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SHOT at Fifty

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Technology and Culture enters its fiftieth year of publication with the strongest revenue base in its history, a growing number of new submissions, and a publication rate of approximately 30 percent, reflecting the quality of its referees. The journal's database can search for referees or book reviewers by expertise in subject matter, geographical area, and time period. As of this writing, the database references 4,738 people, more than 1,500 of whom being what an editor would call "go-to people." They represent SHOT/*T&C*'s primary asset, a pool of expertise that has begun to expand out beyond SHOT/*T&C*'s early Western civilization bias to a world of research questions that more accurately reflects technological practices as global and multicultural. As the session organizers requested, our three speakers this evening approach this half-century mark variously. Tom Hughes concentrates on SHOT's earliest years. Wiebe Bijker and Rebecca Herzig, on the other hand, attend to SHOT in the present. SHOT's healthy state, they both argue, renders new moral challenges inescapable. I will comment on each talk and then add some observations of my own about how SHOT/*T&C* reached its current level of organizational maturity.

Tom Hughes

Tom Hughes takes us back to a time before the "we" that would become SHOT had taken shape. Tom's recollections of the first two annual meetings and *Technology and Culture*'s first issue reveal a surprising number of questions that would help shape SHOT's early vision: the journal's title, *Technology and Culture*; the value of interdisciplinary work; failure studies as complements to success stories; Peter Drucker's critique of historical practice as too focused on devices and not enough on work; Robert Multhauf's argument that science and technology practitioners were by then fully intertwined, with only blurred definitional boundaries. This thematic vari-

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ety should not obscure the early field's narrow conception of what counted as technology and who counted as technological actors of interest. A triumphant passion for Western engineering achievement pervades the discussions and publications, about which Tom observes that "one is struck by their [the founders'] neglect of preindustrial-era crafts and their emphasis on big machines and their products. . . . Not only were the founders male, but they indicated little interest in technologies which females had usually dominated."¹

Hughes calls attention to Mel Kranzberg's pragmatism. The makeup of the founding committee and the early tables of contents show Kranzberg's persuasive ability to recruit high-profile early contributors, though not always their best work. Tom brings nuance to the oft-repeated mantra that SHOT's warmth and congeniality stemmed from Mel's commitment to encouragement and hospitality within SHOT and *T&C*'s author constituency: "preeminence, and not congeniality, was needed at the beginning."² But along with recruitment strategies, Tom's inchoate array of topics and methods points forward to what would come to be called "contextual history of technology." Early SHOT reveals a core idea whose genius has, now at age fifty, outgrown the narrowing limitations of a 1950s worldview.

Wiebe Bijker

Wiebe Bijker affirms SHOT's success in achieving the dream and hope of the founding generation, a coherent institutional and intellectual identity. SHOT's healthy state leads him to urge the society "to engage with two questions that are among the most urgent challenges of humankind: globalization and vulnerability."³ Indigenous cotton from India, suitable for low-input farming and local spinning and weaving, looks to be making a global comeback as a high-quality cloth woven from thread produced in innovative micro-spinning machines, which can operate at the village level alongside village weavers. Then, using the tools of globalization (transport, IT inventory management, etc.), indigenous Indian cotton can compete in the global marketplace. Globalization, when studied with fine-grain understanding of the technologies and cultures involved, need not default in every instance to very large international firms like Monsanto.

Bijker's sense of technological vulnerabilities runs in two directions: technologically sophisticated societies are, because of their complexities, necessarily vulnerable to system breakdowns (think Bhopal, Chernobyl, or

1. Thomas P. Hughes, "SHOT Founders' Themes and Problems," in this issue of *Technology and Culture*, 599.

2. *Ibid.*, 599.

3. Wiebe E. Bijker, "Globalization and Vulnerability: Challenges and Opportunities for SHOT around Its Fiftieth Anniversary," in this issue of *Technology and Culture*, 602.

Exxon Valdez), yet such vulnerabilities can be the seedbed of creative and flexible adaptations by a society to its challenges. The well-documented success of the Dutch Oosterschelde Storm Surge Barrier fostered national technological pride for an extraordinary engineering achievement, but it also eroded the centuries-old tradition of local politics as the basis for water management and flood control. Today, as global warming threatens rising water levels that could overwhelm the storm-surge tolerances engineered into Oosterschelde, a renewed sense of the importance of local politics—not at all unlike the vision of Indian village spinning and weaving—is attracting attention in the Netherlands. Bijker’s fiftieth-anniversary plenary vision is grounded in a compelling sense of SHOT’s potential, and its correlative moral responsibility. What is the *raison d’être* for a healthy, well-managed journal and society if all that intellectual achievement cannot address the most pressing moral concerns of a world so mediated by complex technological and market systems?

SHOT
PLENARY
SESSION

Rebecca Herzig

Rebecca Herzig speaks of SHOT’s calling as a collective of storytellers whose narratives are necessarily moral, like it or not. As her contrasting images—MasterCard® and faux MasterCard®—suggest, the iconic word “technology” has been for a long time and continues to be contested terrain. Who gets to tell technological stories? Advertisers, political advocates, or perhaps historians of technology? Herzig suggests two opportunities in the present moment. First, and internal to SHOT: over this half-century, SHOT scholars have acquired the capacity to wrestle with the contingencies and compulsions of technologically mediated events and embedded systems, and also the capacity for “collective reflection on the changing nature and purposes of our stories.”⁴ SHOT’s increasingly sophisticated community can offer its members critical insight learned from interrogating one another’s assumptions and story-forms. The more SHOT members critique their narrative choices, the more their shared historical discourse acquires intellectual authority to engage terrible and pressing matters in the wider world. Second, Rebecca proposes, at a minimum, that individual SHOT scholars seek out research projects that by their geographical, temporal, and topical foci require stories of moral engagement with complex technological issues. At more than the minimum, she raises the question of whether SHOT ought to bestir itself to create the institutional forms by which the society could debate and then formally adopt explicit moral positions in the public forum.

It is striking to find so strong a commitment, in Wiebe’s and Rebecca’s essays, to a vision of SHOT as a moral actor on the world stage, an invita-

4. Rebecca Herzig, “A Thing for Stories,” in this issue of *Technology and Culture*, 622.

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tion (even a calling) to bring expertise learned in the history of technologies to bear on terrible challenges facing a globalizing world. As Wiebe says, SHOT's discipline-building inner work has been so successful that "it is time to move on."⁵ Rebecca calls for SHOT "to consider what our characteristic thing for stories entails in the context of radically uneven patterns of 'globalization,' and grossly inequitable experiences of 'vulnerability.'"⁶

Both talks remind me of a life-changing conversation with Tom and Agatha Hughes when I was in grad school. We sat in their living room one evening visiting after dinner, and Tom lectured me a little: "In most cases, historians don't sin by commission, by doing an intellectually careless or dishonest job within their chosen research frames. However, historians frequently sin by omission, by the questions they do not ask, the historical actors whom they overlook, the parts of the world which they unthinkingly avoid."⁷ That evening in the mid-1970s, Tom presaged the challenge so eloquently articulated by Wiebe and Rebecca this evening. Which actors and which parts of the world do SHOT scholars not recognize? Which questions have we not learned to adopt as frames for our stories? I am encouraged and challenged by the questions they have placed for us all. And I agree with their assumption that SHOT has matured to the point where these moral questions begin to be inescapable. Let me turn briefly, then, to some of the particular changes that have been at work in SHOT over the past quarter-century. How did SHOT reach its present level of intellectual maturity?

I will begin with a broad metaphorical thesis. SHOT is in the midst of a pervasive geographical reorientation that is fifteen to twenty years old and that is gradually revolutionizing our collective self-awareness. Its migrations are institutional, topical, and methodological.

Institutional Migrations

Over the past decade and a half or so, SHOT's annual meetings, presidential addresses, and listserv conversations have asked with increasing urgency whether we are so comfortable that we talk mostly with one another and not to wider worlds. The wide world is sometimes framed as the larger historical profession and sometimes, as Wiebe and Rebecca have this evening, as the contemporary human condition that pervades and transcends the academic world that SHOT inhabits. Out of these intra-SHOT discussions have emerged five outreach initiatives that, taken together, constitute a trend. The Sally Hacker Prize was instituted in 1999, a major book

5. Bijker (n. 3 above), 601.

6. Herzig (n. 4 above), 621.

7. I am using quotation marks knowing that my memory of what Tom said is now filtered through three decades of my professional living.

prize “to honor exceptional scholarship that reaches beyond the academy toward a broad audience.” The Hacker Prize is intended to pair with the Edelstein Prize (“awarded to the author of an outstanding scholarly book in the history of technology”) that dates, under its original title of the Dexter Prize, to 1968.

Reaching beyond the academy, as a SHOT concern, has been accompanied by four outreach efforts aimed at connecting the history of technology with some intellectual near-neighbors. For much of its first half-century, SHOT privileged the History of Science Society for joint annual meetings. The commonplace, telltale expression, “*the four societies*,” is further evidence that SHOT began with the perception that things to do with science shaped the history of technology’s intellectual world more than any other historical factors.⁸ Increasingly, however, over the past two decades, new relational energies leading to other intellectual neighbors have become increasingly evident. The sociological perspectives of social construction and actor network theories are well-known and recognizably influential, as are close working relationships of historians of technology with women and gender historians, environmental historians, and business historians. On a less organized level, we see an encouraging number of *T&C* manuscript submissions from agricultural, urban, water, and colonial historians, as well as from nonhistorians who are bridging gaps between historical methods and archaeology, anthropology, geography, and cartography. SHOT’s outreach to the larger historical community is most evident in the American Historical Association Booklet Series, begun in 2000, which includes eight titles to date, with another six in process. The series is intended primarily for teachers at the secondary and undergraduate teaching levels.⁹ A thorough rethinking of SHOT’s International Scholars program, completed in 2006, adds momentum to a notable transformation of the society’s legacy of dominance by citizens of the United States.

Finally, we should not overlook the network of strong graduate programs in the history of technology and/or science and technology studies, which has reached a critical mass. These centers fund exchange programs and host international conferences where senior scholars learn from one another and from younger generations. It is encouraging to see these programs showing outreach, in their selection of graduate students and dissertation topics, beyond their exclusively United States and Northern European venues.

8. The History of Science Society, the Society for the Social Study of Science, the Philosophy of Science Society, and SHOT.

9. “The import of technology and its mutual interactions with society and culture has often been neglected in the high school, college, and even university curricula. When teachers unfamiliar with its rich historiography do consider technology, they all too often treat it as inert or determinate, lending their authority to the fallacy that it advances according to its own internal logic”; see http://www.historyoftechnology.org/booklets_intro.html (accessed 11 May 2009).

Intellectual Migrations at *T&C*

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Several intellectual migrations reveal new approaches in the SHOT/*T&C* world stemming from the institutional changes just noted. SHOT has committed serious funding to *T&C*'s free-access website, *eTC*. *T&C* has long offered three kinds of publications: peer-reviewed (articles and research notes), book reviews, and occasional matter (essays, review essays, exhibit reviews, "Classics Revisited," and comments). SHOT's investment in *eTC* represents a new level of commitment to what traditionally had been the least regarded of the three. Over the past five years, occasional matter has come to occupy many more pages of each issue than before; the rhetorical purpose of these pieces is to call attention to and interpret contemporary events with the insight gained through research about technologies and cultures.

The "Classics Revisited" series, now seven years old, takes this contemporary principle in one of *T&C*'s most exciting new directions. To date, SHOT scholars have revisited twenty-five iconic books in the history of technology. They are charged to read the book in light of its influence at the time of its first appearance as well as its subsequent history of prominence. More central than either of these charges, however, is the reviewer's task to read the book's methodology and central interpretation in light of the field's current self-awareness.

Perhaps *T&C*'s most nimble single comment appeared in the January 2001 issue, with Jonathan Coopersmith's puckish and insightful interpretation of the 2000 U.S. presidential election voting-machine debacle in Florida. The managing editor even found a cover illustration in the Ford Archives showing the Bull Moose Party ballot for 1912. Compared to the usual leisurely pace of refereed publications, Jonathan and *T&C*'s editors moved at warp speed that time.

For a decade or more, then, SHOT/*T&C* has begun to emerge from its Western civilization intellectual origins and from the postwar American and cold war triumphalism that largely shaped SHOT's self-awareness during its first four decades. Consider several notable signs of change in SHOT's collective worldview.

In the past several years, particularly through initiatives from Francesca Bray and Suzanne Moon in Asia, Carl Mitcham and Juan Bautista Bengoetxea in Spain, and Gabrielle Hecht and Keith Breckenridge in Africa, *T&C* is beginning to develop small but encouraging intellectual centers in what have been "underspecified" places for the field.¹⁰ Nowhere is the effect of

10. Gabrielle Hecht applies "underspecified" to Africa ("uranium" is therefore as underspecified technologically as "Africa" is underspecified politically), in "The Power of Nuclear Things: Markets and the Technopolitics of Provenance in the Transnational Uranium Trade," forthcoming in *Technology and Culture*. She and Keith Breckenridge hosted a SHOT-funded boutique conference, "Technopolitics in Africa," at the Ithala

TABLE 1
 JULY 2008 *T&C* ARTICLES BY SUBJECTS, TIME PERIODS, AND AUTHOR COUNTRIES
 OF RESIDENCE

<i>Countries studied</i>	<i>Centuries studied</i>	<i>Author's country of residence</i>	
India	3rd century BCE–20th century	India	SHOT
Indonesia	20th century	Netherlands	PLENARY
England	19th century	England	SESSION
Sweden and England	14th–16th centuries	United States	
Tanzania	20th century	Sweden and the United States	
Turkey	19th–20th centuries	Germany	
United States	20th century	United States	
Vietnam	20th century	United States	

these cultural and geographical infusions of influence into SHOT/*T&C*'s world more evident than in the extraordinary scope of *T&C*'s July 2008 issue about water. Unlike other single-theme issues, the water issue did not begin with a proposal submitted to *T&C*; instead, the editorial team, in its normal process of looking ahead four to five issues to see which articles were coming close to publication, noticed a surprising number of independently submitted manuscripts about water technologies. Eventually we invited the authors of eight articles to participate in a water issue, and we asked Marty Reuss to write an introductory overview. The result is an issue unique in *T&C*'s history. Taken together, the eight articles cover material from four continents across 2,000 years, and they were written by authors whose current countries of residence number six. The authors' places of residence are less widespread than their research sites, but their geographical range is still encouraging (table 1).

Other manuscripts currently in process treat China, Korea, India, Lebanon, Colombia, Spain, Portugal, Finland, and the late Soviet Union. *T&C*'s database for potential referees and book reviewers includes a growing number of scholars with expertise to read these manuscripts. In some cases, particularly India, Vietnam, Korea, Lebanon, Iran, and Colombia, we have identified referees new to *T&C*'s world. Their first work on a *T&C* manuscript introduces them to the journal. They then have the potential to become active members who can recommend *T&C* to scholars in their world, recommend other referees when a new manuscript requires fluencies not yet in

Game Reserve, province of KwaZulu-Natal, South Africa, in July 2006. The conference models SHOT outreach that could well be replicated elsewhere.

our database, or submit manuscripts themselves. Little by little, in unmistakably encouraging ways, SHOT and *T&C* are venturing out into the post-cold war world with its many centers of influence and interest.

Methodological Migration

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To me, the most striking methodological change is SHOT/*T&C*'s migration to a new, wide-open definition of who and what belongs in the center of the technological narrative frame. The received template focused the typical history of technology narrative on the origins of high-profile technologies, Tom Hughes's mostly masculine "big machines and their products."¹¹ Origin stories privileged a short list of central actors: inventors, R&D teams, patent attorneys, investors, entrepreneurs, and marketing strategists. Increasingly over the past two decades, these usual suspects share prime space with a host of now-familiar new actors. Maintenance workers define the operational meanings of their technologies; failure stories nuance technological creativity stories; the kitchen becomes as valuable a research site as the R&D lab. Technological actors, such as David Biggs's hydraulic engineers during the U.S. Vietnam War, bring their engineering expertise and funding constraints to a river delta littered with colonial and anti-colonial predecessors as well as the extant contracts, legal constraints, and aging machinery that complicated the strategies of the U.S. newcomers.¹² By specifying the center of one's narrative frame, a historian exerts tremendous power in shaping public imagination about what (and who) matters in technological storytelling.

* * *

I end where I began, with the strong suggestion from our presenters that SHOT has matured to the point where its responsibilities to the larger world require our explicit attention, and that the moral implications of our research habits require discussion and critique. The sense of urgency in Wiebe's multivalent globalization and vulnerability patterns and Rebecca's depiction of historians as necessarily moral storytellers, set against Tom's critically insightful reading of the cradle in which SHOT spent its earliest months and year, compel us. So it seems to me. SHOT has evolved over its first half-century into an academic society that can no longer overlook the revolutionary possibilities of its craft nor its need to think through and become decisive about its public responsibilities in a demanding and complicated world.

11. Hughes (n. 1 above).

12. David Biggs, "Breaking from the Colonial Mold: Water Engineering and the Failure of Nation-Building in the Plain of Reeds, Vietnam," *Technology and Culture* 49 (2008): 599–623.