Policy states, "In cases where the university owns the copyright, the university ordinarily will recognize that faculty creators have recognition of their contribution as creators" (2007, §III).

For Rutgers students, the university copyright policy states that "students typically will own the copyright to works created as a requirement of their coursework, degree, or certificate program. The university, however, retains the right to use student works for pedagogical, scholarly, and administrative purposes" (2007, §III). At the same time, the Rutgers University Libraries *Copyrights for Students* page states, "When a student creates an original and creative assignment, project, paper, or thesis, the student holds copyright in that work, automatically, without any need to register the work to obtain a copyright" (n.d., "Rights in your copyrighted works"). This webpage also states, "Copyright is an important form of protection that gives the student rights over reproduction, public display, public distribution, public performance, and creation of derivative works from their copyrighted works" (n.d., "Rights in your copyrighted works"). However, works created by students in their capacity as employees of the university are owned by the university (Rutgers University, 2007, §III).

There is also the potential for some forms of data to be copyrighted. While factual data elements are not protected by U.S. copyright law, Rutgers libraries, in "Copyright Basics" (n.d.), acknowledge that data collected as part of the process of creating a copyrighted work (literary work, chart, graph, audiovisual work, sound recording, etc.) may be subject to copyright protections. The U.S. Copyright Law explains that

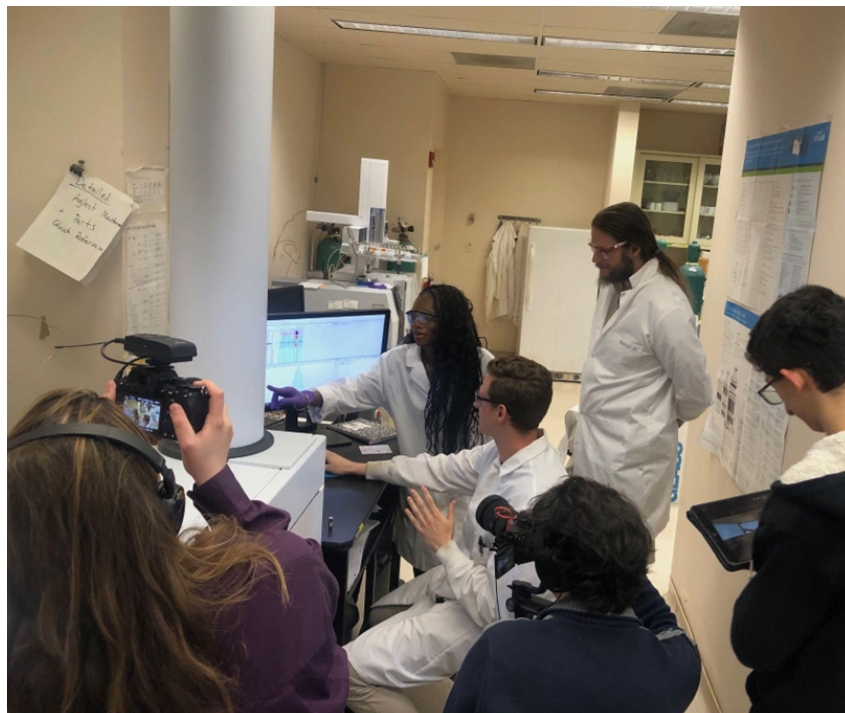
a "compilation" is a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship. (1976, §101)

This is important when considering the potential copyright and creative authorship of the hundreds of hours of science-in-action film footage, understood as data compilation, that are the result of this science storytelling model. In *Feist Publications v. Rural Telephone* (1991), the Supreme Court stated:

The compilation author typically chooses which facts to include, in what order to place them, and how to arrange the collected data so that they may be used effectively by readers. These choices as to selection and arrangement, so long as they are made independently by the compiler and entail a minimal degree of creativity, are sufficiently original that Congress may protect such compilations through copyright law.

Figure 13

Undergraduate students direct a science-in-action scene in the Rutgers plant biology department for their short film *Biting Back: The Lifesaving Potential of Catnip* (2022)

**Figure 14**

Film Poster for *Biting Back* (2023)



Two notable examples are the feature documentary *The Princess of Piombino* (Elise et al., 2016) and the short film *My Father, Electromagnetic* (Riggio, 2014), filmed by two Rutgers undergraduate students in Rome, Italy, with the original film footage used to support Rutgers online and classics courses.

Today, who owns original work is narrowed within U.S. copyright law's work-for-hire doctrine, that states that works prepared in the scope of employment belong to the employer, not the employee. Exceptions are made for independent contractors and commissioned works and for university faculty whose creative products are considered part of their research and academic freedoms. In this way, faculty are almost always exempt from the work-for-hire doctrine even though their job descriptions may include the responsibility to both teach and do research.

According to Title 17, a "work made for hire" is "a work prepared by an employee within the scope of his or her employment"; or

a work specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire. (1976, §101)

Title 17 further states that in the case of work made for hire,

the employer or other person for whom the work was prepared is considered the author for purposes of this title, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in the copyright. (1976, §201)

Professors, faculty and researchers may choose to negotiate separate work-for-hire contracts with their universities outside of their normal teaching, research, and scholarly responsibilities in which university ownership of resulting intellectual property is mutually agreed upon. An example could be a professor signing a work-for-hire contract to develop a new online course that permits a university to own and distribute a course through its online education division. Another example of work-for-hire might be an arts faculty commissioned to design or construct a piece of art for the university.

Patents

It is important here to distinguish between copyright of a creative work produced within a university setting and patents for inventions developed by university faculty. University policy regarding ownership of patents for inventions is important to consider within the context of science films as the subject matter of the films may include research processes that lead to university-owned patents, such as patents for new breeds of agricultural crops or new engineering tools or instruments.

A patent provides a creator/inventor with the right to exclude others from “practicing” (making, using, and selling) an invention. Within universities, faculty-created non-patentable works such as lectures, syllabi, books, art works, and articles are almost always understood to belong to the faculty, not the university, as described above. A patent, unlike a copyright, goes beyond the protection of written expression to secure an exclusive right to the operational principles of an invention. Title 35 of the United States Code pertains to patent law, stating, “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title” (1952, §101).

In 1980, Bayh-Dole Act addressed patents on inventions only but no other forms of intellectual property. The Bayh-Dole Act requires university research personnel to agree in writing to protect the government’s interest in any inventions they make. The Bayh-Dole Act, formerly known as the Patent and Trademark Act Amendments, is now a federal law that enables universities to patent and commercialize inventions that were developed as part of federally funded research programs. University administrations have increased efforts to control faculty intellectual property of patents using broad interpretations of the 1980 Bayh-Dole Act. That includes university ownership of all federally supported inventions generated on campus as well as universities’ right to license this intellectual property to industry in exchange for royalties, equity, and other fees. This broad interpretation of the law was implemented in 2011 when the University of California began requesting that faculty sign letters assigning ownership to all their future inventions to the university (American Association of University Professors, 2014).

Rutgers University Patent Policy has adopted this broad interpretation of patent law. Rutgers Copyright Policy states that:

Copyrightable works that also qualify for protection under patent laws as inventions or discoveries or that arise from matters that also are covered by the university’s patent policy, shall be owned by the university and governed by the university’s patent policy. (2007, §III).

A separate Rutgers patent policy (Rutgers, 2013) includes a distribution schedule for Rutgers’ licensing income that results from the marketing of these patents shared between the inventors and the university. Here it is important to recognize the distinctions made between university ownership of *inventions* made within their facilities using federal dollars as compared to faculty owner-

ship and copyright of creative works made at Rutgers regardless of university resources involved in the production of those works.

Considering Substantial University Resources Use for Production of Creative Works:

While Rutgers University's Copyright Policy states that faculty own their creative works "without regard to the extent of university resources involved in the creation of these works" (2007, §III), the university's policy also includes this statement: "With the exception of traditional scholarly and artistic works as noted above, the university also may elect to own the copyright to works created using substantial university resources" (2007, §III) The policy goes on to define substantial university resources as

the use of university funds, facilities, equipment or other resources not ordinarily available to all or most faculty members ...[and] may include research funding, paid or release time awarded to support the creation of the copyrightable work, use of university laboratories or special instrumentation, and dedicated assistance by university employees. (n.d., §IV)

Figure 15

Film Poster for *Life of the Edge* (2023)



Figure 16

Undergraduate students interview scientist Dr. Daphne Munroe at the Rutgers Cape Shore Labs in 2022 for their short film *Life on the Edge: Exploring New Jersey's Coastal Ecosystems*



Joint Authorship and Dissemination of New Knowledge for the Public Good

With regard to collaboratively created works produced within a university setting, joint authorship should be considered, not only for the protection of all participating creators but also in service of the broadest distribution of new knowledge. Rutgers University's Copyright Policy supports joint authorship here: "Rights pertaining to copyright ownership may be allocated or shared with others. Works created collaboratively by students, staff, faculty, and/or others may be owned in whole or in part by the university" (2007, §III). Further,

In the interest of the broadest dissemination of new knowledge for the public good, the university supports and encourages creators who assign their copyright to retain the right to use their work within the university for educational, research, and public service, and to retain the right to make their work available in publicly accessible electronic archives. (2007, §III)

Joint authorship involves creative works that form a unitary whole of which the parts are inseparable and the contributions are indistinguishable. U.S. Copyright Law defines a joint work as "a work prepared by two or more authors with the intention that their contributions be merged into inseparable or interdependent parts of a unitary whole," and in such cases it is typical that all the coauthors will be listed as authors on a joint work (1976, §101). Rutgers University Libraries "Copyright Basics" (n.d.) recognizes that copyright ownership may be shared by more than one person or entity as people sometimes collaborate to produce a work of research or scholarship.

VI. Lessons Learned When Producing Professional and Authentic Science Film Stories that Feature University Research

While there has been considerable enthusiasm for this science-in-action storytelling model and its many resulting professional film products, there have been challenges regarding a) copyright protection for the faculty and students' creative contributions, b) the protection of original science-in-action video data, and c) perceptions by outside distribution platforms that these science films are promotional tools of the university due to the university logos in the film's end credits and posters. Many professional distribution platforms, including cable venues, PBS, and film festivals, will only screen films stories that are recognized as "authentic" and will consistently reject films that are perceived as promotional.

Atlantic Crossing (Seidel, 2010), *Antarctic Edge* (Seidel, 2015a), *Thailand Untapped* (NJ PBS, 2012), *The War After: From Combat to Campus* (Seidel, 2014), and *Generation at Risk* (Seidel, 2015b) have been featured on a university website without acknowledging the faculty director or the participating storytelling students. The non-tenure-track faculty (this author) who spent a total of eight years directing and overseeing the above science film productions did not have written proof of copyright of these film products. Importantly, these films were made outside the faculty member's contractual responsibilities and without an additional work-for-hire contract. While not part of the faculty member's job responsibilities, the faculty was instructed to direct and oversee these large film projects as a means to bring in revenue to the film production program the faculty was creating. In 2015, the university announced its plan to create a new undergraduate film production major with an accompanying tenure track position based on the professional success of this faculty's science films, as announced by the creation of Rutgers University Henry Rutgers Professors and Term Chairs (2014).

However, this new tenure-track position was converted into a position for fiction film faculty. As the original program changed its focus and leadership, the scientists who had collaborated on the science film stories were unable to access the hundreds of hours of video data that documented their federally funded research. The scientists had entered into these trusting creative partnerships with the understanding that the video footage featuring their work would be protected and they would have the opportunity to approve the final film's science content.

As a result of this experience, the participating scientists and the original science filmmaker have since established a science storytelling lab in the Rutgers School of Environmental and Biological Sciences to serve as a secure repository for science-in-action film footage that the scientists can access as video data of their research processes. Current science film story projects co-authored by undergraduates (Figs 13, 14, 15, 16) are now supported in the Immersive Learning Through Science Storytelling lab, which was recently recognized by a New Jersey State Senate resolution for increasing public trust in science (Walcott-Quintin, 2025).

Considerations when adding University Branding to Authentic Science-in-Action films:

All films made with the model thus far have been branded with the Rutgers logo on the films' end credits. It is understandable why universities seek to brand all potentially marketable products made by faculty and staff. As funding for state universities has declined across the nation, there have been increased disputes over faculty intellectual property that could be commercialized for income generation to help offset university operating costs (Monotti & Ricketson, 2003). In order to cover operational expenses, universities seek revenue from royalties from the licensing of faculty inventions and instructional materials (Rooksby, 2016). Rutgers also works with outside marketing and distribution companies to sell and license university-produced products.

In 2015, Rutgers University signed a multi-film distribution agreement with First Run Features for the broad dissemination of three of the feature science films made with this model: *Antarctic Edge*, *The War After*, and *Atlantic Crossing* (First Run Features, 2015). A percentage of the revenue from the sales and licensees on these film products came back to the university. In 2022, First Run Features was again contracted to distribute the most recent science film made from this model, *Fields of Devotion* (Seidel 2023). Documenting USDA funded agriculture science and partnerships between researchers and farmers, this 30-minute science film initially encountered distribution obstacles when the story's creators were questioned about the university's editorial control. Because of the university copyright at the end of the film, *Fields of Devotion* was rejected by American Public Television and only accepted by Kanopy and later NJPBS after clear changes were made to the end credits articulating that the funding for the film was from an external grant and not from the university.

The university's copyright branding in the end credits of *Fields of Devotion* had been interpreted as university editorial control, with concerns that the film might be a promotional product for the university. This interpretation is inaccurate as the faculty and student filmmakers create these stories independently of administrative oversight, as part of their academic research and in a trusting partnership with participating scientists and community stakeholders.

Recently, national distribution platforms such as PBS have either questioned or rejected these science films, referencing PBS standards, which state, "public television content needs to be free from the control of any parties with a vested self-interest in that content" (n.d., p. 5).

To ensure the full public reach of these science stories, it is increasingly important that these science-in-action films be identified as authentic and not promotional. Unlike promotional films made by a university marketing division, authentic science documentaries are broad in the complexity of their subject matter and can include voices of community stakeholders with wide-ranging perspectives and opinions that may challenge the positions or findings of featured scientists.

With regard to these films' objectives for increased public science literacy, recent communication research (Khurram et al, 2025) has found that the content and messaging of promotional science videos is increasingly rejected by public audiences. This is because promotional science messaging does not allow audiences the opportunity to experience scientific processes and decision-making and then independently decide the validity of the videos' scientific conclusions. In this regard, such a university marketing approach has a limited reach, and university communication goals can be supported by the authentic science stories produced from this model that are seen, and accepted by, wider audiences.

VII. Proposed Institutional Arrangements to Protect Science Storytelling Collaborations

The university-based science-in-action video storytelling model described in this paper relies on students and faculty motivational goals to author authentic science stories that positively impact broad public audiences. Rutgers University Copyright Policy recognizes that creative works that students author as part of their coursework are their intellectual property. Rutgers University Copyright Policy also recognizes the creative works of faculty as their intellectual property. This section will address previous challenges and consider some of the structural mechanisms that could support these long-term impactful and creative science film collaborative productions within a university setting.

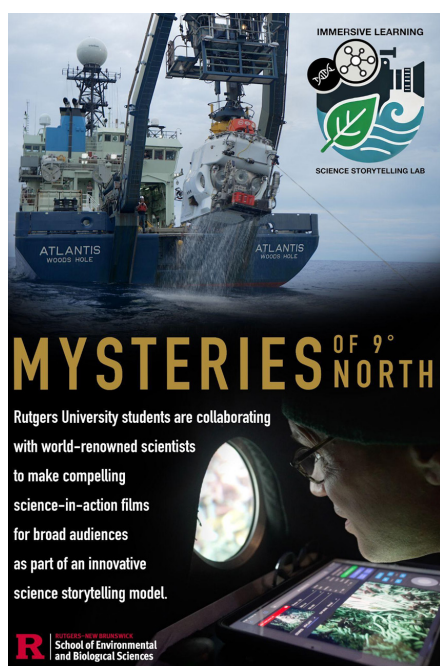
Students have worked on these projects under the supervision of science storytelling faculty who facilitate collaborative relationships with scientists, secure project funding through grants and internal partners, and help students reach their final, professional story product goals. Faculty have also been asked to oversee these projects over several semesters to completion as college students are often only able to creatively participate for one or two semesters.

Given the complexities highlighted, there are several approaches that can be considered as institutional arrangements to support these creative collaborations while alleviating some of the challenges experienced in the past. The paper proposes a memorandum of understanding (MOU) for the co-creation of science-in-action films between participating scientists, student filmmakers, and science filmmaking faculty before the creative collaboration begins. Importantly, this proposed memorandum of understanding is designed for collaborative teams within one university and not across universities.

In a joint copyright arrangement with revenue returns going to the university, the copyright of these original science films would be shared between the faculty and/or student directors and the university. *Fields of Devotion* is understood to be a joint copyright by way of an MOU signed by the university administration and the filmmaker, who was an unpaid visiting scholar for the majority of the film's production. This 2022 *Fields of Devotion* MOU states:

- 1.) The filmmaker is a joint copyright owner of the *Fields of Devotion* (referred to as Film) with the university as the other owner (referred to as The Parties) and each enjoys equal intellectual property rights to the Film as allowed under federal copyright law.

Figure 17 - 20 (top left clockwise): 17) the author interviews Dr Costa Vetriani for the NSF funded feature science film *Mysteries of 9°North* currently in development; 18) Rutgers undergraduate student edits science-in-action film footage; 19) participating students share scenes from *Mysteries of 9°North* at the Planet Forward Storyfest 2025; 20) *Mysteries of 9°North* project poster for Planet Forward conference



2.) It is agreed that the copyright of both Parties shall be acknowledged in the Film and in publicity regarding the Film, the Parties shall agree on what other acknowledgements should be included in the Film credits.

3.) The filmmaker voluntarily agrees to waive their rights to any revenue generated from the sale or lease of the Film with all monies generated paid directly to Rutgers University.

The purpose of the above joint copyright arrangement is to protect the authorship of the science filmmakers so their names are not removed from their creative work, and to also make sure they are part of the conversation if the university wishes to edit or repackage the film. A potential challenge with this arrangement, as described above, is that *Fields of Devotion* was produced without university editorial oversight but the university's co-copyright has been flagged by distributors as perceived administrative control, creating concern that the film is promotional messaging. This approach also is intended to comply with scholarly guidelines of traditional peer-reviewed publications, which ensures proper recognition for researchers and authors. In short, such a co-copyright

arrangement is suggested to provide the same level of authorship over time that traditional scientists receive and expect for their multipublished scholarship.

Another proposed arrangement would be for copyright to be granted only to the science filmmakers but within an agreement that ensures all revenue from the lease or sale of these films is returned exclusively to the university and designated university programs. An end card that would support the broad distribution of these authentic films could include language such as, “This science film is the creative authorship of the named directors and has been made free of university editorial oversight.”

Both arrangements proposed above would ideally include university support for a secure repository for the science-in-action video data. University infrastructure support for the creation of authentic science film stories can include:

- 1.) A secure repository for the science-in-action video footage that scientists reference as data;
- 2.) Professional video cameras, audio recorders, and editing equipment;
- 3.) Support for science video library staff to manage the science video repository; and
- 4.) Support for faculty to train students in science-in-action filmmaking and oversee the completion of professional student-authored science film stories.

Other components of an agreed-upon working framework for scientists and filmmakers with agreed-upon terms that are designed to ensure the success of this model include:

1) A shared understanding that it is the agreed-upon “final film product” that has copyright and that any

re-edit of the final film product be only made with the filmmakers’ involvement and consent.

2.) Copyright of science video data determined on a case-by-case basis depending upon whether the footage was filmed as part of a work-for-hire contract or is the result of faculty science communication research or student coursework.

3.) The time frame in which scientists must approve or request corrections to the science featured in the film. Importantly, scientists do not have editorial control over the story, only the accuracy of science content.

4.) Work-for-hire terms for students and outside professionals. It is understood that students who worked on these films and earned university credit in the process can be paid to work on these films beyond their credit hours without jeopardizing their copyright if they are paid from the broader impact components of the grants that funded the film’s featured research. Student filmmaker copyright should not be jeopardized in this regard as the university did not pay for their work and national funding agencies (such as NSF, USDA, NOAA, and USAID) acknowledge the copyright of paid science communicators. Science-in-action films made from this model have in the past hired outside cinematographers, underwater camera operators, and music composers.

VIII. Conclusion

Science-in-action films discussed in this paper take years to produce and have been made in good faith between the filmmakers and scientists. Creating university-based policy and an institutional framework that supports this impactful work and is most beneficial to all parties, including the university’s communication offices, is important. Having established rules for copyright and/or co-copyright of these science story products with the agreed-upon and written understanding that the host university has sole authority to license the films for revenue-generating purposes may be a viable collaborative framework moving forward.

Questions regarding copyright and authorship of raw science-in-action video data are complex, as the footage by design features the work of two collaborators: The framing, cinematic style, and direction are the decisions of the filmmakers, while the activities documented contain original research belonging to the featured scientists.

Terms for authorship and credit should be defined at the outset of this creative process so expectations are respectfully met with the understanding that raw video footage of the science process is recognized as the scientists' research data and the edited final science story is the intellectual property of the video storytellers. Without oversight and protection of the raw science-in-action video data, scientists will be hesitant to participate in this creative process. Without a guarantee to the filmmakers of copyright protection of their authored stories, faculty and student filmmakers will hesitate to participate.

Importantly, there has been an increase in public distrust of scientists and their work (Pew Research Center, 2023). Despite scientists' strong desire to communicate their research to the public, they continue to describe their lack of communication skills, as well as the lack of university infrastructure support, as hindering their communication goals. This science-in-action filmmaking model developed at Rutgers over the last 17 years, in contrast, has successfully embedded the process of scientists' research in professional narrative forms that reach broad audiences in a manner that audiences report as relatable and trustworthy (Seidel et al., 2023).

In order for this model to produce new science storytelling products, the participating scientists and storytellers must feel that their featured research and creative contributions are protected. Perceived vulnerabilities in this model for scientists as storytellers have the potential to inhibit future collaboration as these projects require long-term commitment. Without proper protections, scientists, students, and faculty may not be willing to invest their time and creativity.

A new science-in-action feature film titled *Mysteries of 9° North* (Seidel, forthcoming) is currently being shaped from more than 400 hours of film footage documenting an NSF-funded interdisciplinary team studying life at deep-sea hydrothermal vents and involving a dozen undergraduates in the creative process (Figs 17-20). To implement our proposed solution and reduce current constraints facing this innovative transdisciplinary approach to science communication, an MOU to establish the film's terms of joint copyright and authorship, with licensing privileges given exclusively to the university, is currently being developed in advance of the expected completion of *Mysteries of 9° North* in 2026. Such an MOU could serve as a template for all future science-in-action films, ensuring the creative and intellectual property of both the filmmakers and the engaged scientists as well as providing clear guidance as to how such products could be used by others within the institution.

Acknowledgements:

This paper and the work featured would not have been possible without the support from my Rutgers mentors and colleagues Elizabeth Minott, Barbara Lee, Jim Simon, Oscar Schofield, Jorge Schement, Xenia Morin, Costa Vetriani, Richard Edwards, Don Kobayashi, Bob Goodman, Rick Ludescher, Scott Glenn, Josh Kohut, Dennis Benson, Corey Brennan, Ann Marie Carlton, Carolyn Williams and Daphne Munroe.

References

- American Association of University Professors. (2014, June). *Defending the freedom to innovate: Faculty intellectual property rights after Stanford v. Roche*. <https://www.aaup.org/report/defending-freedom-innovate-faculty-intellectual-property-rights-after-stanford-v-roche-0>.
- Baram-Tsabari, A., & Osborne, J. (2015). Bridging science education and science communication research. *Journal of Research in Science Teaching*, 52(2), 135–144. <https://doi.org/10.1002/tea.21202>
- Bayh-Dole Act of 1980, Pub. L. No. 96–517, § 200–212, 94 Stat. 3015 (1980). <https://www.govinfo.gov/content/pkg/STATUTE-94/pdf/STATUTE-94-Pg3015.pdf> \
- Besley, J. C., Dudo, A., & Storksdieck, M. (2015). Scientists' views about communication training. *Journal of Research in Science Teaching*, 52(2), 199–220. <https://doi.org/10.1002/tea.21186>
- Besley, J. C., Dudo, A., Yuan, S., & Lawrence, F. (2018). Understanding scientists' willingness to engage. *Science Communication*, 40(5), 559–590. <https://doi.org/10.1177/1075547018786561>
- Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53 (1884). <https://supreme.justia.com/cases/federal/us/111/53/>
- Chen, X., & Soldner, M. (2013). *STEM attrition: College students' paths into and out of STEM fields* [Statistical analysis report]. National Center for Education Statistics. <https://nces.ed.gov/pubs2014/2014001rev.pdf>
- Clough, M. P. (2009). *Humanizing science to improve post-secondary science education* [Conference presentation]. International History, Philosophy and Science Teaching (IHPST), Notre Dame Indiana. <https://www.storybehindthescience.org/pdf/2009IHPST.pdf>.
- Copyright Law of the United States, 17 U.S.C. §§ 101–1511 (1947), revised by, Pub. L. 94–553, title I, §101, 90 Stat. 2541 (1976) <https://www.law.cornell.edu/uscode/text/17>.
- Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, 111(Supplement 4), 13614–13620. <https://doi.org/10.1073/pnas.1320645111>.
- Elise, G., Feuer, S., & Nawrot, A. (Directors) (2016). *The princess of Piombino* [film]. Rutgers University. <https://classics.rutgers.edu/the-princess-of-piombino>
- Feist Publications v. Rural Telephone*, 499 U.S. 340 (1991), <https://supreme.justia.com/cases/federal/us/499/340/>.
- Feuer, S., Deradorian-Delia, J., & Wong, S. (2013). *The skycatcher* [video]. Vimeo. <https://vimeo.com/73308781/cc17a06428?fl=pl&fe=vl>
- First Run Features. (2015, January 29). *Rutgers Center for Digital Filmmaking and First Run Features in new pact to distribute documentaries* [Press release]. First Run Features. <https://www.firstrun-features.com/newsletter/Publicity/RUAcquisition.html>
- Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences*, 111(23), 8410–8415. <https://doi.org/10.1073/pnas.1319030111>.
- Hoffman, A. (2011). Auteurs in the rough. *Rutgers Magazine*. <https://ucmweb.rutgers.edu/magazine/archive1013/departments/fall-2011/the-arts/auteurs-inthe-rough>
- Hoffman, A. (2013). The view down under. *Rutgers Magazine*. <https://ucmweb.rutgers.edu/magazine/1013archive/features/spring-2013/the-view-downunder.html>

- Isaacs, J. P. (Director). (2015). *The women of Nsongwe* [video]. Vimeo. <https://vimeo.com/191302507>
- Joubert, M., Davis, L., & Metcalfe, J. (2019). Storytelling: The soul of science communication. *Journal of Science Communication*, 18(05). <https://doi.org/10.22323/2.18050501>
- Kenigsberg, B. (2015, April 16). Review: In “Antarctic Edge,” a Region of Retreating Ice. *The New York Times*. [online] 16 Apr. <https://www.nytimes.com/2015/04/17/movies/review-in-antarctic-edge-a-region-of-retreating-ice.html>
- Khurram, A., Niaz, N., Khan, M., & Ashraf, S. (2025). Impact of social media advertising on consumer behavior: role of credibility, sustainability and trust. *Frontiers in Communication* Volume: 10
DOI: <https://doi.org/10.3389/fcomm.2025.1595796>
- Laursen, S. L., & Brickley, A. (2011). Focusing the camera lens on the nature of science: Evidence for the effectiveness of documentary film as a broader impacts strategy. *Journal of Geoscience Education*, 59(3), 126–138. <https://doi.org/10.5408/1.3604825>
- McPherson, E., Park, B., & Ito, T. A. (2018). The role of prototype matching in science pursuits: Perceptions of scientists that are inaccurate and diverge from self-perceptions predict reduced interest in a science career. *Personality & Social Psychology Bulletin*, 44(6), 881–898. <https://doi.org/10.1177/0146167217754069>
- Monotti, A. L., & Ricketson, S. (2003). *Universities and intellectual property: Ownership and exploitation*. Oxford University Press.
- National Science Foundation. (2013). *NSF supported Antarctic science documentary is also a teaching tool for aspiring film students* (National Science Foundation News Release 13-099). https://www.nsf.gov/news/news_summ.jsp?cntn_id=128123
- National Science Foundation. (2022, September). *Perspectives on broader impacts* (NSF 15-008). https://nsf.gov-resources.nsf.gov/2022-09/Broader_Impacts_0.pdf
- NJ PBS. (2012). *Thailand untapped: The global reach of engineers without borders* [video]. YouTube. <https://www.youtube.com/watch?v=HIESVRZtf-E>
- Office of Communications. (2021, December). *Science storytelling as community engagement: Rutgers releases “Fields of devotion” short film trailer*. Rutgers NJAES SEBS News. <https://sebsn-jaesnews.rutgers.edu/2021/12/science-storytelling-as-community-engagement-rutgers-releases-fields-of-devotion-short-film-trailer/>
- Office of Public Outreach and Communication. (2022, March 8) *Rutgers interdisciplinary pilot project connects high school youth to university science*. Newsroom, Rutgers. sebsn-jaesnews.rutgers.edu/2022/03/rutgers-interdisciplinary-pilot-project-connects-high-school-youth-to-university-science/
- Patents, U.S.C. 35 (1952) Pub. L. 593, §1, 66 Stat. 792, <https://www.law.cornell.edu/uscode/text/35>.
- Pedraza, L., & Chen, R. (2021). Examining Motivator Factors of STEM Undergraduate Persistence through Two-Factor Theory. *The Journal of Higher Education*, 93(4), 532–558. <https://doi.org/10.1080/00221546.2021.1999722>
- Pew Research Center. (2019, March 28). *What Americans know about science*. <https://www.pewresearch.org/science/2019/03/28/what-americans-know-about-science/>
- Pew Research Center. (2023, November 14). *Americans’ trust in scientists, positive views of science continue to decline*. <https://www.pewresearch.org/science/2023/11/14/americans-trust-in-scientists-positive-views-of-science-continue-to-decline/>

- Public Broadcasting Service. (n.d.). *PBS editorial standards and practices*. <https://www.pbs.org/about/producing-pbs/editorial-standards.pdf>
- Rechtshaffen, M. (2015, May 14). Review: “Antarctic Edge” follows scientists grappling with climate change. *Los Angeles Times*. <https://www.latimes.com/entertainment/movies/la-et-mn-antarctic-edge-70-degrees-review-20150515-story.html>
- Riggio, J. (Director). (2014) *My father, electromagnetic* [Film]. Rutgers University. 2014. <https://classics.rutgers.edu/my-father-electromagnetic>
- Rockman et al. (2015) Rutgers: Antarctica report, Evaluation Findings. <https://beyondtheice.rutgers.edu/wp-content/uploads/2021/08/Rockman-Rutgers-Antarctic-Edge-Findings.pdf>
- Rooksby, J. H. (2016). *The branding of the American mind: How universities capture, manage, and monetize intellectual property and why it matters*. Johns Hopkins University Press.
- Rose, K. M., Markowitz, E. M., & Brossard, D. (2020). Scientists’ incentives and attitudes toward public communication. *Proceedings of the National Academy of Sciences*, 117(3), 1274–1276. <https://doi.org/10.1073/pnas.1916740117>
- Rutgers Magazine. (2014, Spring). *A documentarian on the move*. <https://ucmweb.rutgers.edu/magazine/1419archive/the-arts/a-documentarian-on-the-move.html>
- Rutgers University. (2007). 50.3.7 university copyright policy. Rutgers University Policy Library <https://policies.rutgers.edu/B.aspx?BookId=12007&PageId=459331>
- Rutgers University. (2013). 50.3.19 patent policy. Rutgers University Policy Library. <https://policies.rutgers.edu/B.aspx?BookId=12014&PageId=459338>
- Rutgers University (2014) *Henry Rutgers professorships and term chairs*. University Strategy Archive. <https://ucmweb.rutgers.edu/universitystrategyarchive/implementation/henry-rutgers-professorships-and-term-chairs.html>
- Rutgers University. (2021). *FAME (Food, Agriculture, and Marine Ecosystems) pilot project*. Rutgers School of Environmental and Biological Sciences. <https://ifnh.rutgers.edu/centers/agricultural-food-ecosystems/fame-science-storytelling-pilot.html>
- Rutgers University Libraries. (n.d.). *Copyright basics*. Retrieved March 31, 2023, from <https://www.libraries.rutgers.edu/research-support/copyright-guidance/copyright-basics>
- Rutgers University Senate. <https://senate.rutgers.edu/wp-content/uploads/2020/11/Patent-Policy-50.3.1-pre-June-2020.pdf>
- Schofield, O., & Seidel, D. K. (2014) *NSF CRPA #1241413 final report*. Rutgers University. <https://beyondtheice.rutgers.edu/wp-content/uploads/2021/08/Annual-Project-Report-1241414-FFY14.pdf>
- Seidel, D. (Director). (forthcoming). *Mysteries of 9° north* [film]. Rutgers University.
- Seidel, D. (Director). (2010). *Atlantic crossing: A robot’s daring mission* [film]. Rutgers University. <https://storytelling.marine.rutgers.edu/atlantic-crossing/>
- Seidel, D. (Director). (2014). *The war after: From combat to campus* [Film]. Rutgers University. <https://www.kanopy.com/en/product/162857>
- Seidel, D. (Director). (2015a). *Antarctic edge: 70° south* [film]. Rutgers University. <https://beyondtheice.rutgers.edu/>
- Seidel, D. (Director). (2015b). *Generation at risk: Joining forces to fight childhood obesity* [film]. Rutgers University. <https://generationatrisk.rutgers.edu/>
- Seidel, D. (Director). (2023) *Fields of devotion* [film]. Rutgers University. <https://fieldsofdevotion.rutgers.edu/>

- Seidel, D. K., Morin, X. K., Staffen, M., Ludescher, R. D., Simon, J. E., & Schofield, O. (2023). Building a collaborative, university-based science-in-action video storytelling model that translates science for public engagement and increases scientists' relatability. *Frontiers in Science and Environmental Communication*, 7. <https://www.frontiersin.org/articles/10.3389/fcomm.2022.1049648/full>
- Seidel, D., Staffen, M., Abdallah, L., & Morin, X. (2025, February 15). Outcomes of a 4-H STEM learning enrichment program using video storytelling. *The Journal of Extension*, 63(1), Article 18. <https://open.clemson.edu/joe/vol63/iss1/18>
- Shin, M.-H. (2018). Effects of project-based learning on students' motivation and self-efficacy. *English Teaching*, 73(1), 95–114. <https://doi.org/10.15858/engtea.73.1.201803.95>
- United Nations Universal Declaration of Human Rights, December 10, 1948, <https://www.un.org/en/about-us/universal-declaration-of-human-rights>
- U.S. Const. art. I, §8, cl. 2.
- U.S. Copyright Office. (2014.). *Copyright registration for motion pictures, including video recordings* (Circular 45). <https://copyright.gov/circs/circ45.pdf>
- Walcott-Quintin, P. (2025, May 7). *NJ State Senate resolution recognizes Rutgers SEBS Immersive Learning through Science Storytelling Lab for increasing public trust in science*. Rutgers University Office for Research. <https://research.rutgers.edu/news/nj-state-senate-resolution-recognizes-rutgers-sebs-immersive-learning-through-science>
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82–96. <https://doi.org/10.1037/0022-3514.92.1.82>
- Zaniewski, A. M., & Reinholz, D. (2016). Increasing STEM success: a near-peer mentoring program in the physical sciences. *International Journal of STEM Education*, 3, Article 14. <https://doi.org/10.1186/s40594-016-0043-2>
- Khurram, A., Niaz, N., Khan, M., & Ashraf, S. (2025). Impact of social media advertising on consumer behavior: role of credibility, sustainability and trust. *Frontiers in Communication* Volume: 10
DOI: <https://doi.org/10.3389/fcomm.2025.1595796>