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Television Ratings: From Audimeter to Big Data

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Film and Media Studies

by

Jennifer Marie Hessler

Committee in charge:

Professor Jennifer Holt, Chair

Professor Michael Curtin

Professor Lisa Parks

Professor Ellen Seiter

June 2019

The dissertation of Jennifer M. Hessler is approved.

Michael Curtin

Lisa Parks

Ellen Seiter

Jennifer Holt, Committee Chair

June 2019

Television Ratings: From Audimeter to Big Data

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by

Jennifer Marie Hessler

ACKNOWLEDGEMENTS

While I was applying to graduate school and considering who I wanted to work under, I had in mind a number of qualities that I hoped to find in an advisor. I wanted a PhD advisor who did important and cutting-edge research, someone equally as passionate and creative as they were practical, logical, and strategic. My ideal advisor would be—and could teach me to be—an engaging speaker and inspiring teacher. But most importantly, I wanted my advisor to be someone who I could look up to as a person. At the very top of my dream-advisor short list was Jennifer Holt. And indeed, it's been an honor to work with her at UCSB. Throughout the process of crafting this dissertation, Jennifer has been endlessly helpful and encouraging. By the time I advanced to candidacy, I had a specific vision for what I wanted my dissertation to be. She gave me space to write the dissertation I wanted while guiding me through methodological challenges and helping me fill gaps in my argumentation. Her expertise in media industries, historiography, digital media, critical data studies, and cultural studies has been invaluable. She has also been easy to communicate with (I actually think there might be some sorcery involved in how quickly she can respond to emails), which made my life immensely less stressful, and further demonstrates her commitment to her advisees. In addition to helping me become a better researcher, getting to know Jennifer has helped me learn to be a bold advocate and a generous and collaborative colleague.

Aside from Jennifer, at UCSB, I've had the honor to work with a literal dream team of mentors. Lisa Parks is one of the most hard-working and innovative people I know. It seemed like Lisa was on almost everyone's committee at UCSB, and that's because she is amazing at helping people think beyond disciplinary confines and create innovative scholarly

interventions. She has always been amazingly generous with her time and energy. Lisa is a big part of the reason that I was inspired to combine so many methodological and theoretical frameworks in this dissertation. I wrote the first draft of my third chapter while in Lisa's Surveillance seminar, and I thought through many of my dissertation's key interventions during discussions with her. She also came up with my dissertation's title. I was equally fortunate to have the opportunity to work with Michael Curtin. His insurmountable expertise in industry studies, television studies, historical research, and technology studies has been invaluable. Whenever I met with Michael, he always had a game-changing factoid, idea, or literature recommendation; his feedback always offered insight that I would've never thought of myself. In fact, it was partly while teaching "The Early History of Electronic Media" with him and listening to his captivating and contemporarily relevant lectures about early mass communication technologies that my vision for how to write this dissertation as a technological history became clear. In addition to being three of the most prolific and innovative researchers, Jennifer, Lisa, and Michael are some of the best teachers in our field, and I learned so much from all three of their commitment to students/mentees and their vastly different but equally inspiring styles of teaching. I was also very fortunate to have Ellen Seiter from USC on my committee. Ellen's research in television studies and audience studies has inspired me for years. Her feedback on my project has been thoughtful and generous. I'm a better researcher, teacher, and colleague because of the people I've worked with, and I'm so thankful for the opportunity to learn from them.

In general, being at UCSB has been incredible. The entire faculty is committed to the success of the department, and in particular, to the graduate students. During the spring before I came to UCSB, I saw Ross Melnick present research at the University of Michigan,

and when I learned that he would be joining UCSB (as a faculty member) in the Fall as well, I was really excited to work with him. He does inspiring industry studies work and is one of the best historians out there. He's also incredibly generous with his advice for and support of grad students. It was also a pleasure to work with Janet Walker. Her grad courses were innovative and cutting edge, and her advice was always thought-provoking. I'm inspired by the way she combines activism and research. One of my biggest regrets from my time at UCSB is not having worked more closely with Bhaskar Sarkar. Whenever he's offered insight on my project, it's been shockingly astute. His combination of rigor and humor has been much appreciated. Chuck Wolfe was a big part of the reason I discovered I was an historian at heart; the lessons I learned in his historiography seminar have shaped my dissertation methodology. Moreover, he offered great insight and encouragement during the formative days of my dissertation, during our prospectus seminar. Peter Bloom was awesome to work with during my time as the Lead TA. His commitment to the grad students during his tenure as graduate advisor is much appreciated. Anna Brusutti was such a pleasure to TA for. She can somehow take a single shot or scene of a film that I've seen 100 times and still offer analysis that makes me see it in a new light. The UCSB undergrads are very fortunate to have her. Constance Penley is a big inspiration, and I was really lucky to work under her while working for Camera Obscura and for the Blue Horizons Environmental Media program. I loved taking and teaching cultural theory with Greg Siegel. Siegel also offered me great literature recommendation on tech/body interfaces (in fact, his advice inspired me to foreground interface theory more centrally in my dissertation). I had the profound honor to take a seminar with Dick Hebdige, and he's also supported me in securing funding. Naoki Yamamoto has also been a pleasure to work with, and in particular, I'm thankful for his

insightful and encouraging feedback on my teaching. Anna Everett and Christina Venegas always offer thought-provoking insights, and both of their positive energy contributes to the collegiality of our department. Alenda Chang, Laila Shereen Sakr, Mona Damluji, and the legend Patrice Petro all entered the department after I was already done with course work, but I've been inspired by their research, and watching them give job talks showed me how to do it like a pro. I'm thankful for the chance I've had to get to know all four of them. Finally, our Admin Queen, Kathy Murray, has been a life-saver. I've held a ridiculous amount of appointments during my time in grad school and have applied for hordes of funding, and Kathy made it all possible. Kathy knows EVERYTHING and is always the last person to leave the department at night. She's also a kind and generous person. She keeps the department operating like a well-oiled machine. Dana Welch is a super helpful computer whiz, a great support for the undergrads, and a joy to have around. The same can also be said for Joe Palladino (wizard of the crasher disarray). Catherine Cox and Evelyn Godinez were also great help!

Before I continue about my time at UCSB, I just want to say that the reason I had such high hopes for my PhD experience was because I had great mentors during my time as an undergrad in the Film, Television, and Media department at the University of Michigan. In addition to doing ingenious research, Dan Herbert and Sheila Murphy were inspiring teachers and beyond-supportive mentors. They're the reason I went into academia, and they're part of the reason for my success in graduate school. I'm thankful that they've remained great mentors. During undergrad, I also had the opportunity to take a graduate seminar with and conduct research for Candace Moore. And I had the opportunity to take a grad seminar with Amanda Lotz, who also offered me support during my grad school

application process. Both Candace and Amanda have also been inspiring and supportive beyond mention. I'm thankful for the support I received from a number of other faculty at the University of Michigan, including Johannes Von Moltke, Hugh Cohen, Terry Sarris, Markus Nornes, Yeidy Rivero, and Peter Alilunas. I had an amazing experience at U of M, and I'll forever be thankful for the support I've received (and continue to receive).

My graduate student colleagues at UCSB were ridiculously smart, continuously inspiring, and wonderfully collaborative. Nicole Strobel inspires me with her work ethic, advocacy, and her strong sense of self. I'm thankful for the support she gave me during my job application cycle, and I can't wait to see what else she accomplishes. Sarah Lerner was also an awesome sounding board for ideas and a great support during my job app cycle. Kajsa Niehusen, my Prague-ICA buddy and always-optimistic ball of sunshine, was also a supportive friend. Juan Llamas Rodriguez is an ideal colleague. His hard work, innovative ideas, and astute feedback were always inspiring; but he's equally generous with his time/energy and support of others. Lisa Han is also a rock star—she's brilliant, and she selflessly contributed more service to the department than anyone. Rachael Fabian's ability to recall and work with theory is incomparable, and her research is inspiring. It was a pleasure to work under her at Camera Obscura. I'm also thankful for the intellectual and friendly exchanges I had with Rachael Ball, Bianka Ballina Calderon, Stephan Boman, Greg Burris, Daniel Bydlowski, Alex Champlin, Maria Corrigan, Alston D'Silva, Hannah Goodwin, David Gray, Daniel Grinberg, Brian Huser, Wes Jacks, Carlos Jimenez, Aleah Kiley, Lan Le, Jeremy Moore, Tyler Morgenstern, Rahul Mukherjee, Bhargavi Narayanan, Charlotte Orzel, Lindsay Palmer, Miguel Penabella, Teddy Pozo, Steven Secular, Athena Tan, Amaru Tejeda, John Vanderhoef, Corrigan Vaughan, Thong Win, Xiehe Zhang, and

everyone else. I'm also grateful to the wonderful UCSB grad alum who have been so friendly with us at conferences and shared their job market and post-PhD advice with us.

One of the best things about my time at UCSB was the abundance of collaborative research and teaching opportunities in which I participated. Part of the reason I wanted to attend UCSB was because of the ground-breaking academic/industry research collaborations that were being undertaken in the Media Industries Project (MIP); thus I'm very thankful for the time that I got to spend researching for MIP's Connected Viewing Initiative and working with Karen Petruska and Kevin Sanson. I also spent four summers teaching Environmental Media with Richard Hutton and Michael Hanrahan for the Blue Horizons program. I learned a lot from Richard about how to successfully combine theory with practicum. Richard also has a way of giving students feedback in a manner that is very direct, but still comes across as encouraging—the combination of which students really tend to appreciate. I've adopted many aspects of his teaching style. In general, Richard and I developed a great collaboration, which I hope to emulate in future collaborative teaching endeavors. I'm also thankful for the opportunity I had to work with Alan Liu, along with Lindsay Thomas and Jeremy Douglass, on the Melon funded WhatEvery1Says Digital Humanities Research Initiative. Alan, Lindsay, and Jeremy have a knack for teaching tech skills. Alan was an amazing PI, and the whole research team was a pleasure to work with. During the summer of 2018, I had the opportunity to teach two iterations of Engineering 101: Ethics in Engineering with Olivia Walling. I learned a lot from the experience, and I'd love to teach a similar class in the future. I'm also thankful for the mentors I had in the UCSB Writing program, including Jennifer Smith, Ilene Miele, and Jeff Hanson. Finally, I'm thankful for the feedback I

received from my cohort of Interdisciplinary Humanities Center fellows, Rosie Bermudez, Nicole Dib, Doug Genens, and Max Jack, and the IHC director Susan Derwin.

I spent Fall 2018 as a visiting fellow in the American Studies department at the University of Mannheim in Germany. I'm really thankful to Ulf Reichardt and Regina Schober for giving me the opportunity to visit their department, and also for including my essay in their forthcoming edited collection. I met a great community of scholars at Mannheim, including Katharina Motyl, Su Montoya, Miller Jones, and graduate students Stefan Benz, Stefan Danter, Dominik Steinhilber, and Juliane Stratz. During the semester that I spent in Mannheim, I learned a lot about posthumanism and the quantified-self movement, both of which became central theoretical interventions of my dissertation.

I'm fortunate to have built up a great network in Film and Media Studies, and I want to name just a few of the scholars outside of UCSB who have collaborated with me, given me support, or provided feedback on my work: Mark Andrejevic, Aymar Jean Christian, Amanda Cote, Katie Frank, Bishnu Ghosh, Jonathan Gray, Niclas Heckner, Eric Hoyt, Brett Hutchins, Min Jiang, Derek Kompare, Abigail De Kosnik, Elana Levine, Derek Johnson, Denise Mann, Alfred Martin, Vicki Mayer, Cynthia Meyers, Diane Negra, Nora Patterson, Dimitrios Pavlounis, Alisa Perren, Minna Ruckenstein, Barbel Gobel-Stolz, Ben Strassfeld, Stacey Takacs, Patrick Vonderau, and Catherine Zimmer.

Finally, I'm thankful for all of the archives and institutions that have provided funding for my dissertation. This includes: The Albert and Elaine Borchard Foundation; the Hartman Center for Sales, Advertising & Marketing; the UCSB Academic Senate; the UCSB Chicano Studies Institute; the UCSB Department of Film and Media Studies; the UCSB Interdisciplinary Humanities Center; the UCSB Graduate Division; the UC Humanities

Research Institute; and the Wisconsin Historical Society. Michael Henry at the Hornbake Library at the University of Maryland; Joshua Rowley at the John W. Hartman Center at Duke; Lee Grady at the Wisconsin Historical Society; and Tab Lewis at the FCC Collection were all very helpful during my archival research. I'm also thankful to the industry professionals who have provided insight and resources during this project. Some have asked to remain anonymous, but I'm particularly grateful to Roger Percy and Lee Cooper. I'd also like to thank the former ratings panelists whose insights and experiences contributed to Chapter 2.

Finally, I want to thank my dad, John, and my sister, Mikayla. I'm also thankful to my Aunt Cindy for her kind messages throughout my time in grad school. I'm appreciative of everyone at home who continues to support me. I'm thankful for the work ethic, self-responsibility, and tenacity that I learned from my blue-collar upbringing. This dissertation is dedicated to all the first-gens working hard to stay true to themselves while breaking ground in the ivory tower.

VITAE

Jennifer Hessler

6510 El Colegio Rd., Apt# 4118
Santa Barbara, CA., 93106
(805) 636–9018
jenniferhessler@ucsb.edu

EDUCATION

PhD – 2019, University of California, Santa Barbara, Film and Media Studies

Dissertation – "The Television Ratings: From Audimeter to Big Data" a recuperative history of the television ratings that looks at ratings technologies and methods as precursory models of data-driven consumer surveillance

Committee: Jennifer Holt (Chair), Michel Curtin, Lisa Parks (MIT), Ellen Seiter (USC)

MA – 2014, University of California, Santa Barbara, Film and Media Studies

BA – 2012, University of Michigan, Film, Television, and Media

RESEARCH/TEACHING EXPERTISE

Media Industries, Telecommunications History, Technology Studies, Digital Media Theory, Critical Data Studies, Media Audiences, Consumer Surveillance, Feminist Media Studies

PUBLICATIONS

"The Portable Peoplemeter Initiative: Wearable Ratings Technologies and Embodied Labor," in *Laboring Bodies & the Quantified Self*, ed. Ulf Reichardt and Regina Schober (Forthcoming)

"Peoplemeter Technologies and the Biometric Turn in Audience Measurement," *Television and New Media* (Forthcoming)

"Quality You Can't Touch: Mubi Social, Platform Politics, and the Online Distribution of Art Cinema" *The Velvet Light Trap,* Issue 82 (September 2018), 3-17.

"Introduction: Digital Distribution and Cultural Power," co-authored with Juan Llamas-Rodriguez. *Media Fields Journal*: *Digital Distribution*. Issue 10. (November 2015). mediafieldsjournal.squarespace.com/digital-distribution-intro/

"Bookshelf Review of Derek Johnson's *Media Franchising: Creative License and Collaboration in the Culture Industries*." *Media Industries Project*. 2014.

WORKS UNDER REVIEW

"The Audimeter as Big Data: Early TV Ratings Technologies and the Mechanization/Datafication of Audience Measurement," *Convergence: The International Journal of Research into New Media Technologies* (Under Review)

GUEST LECTURES AND COLLOQUIA

"Teaching Critical Technology Studies Across Disciplines," presented at the American Studies Department Colloquium, University of Mannheim, Germany, October 18th, 2018.

"Manufacturing Surveillance States: Democracy, Technology, and Privacy" guest lecture in Engineering 101: Ethics in Engineering and Technological Invention (supervising professor Olivia Walling), Santa Barbara, CA. July 25, 2018.

"Automating Inequality: Algorithms and Racial Bias" guest lecture in Engineering 101: Ethics in Engineering and Technological Invention (supervising professor Olivia Walling), Santa Barbara, CA. July 11, 2018.

"Three-Act Structure and Documentary Form," guest lecture in FAMST 182: Environmental Media (supervising professor Richard Hutton), Santa Barbara, CA. August 3, 2017.
"Television Ratings in the 1950s," guest lecture in FAMST 101D: History of Electronic Media: From Telegraphy to Early Television (supervising professor Michael Curtin), Santa Barbara, CA. November 21, 2016.

"Narration and Generic Schema in *To Die For*," guest lecture in FAMST 96: Advanced Film Analysis (supervising professor Lisa Parks), Santa Barbara, CA. April 13, 2016.

"The Peoplemeter Wars and the Biometric Turn in Audience Measurement," presented at the Film and Media Studies Department Recruitment Colloquium. Santa Barbara, CA. April 8, 2016.

CONFERENCES

"Cheating the Ratings: Viewer Diaries as a Technology/Text of Mediated Audience Labor," presented at the Society for Cinema and Media Studies. Seattle, Washington. March 14, 2019.

Panel Organizer: "Data Mediations" with Mark Andrejevic, Lisa Parks, Patrick Vonderau, and Jennifer Holt

"Ratings Technologies and Embodied Labor," presented at the Laboring Bodies and the Quantified Self conference. Mannheim, Germany, October 5, 2018.

Panel Participant, "Doing Communication History: A Methodological Roundtable," the International Communication Association. Prague, Czechia. May 28, 2018.

"Early TV Ratings Technologies and the Mechanization/Domestication of Consumer Surveillance," presented at the International Communication Association. Prague, Czechia. May 28, 2018.

"From Audimeter to Big Data," presented at the Society of Cinema and Media Studies. Toronto, Canada. March 14, 2018.

"The Biometric Turn in Audience Measurement," presented at the International Communication Association. San Diego, CA. May 27, 2017.

"'Size Does Matter': The Promotional Gendering of the Sony Watchman," presented at the International Communication Association. San Diego, CA. May 27, 2017.

"Perfecting the Body Count: Audience Measurement and the Gendered Biopolitics of Passive Metering," presented at the ICA Communication History Division Preconference: Audiences? The Familiar Unknown of Communication Historiography. San Diego, CA. May 25, 2017.

"A History of Gender Split Pocket TV," presented at Media Fields Conference. Santa Barbara, CA. April 7, 2017.

"Me TV: Portability, Control, and the Sony Watchman," presented at the Society for Cinema and Media Studies. Chicago, IL. March 25, 2017.

Panel Organizer: "Beyond 'A Window to the World': Histories of Television and Spatiality" with Sheila Murphy, Stacey Takacs, and Hannah Spaulding

"Audience Generations: Millennials, 'Becomers,' and Beyond," Flow. Austin, TX. September 16, 2016.

"Peoplemeter Technologies and Cooperative Surveillance," presented at the Society for Cinema and Media Studies. Atlanta, GA. April 2, 2016.

Panel Organizer: "The Technicity of Surveillance" with Mark Andrejevic, Catherine Zimmer, and Lisa Han

"Mubi and the Online Distribution of 'Quality' Cinema," presented at the Society for Cinema and Media Studies. Seattle, WA. March 22, 2014.

Panel Organizer: "Niche Models of Online Media Distribution" with Chelsea McCracken, Katie Frank, and Abigail De Kosnick

"Cultural Control, Globalization, and the Internet: The Case of Spain's Ley Sinde," presented at the Cultural Studies Association. Chicago, IL. May 24, 2013.

"NEXT and the Ethos of Authenticity: An Ethnographic Look at Sundance's Low Budget Filmmakers," presented at the Society for Cinema and Media Studies. Chicago, IL. March 9, 2013.

"Your Online Art Cinema, Anytime, Anywhere," presented at the Far West Popular Culture Association. Las Vegas, NV. February 24, 2013.

"'They say you fly when you die': Digital Effects and the Construction of Subjectivity in *Enter the Void*," presented at the Popular Culture Association National Conference. Boston, MA. April 14, 2012.

"Femininity, Sexuality and the Female Body in *Black Swan*," presented at the Ray Browne Conference on Popular Culture. Bowling Green, OH. March 31, 2012.

TEACHING EXPERIENCE

Instructor, Bucknell University:

ENFS 245: Televisual Culture: Genre and Identity in 90s Television – Fall 2019

Instructor, University of California, Santa Barbara:

FAMST 70: Media Criticism (core curriculum lecture course) – Summer 2018
Evaluation score for overall quality of Instructor: 1.3/5 (1 high, 5 low)
Evaluation score for overall quality of course: 1.5/5 (1 high, 5 low)

FAMST 187TR: Television Ratings: Measuring Audiences from Radio to Digital (senior seminar) – Summer 2017
Evaluation score for overall quality of teaching: 1.2/5(1 high, 5 low)
Evaluation score for overall quality of course: 1.3/5 (1 high, 5 low)

Teaching Assistant, University of California, Santa Barbara:

Writing 2: Introduction to Academic Writing – Fall 2017, Winter 2018, Spring 2018, Spring 2019

Engineering 101: Ethics in Engineering and Technological Invention – Summer 2018

FAMST 46: Introduction to Cinema – Spring 2013, Summer 2013, Fall 2014, Spring 2017

FAMST 70: Media Criticism – Winter 2015, Winter 2017

FAMST 101D: History of Electronic Media: From Telegraphy to Early Television – Fall 2016

FAMST 182: Introduction to Environmental Media – Summer 2013, Summer 2014, Summer 2015, Summer 2016

FAMST 96: Advanced Film Analysis – Fall 2013, Summer 2014, Spring 2015, Spring 2016

FAMST 101E: History of Electronic Media: Network TV to the Digital Era – Spring 2014

FAMST 192FT: Film and Media Theory – Winter 2014

RESEARCH ASSISTANCE

Graduate Student Researcher, WhatEvery1Says Project: With Dr. Alan Liu, University of California, Santa Barbara, 2018. Part of a 20+ person research team that uses digital humanities methods to study public discourse about the humanities at large data scales. The WhatEvery1Says Project received $1.1 million in funding from the Andrew W. Mellon Foundation.

Graduate Student Researcher, Connected Viewing Initiative: With Jennifer Holt, Michael Curtin, and Karen Petruska, University of California, Santa Barbara, 2013. The Connected Viewing Initiative was a collaborative venture with Warner Bros. Home Entertainment. I collected data related to connected-viewing, helped create infographics, and produced content for the Media Industries Project website.

Research Assistant: Professor Jennifer Holt, University of California, Santa Barbara, Department of Film and Media Studies, 2013. Researched anti-trust cases in the film and television industries.

Research Assistant: Professor Dan Herbert, University of Michigan, Department of Screen Arts & Cultures, 2012-2013. Assisted in copy-editing and gathering historical research for his book, *Videoland: Movie Culture at the American Video Store* (UC Press, 2014).

Research Assistant: Professor Candace Moore, University of Michigan, Department of Screen Arts and Cultures, 2011. Researched in archives for historical discussions of transgressive female sexuality in broadcast television for the forthcoming book, *Heteroflexibility: Empathetic Queer and Television*.

EDITORIAL WORK

Editorial Collective: *Media Fields Journal.* University of California, Santa Barbara, 2012-2017. (Coordinating Editor 2015, 2016)

Editorial Assistant: *Camera Obscura: Feminism, Culture and Media Studies*. Santa Barbara, California, 2014-2016.

Co-editor, with Juan Llamas Rodriguez: *Media Fields Journal: Issue 10: Digital Distribution*, November 2015.

FELLOWSHIPS, GRANTS, AND AWARDS

Consortium for Faculty Diversity in Liberal Arts Colleges Postdoctoral Fellowship, 2019-2020 – $68,500

Interdisciplinary Humanities Center Predoctoral Fellowship, Winter 2019 – $6,000

UCSB Film and Media Studies, Departmental Research Travel Grant, Winter 2019 – $1,750

Visiting PhD Fellowship, American Studies department at the University of Mannheim, Germany, Fall 2018 – $5,000

Albert and Elaine Borchard European Studies Fellowship, 2018– $4,400

UCSB Chicano Studies Institute Dissertation Grant, 2018 – $1,600

Academic Senate Doctoral Student International Travel Grant, 2018– $1,350

Recipient of the UCSB Graduate Student Association Excellence in Teaching Award, 2017 – $500

Alvin Achenbaum Research Grant for the Hartman Center for Sales, Advertising & Marketing, 2017 – $750

Department Nominee, UCSB Academic Senate Outstanding Teaching Assistant Award, 2017

UCSB Graduate Student Association Pedagogy Development Grant, 2017 – $750

Humanities and Social Sciences Research Grant, 2016 – $3,000

Graduate Opportunity Fellowship Award, Department of Film and Media Studies, University of California, Santa Barbara: 2012-2013, 2015-2016 – $44,000

Trueblood Fellowship Award, Department of Screen Arts and Cultures, University of Michigan, 2012 – $750

Institute of the Humanities Grant, University of Michigan, 2012 – $2,000

The Hubert and Ellen Cohen Film Essay Award, Department of Screen Arts and Cultures, University of Michigan, 2012 – $1,000

SERVICE

Graduate Student Representative: Television Studies SIG, Society of Cinema and Media Studies, 2017, 2018, 2019.

Graduate Research Affiliate: UCSB Chicano Studies Institute, 2018-2019.

Graduate Student Juror: Peabody Television Awards, "Entertainment" category, 2016, 2017, 2018.

Lead Teaching Assistant: Film and Media Studies, University of California, Santa Barbara, 2017-2018.

Reviewer: International Communication Association Conference, 2017, 2018.

Reviewer: *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*, 2018.

Reviewer: *Focus Media Journal*, 2017.

Judge: REEL loud silent film festival, Santa Barbara, California, 2017.

Conference Planning Committee: "Dirty, Sexy Policy Conference," with Jennifer Holt, Constance Penley, and Karen Petruska, University of California, Santa Barbara, February 2013.

Panel Co-organizer: "Tastemaking: The Business of Opinion in Media," with Jonathan Rosenbaum, Thom Powers, and Elliot Wilhelm. University of Michigan, April 13, 2012.

Judge: Ruby Zima Student Film and Arts Festival, Fenton, Michigan, March 21, 2012.

Submission Screener: Ann Arbor Film Festival, 2011-2012.

PROFESSIONAL AFFILIATIONS

Society for Cinema and Media Studies, 2013-2019
Special Interest Groups: Television Studies; Media Industries; Media, Science, & Technology; Audience & Fan Studies

International Communication Association, 2015-2019
Divisions: Communication History, Media Industries, Communication and Technology, Popular Culture

European Network for Cinema and Media Studies, 2017-2019

Society for the History of Technology, 2017-2019

REFERENCES

Dr. Jennifer Holt
Email: jholt@filmandmedia.ucsb.edu (Dissertation Chair)
Associate Professor
Film and Media Studies, UC Santa Barbara

Dr. Michael Curtin
Email: mcurtin@ucsb.edu
Professor
Film and Media Studies, UC Santa Barbara
Dr. Lisa Parks
Email: lparks@mit.edu
Professor
Comparative Media Studies, MIT

Dr. Ellen Seiter
Email: seiter@usc.edu
Professor
Cinema Studies, USC

ABSTRACT

"Television Ratings: From Audimeter to Big Data" is a recuperative history of television ratings that examines audience measurement technologies and methods as precursory modes of cooperative data-driven consumer surveillance. First, I ague that audience measurement has been structured by its inherent reliance on the (inconsistent) cooperation—the co-optation as well as the collaboration—of viewers in the task of being measured. Modern surveillance theory tends to focus on how consumer surveillance becomes routinized or appropriated through resignation or alternatively, on the potential of counterveillance, but often overlooks the ways that participation in surveillance is often neither docile nor purposefully inimical, but still (whether it be out of ineptitude, boredom, or noncompliance) inconsistent. The surveillance complex constantly evolves in attempts to work around these forms of noncooperation. Rather than focusing on how cooperation is enacted, my use of cooperative surveillance focuses on how inconsistent cooperation shapes the very processes of surveillance. Second, I take the position that technology is political—it's an important locus for the conflicts between corporate power and subject agency. In addition to analyzing the technologies that Nielsen and its competitors have used in their national panels, I use previously un-accessed archives to recuperate a history of experimental television ratings technologies and methods that are largely unknown. I argue that audience measurement technologies that failed or never came to fruition can tell us as much about the history of data regimes and consumer surveillance as mainstream ratings technologies. Further, these TV ratings experiments betray television culture's embeddedness in problematic surveillance and also forecast the limitations of contemporary data regimes. The ratings industry's response to the challenge of viewer cooperation has been a constant

onslaught of technological experimentation to find the "proper standard" or "proper code" to create a commodifiable user/machine language.

My methodology combines top down industry analysis with ethnographic-inspired approaches by utilizing analysis of archival materials, interviews with industry professionals, trade discourse, technology patents, and legal documents, alongside interviews with former Nielsen panel participants. Ultimately, by pairing rigorous historical research with a contemporary media theory lens, my dissertation argues that the US commercial television system as a whole was founded on and even formative of these cooperative regimes of consumer surveillance, which continue to shape contemporary digital media culture.

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Introduction

Your Television Has Always Been Smart

Smart TV's have been on the market for about 10 years now, and throughout the past five years, journalist have published seemingly endless dystopian accounts of Smart TVs' ability to surveil you in your living room. In 2013, *CBS News* published an article asking, "Can Your 'Smart TV' Watch You?" The article explains how a component of Smart TVs, called Automated Content Recognition (ACR), which keeps a constant data trail and video record of the content that plays on your television, could be hacked.[1] Security engineers Aaron Grattafiori and Josh Yavor of iSEC Partners explained that by intercepting the data stream with malicious JavaScript code, hackers can actually live stream video into your home or take still camera shots of you with your Smart TV webcam, even while your television is off. In 2015, *CNN* published a report warning consumers: "Be careful what you say in front of your Samsung TV. It's listening to you."[2] The article explains that because Samsung Smart TVs come equipped with voice recognition, which is always listening for your voice, in effect your every word is being captured and sent over the Internet. In 2017, Wikileaks published a series of articles, code named "Vault 7," describing a CIA program called "Weeping Angel" that could hack into Samsung Smart TV's microphones and audio records.[3] A simple internet search will reveal countless other news articles making quips about how "your Smart TV is watching you," informing consumers "how to stop your Smart TV from spying on you," or advising the public to just "stick with dumb TVs."[4]

To be sure, these reports draw attention very serious issues of privacy invasion and unethical consumer tracking, and they productively alert consumers to the implications of outfitting their living space with smart gadgets. But for my purposes here, I'm interested in

analyzing the presentist relationship between television and surveillance that gets conveyed through this panicked discourse. While consumers are barraged with reports about how websites track their data and CCTV cameras scan their faces on a seemingly daily basis, these alerts about Smart TVs seemed to beget a special degree of public outrage. Perhaps it is because our television sets hold a privileged space within in our private, domestic spaces; we engage with them in our most vulnerable solo or familial moments of leisure. Or perhaps it's because, unlike our laptops and cellphones, we still equate our physical television sets with a nostalgic, archaic experience of media engagement that we imagine as existing outside of today's all-encompassing digital data regimes.

In any case, from an historical perspective, televisions have always been smart. Even as early as the 1950s, television had the ability to track what viewers watched from their own living rooms and send it back to corporations in 30-second intervals, where the information was then cleaned, aggregated, and farmed in big-data fashion. Since the 1950s, companies have had the ability to interject into living rooms through wires or switch viewers' TVs on in the middle of the night. Since the 1980s, companies have had the ability to remotely black out viewers' television screens on cue. Throughout history, television has had the ability to detected body weight, track motion, scan faces, sense body heat. On some occasions, viewers have had video cameras attached to their television sets that took videos or pictures of them. While contemporary journalists make puns about Smart TVs watching us back, the truth is, television has always peered back at us. The United States' commercial television system was founded on data regimes, and television has always provided an avenue for corporations to commodify us through our leisure and in our domestic space.

Of course, not everyone experienced these facets of surveillance while watching television. Unlike the incognizant and admittedly more dangerous forms of surveillance that we have today, where your Smart TV allows strangers to watch or listen to you without you knowing, viewers who were subjected to the aforementioned historical forms of surveillance volunteered for it. Specifically, they signed on to be ratings panelists—to have their viewing counted and turned into a metric, which the television industry then used as a currency to sell ad spots to advertisers. Further, an even smaller number of people signed up, not to be a part of the official ratings panel, but to participate as test subjects for experimental, often more out-of-the-box audience measurement methods. One might ask why these participants would sign up to be surveilled: perhaps to feel like they were a part of something larger, or to have an influence on television programming; perhaps they figured they might as well since they "don't have anything to hide": or perhaps they wanted the incentives provided by participating. Their reasons for participating might be some of the same reasons contemporary Smart TV owners are willing to be under surveillance in order to reap the benefits of connected leisure. We have a complex relationship with surveillance. That relationship has been cultivated historically, in part, through our relationship with media. The contemporary proliferation of data economies and culture of surveillance was not borne out of a digital rupture, but has been slowly cultivated throughout modern history. While media scholars are beginning to contend with the ever-increasing datafication of our media systems, they also need to contend with how our historical relationship with communication technologies might have helped cultivate or normalize such a culture of datafication.

In "Television Ratings: From Audimeter to Big Data" I explore the historical relationship between television and data-driven consumer surveillance through an analysis of

television ratings technologies and methods. Television audience ratings are the foundation of the United States' commercial television industry; they operate as a third-party entity and establish the currency with which commercial spots (which fund television programs) are sold to advertisers. Ratings are derived from viewing data collected from a small but "statistically representative" sample of households. In effect, ratings assign consumer power to certain demographics of viewers and determine which programs get aired. For the most part, scholarly work has taken an industry studies approach to television audience ratings; this includes foundational historical work by Karen Buzzard and Hugh Malcolm Beville[5] that tracks how Nielsen (and to a lesser degree, Arbitron) achieved and maintained their dominant position throughout the 20th century as well as seminal work by Mark Balnaves and Tom O'Regan; Eileen Meehan; Philip Napoli; Thomas Streeter; and James G. Webster et al. that explores the (political) economic function of the television ratings as an industrial intermediary.[6] Since the 1980s, following the increasing popularity of critical audience studies, media scholars have critiqued the symbolic function of audience ratings, undermining the ratings industry's claims of empiricism. For example, Ien Ang and Philip Napoli argue that television ratings are characterized less by their empirical accuracy or representativeness than their function as a social-discursive-economic convention, a streamlined currency that suits the needs and interests of various factions of the television industry.[7] Scholars such as Todd Gitlin and Amanda Lotz have critiqued the ratings industry's sampling practices, shedding doubt on the degree to which they truly represent the American public,[8] while others like Mark Alvey and Ron Becker have demonstrated how television ratings' construction of "the audience" has influenced programming trends.[9]

Still, given their role as the foundation of commercial television, there is a dearth of

critical scholarship on television audience ratings. The monographs that do exist on the history of television ratings track their industrial evolution, but don't offer a thesis about their cultural influence, particularly beyond their influence on programming.[10] In particular, among many understudied aspects, the consumer surveillance properties of the television ratings and their historical relationship to emerging data economies remains relatively under-examined. To be sure, while they don't offer extensive discussion of television ratings, James Beniger and Greg Elmer have pointed to audience measurement's historical role within the evolving consumer information economy.[11] More generally, both of their work on the convergence of the consumer information and cybernetics industries throughout the 20th century is foundational to this project. And scholars like Amanda Lotz and Ien Ang have gestured toward the surveillance mechanisms of television audience measurement. In *The Television Will Be Revolutionized* Lotz writes, "Another aspect of the new measurement and research capabilities that has extensive implications is the increased surveillance of viewers…"[12] And on the subject of peoplemeters, in *Living Room Wars* Ang writes, "There is definitely something panoptic in the conceptual arrangement of this intricate measurement technology, in that it aims to put television viewers under constant scrutiny by securing their permanent visibility... The people meter boosts the hope for better surveillance of the whole spectrum of television-viewing activities…"[13] Still, few scholars have examined the unique surveillance dynamics of audience measurement. Constituting the first forms of constant, 24/7, technologized corporate surveillance in the domestic space, audience measurement is entangled with tensions over corporate control and consumer agency and also embedded in social politics. Thus, analyzing television audience measurement as surveillance requires examining both its techniques and the socio-industrial anxieties it encompasses.

Accordingly, "Television Ratings: From Audimeter to Big Data" is a recuperative history of the television ratings that examines ratings technologies and methods as precursory modes of cooperative data-driven consumer surveillance. Television ratings' historical relationship to emerging data economies is a prescient history, one that the increasing datafication of media culture begs us to recuperate. Thus, in this dissertation, I combine an historical methodology with digital media theory to rethink the history of television audience measurement through a critical data age lens. There are two main theoretical through-lines of this dissertation. The first centers on examining what I call the "cooperative" dynamics of consumer surveillance. I argue that audience measurement has been structured by its inherent need to rely on the (inconsistent) cooperation—the co-optation as well as the collaboration—of viewers in the task of being measured. The second is a critical technology studies framework, for which I draw on foundational work by Marshall McLuhan; Raymond Williams; Arnold Pacey; James Beniger; Langdon Winner; and Wiebe Bijker, Thomas Hughes, and Trevor Pinch, among others.[14] I take the position that technology is political, and moreover, it's an important locus for the conflicts between corporate power and subject agency. In addition to analyzing the technologies that Nielsen and its competitors like Arbitron have used in their national panel, I recuperate a history of experimental television ratings technologies and methods that are largely unknown. Technologies that failed or ratings experiments that never came to fruition can tell us as much about the history of data regimes and consumer surveillance as mainstream ratings technologies. This overlooked history of television ratings technologies and methods precedes, informs, and underlies contemporary regimes of consumer surveillance.

Audience Measurement as Cooperative Surveillance

Re-approaching audience measurement through the lens of critical data studies and surveillance helps us rethink foundational critiques of audiencehood as labor. In his 1981 Marxian-influenced analysis of the audience's function in commercial media, Dallas Smythe argues that since audience attention is produced, sold, and consumed, it is a commodity.[15] In their production of a commodity then, audiences are laborers who perform work. Eileen Meehan and Thomas Streeter have both compared the form of unpaid labor that audiences undertake to "women's work," the unpaid yet functionally essential domestic labor traditionally undertaken by women.[16] Drawing on Marx's differentiation of productive and nonproductive work (building a piano creates a tangible product whereas playing a piano does not), Streeter argues that television viewing is commodified via its systematic exclusion from the category of productive work.[17] However, Streeter's conceptualization of audience labor in this way is limited. In addition to the first form of unproductive labor that Streeter writes of—the task of viewing and interpreting advertising messages—audiences conduct a second type of labor that is productive: they create data, a tangible commodity, which must be mediated, stored, and interpreted. Understanding audiencehood as both unproductive and productive labor opens up avenues for thinking about television viewers as active under surveillance—particularly, active in their embodiment—which has tangible effects on the production of data and its influence on culture.

Surveillance theory has historically been influenced by Jeremy Bentham's and Michel Foucault's foundational conceptions of panoptic surveillance, which is characterized by a centralized, imposing watchful eye that evokes in its subjects an internalized threat of surveillance.[18] However motivated by social networking and data sharing, contemporary

surveillance theory has turned to more networked models of surveillance to explain subjects' (sometimes willing) participation in the surveillance mechanisms of contemporary digital culture. For example, Mark Andrejevic discusses the material conditions that drive the contemporary disposition to being watched, seen in the rise of reality TV as well as the spread of webcams and the popularity of social media.[19] Other scholars argue that consumers submit themselves to surveillance systems because they deem them to be mutually beneficial, what Greg Elmer refers to as an "enticement model" of surveillance.[20] Reg Whitaker, for example, argues that consumers consciously offer their personal information in exchange for benefits such as reward programs, exclusive services, or to enhance the utility of electronic devices.[21] (Of course, scholars such as Elders and Joseph Turow et al. have argued that this apparent "enticement" is often due more to surveillance automation or manufactured resignation, rather than active consumer choice).[22] Anders Albrechtslund offers the term "participatory surveillance" to account for the ways that surveillance can be a playful or enjoyable practice. He says that while "'lateral surveillance' makes us spies in a disciplinary society," participatory surveillance accounts for some of the "positive aspects of being under (mutual) surveillance."[23] Turning to the practice of social networking, Albrechtslund writes:

> A hierarchical conception of surveillance represents a power relation which is in favor of the person doing the surveillance. The person under surveillance is reduced to a powerless, passive subject under the control of the "gaze." When we look at online social networking and the idea of mutuality, it appears that this practice is not about destructing subjectivity.... Rather, this surveillance practice can be part of the *building* of subjectivity.[24]

Thus, at the forefront of Albrechtslund theory is the recuperation of subject agency and mutual benefit.

Audience measurement commodifies the unpaid viewing labor of audiences into "eyes" for the advertising industry and data for the television industry. Through this process,

the complexity of viewership gets streamlined into a monogamous and often less-than-representative discursive whole.[25] Moreover, viewers who participate in this process are under constant domestic surveillance, and sometimes via surprisingly invasive methods. Yet to characterize audience measurement as panoptic surveillance is limiting. For one, Nielsen's national ratings panelists opt in, often enthusiastically. As John Philport, president of the audience measurement firm Audits of Great Britain (AGB), stated, "People cooperate with ratings because they are interested in TV."[26] There is a strong popular-cultural affinity with being chosen as a Nielsen Family. This aligns with a participatory surveillance model, where being watched can make one feel a valid, strong sense of subjectivity, and participating in surveillance can be "fun."

For most of their history, Nielsen's methods have been active, meaning that they require a high level of interactivity and are foundationally contingent on cooperation. "Cooperation" is a term that the ratings industry uses to describe inconsistent viewer participation in the task being measured. However, the multivalence of the term also makes it useful for theorizing the surveillance mechanics of audience measurement. The term "cooperate" implies a hierarchical power relation—a system where compliance breeds utility. But, on the other hand, the term "cooperation" also invokes notions of collaboration or collectiveness. This rhetoric of being a part of something larger often comes up in Nielsen's own participant recruitment materials, where participation as a Nielsen Family is positioned as an opportunity for families to make their own experiences matter in the larger system of television culture. Audience measurement works at the dialectic co-opt and co-op. Rather than being "in-between" panoptic and participatory surveillance, it is both at once, resulting in an ever-precarious process of working through the tensions between corporate power and

subject agency. But more uniquely, cooperative surveillance points to how the *problem* of cooperation influences the mechanisms of surveillance. Modern surveillance theory tends to focus on how consumer surveillance becomes routinized or appropriated through resignation or alternatively, on the potential of counterveillance, but often overlooks the ways that participation in surveillance is often neither docile nor purposefully inimical, but still (whether it be out of ineptitude, boredom, or noncompliance) inconsistent.[27] The surveillance complex constantly evolves in attempts to work around these forms of noncooperation. Rather than focusing on how cooperation is enacted, my use of cooperative surveillance focuses on how inconsistent cooperation shapes the very processes of surveillance. In describing the ratings collection process as cooperative, I argue that audience measurement has been characterized by the ways in which audiences are undisciplinable.

The Politics of Technology/Interfaces

The technology-oriented focus of this project is influenced, in part, by a contemporary perspective on how consumer surveillance and data tracking is facilitated by the entrenchment of technology in almost every aspect of our lives. This is compounded by the rapid rate of technological change, which has prompted the engineering profession itself to recognize the increased necessity of ethics training for engineers.[28] Indeed, technology has always been a catalyst of mass surveillance. Further, technology has ordered the social mechanisms and implications of consumer surveillance. In *Discipline and Punish*, Foucault states, "The panopticon was also a laboratory, it could be used as a machine to carry out experiments, to alter behavior, to train or correct individuals."[29] Foucault's use of the word laboratory here is operative. While some scholars have characterized Nielsen's corporate

strategy as being reactive rather than innovative,[30] since Nielsen opened its engineering laboratory in 1957, the company has been steeped in technological design, filing hundreds of patents, and conducting constant experiments with potential new devices. For most of its history, Nielsen has been simultaneously a data collection firm and a technology engineering laboratory.

In foregrounding technology, my perspective is not one of technological determinism—although, to be sure, when it comes to consumer surveillance, technologies have indeed evolved in a somewhat rigid (modernist and neoliberalist) trajectory toward commodifiable data-centric logics of veracity that are reliant on corporate oversight. But still, rather, I argue that the surveillance mechanisms, social biases, and assumptions underlying claims of veracity that are built into technologies have been somewhat malleable, socially constructed, and shaped by the way users/subjects under surveillance interface with technologies. But nor is my position one of rigid social determinism—rather, the tech-centricity of this project can best be characterized as a focus on technological politics. In "Do Artifacts have Politics?" Langdon Winner writes, "Rather than insist that we immediately reduce everything to the interplay of social forces, [a theory of technological politics] suggest that we pay attention to the characteristics of technical objects and the meaning of those characteristics."[31] Here, I take the position that technology is political: it is an important locus for the conflicts between subject agency and corporate power. Thus, each of the chapters of this dissertation also center on a particular technology or era of technological disruption: the introduction of mechanized meters like the audimeter and the arbitron; viewer diaries; peoplemeters; and finally, the A/P meter and what I call the "black box apparatuses" that Nielsen uses today. However, in addition to analyzing the technologies that Nielsen and

its competitors like Arbitron have used in their national panel, I recuperate a history of experimental television ratings technologies and methods that are largely unknown. Technologies that failed or ratings experiments that never came to fruition can tell us as much about the history of data regimes and consumer surveillance as mainstream ratings technologies. I argue that the ratings industry's technological experiments, negotiation of design logics, and technological failures, are often where conflicts between consumer agency and corporate control come to surface. Further, these failures and experiments often betray television culture's embeddedness in problematic surveillance and also forecast the limitations of contemporary data regimes.

Ultimately, throughout this dissertation, I demonstrate the ratings industry has evolved in response to the cooperative dynamics of consumer surveillance and their technological negotiation. In other words, user/technology interfaces are the locus of cooperation—indeed where the politics of consumer surveillance get enacted. Not only does technology shape the dynamics of cooperation in the ratings collection process—technology design can encourage viewers to cooperate in certain ways, make cooperation difficult, or attempt to compensate for a lack of cooperation—but the ratings process must also contend with the functional abilities and limitations of technology itself. The ratings industry's response to the challenge of viewer cooperation has been a constant onslaught of technological experimentation to find the "proper standard" or "proper code" to create a common user/machine language. In its efforts to datify and commodify viewers/consumers, audience measurement must constantly work around the body's agency as well as its biological and cognitive limitations. In fact, these things are often conflated in industry discourse—for example, the ratings industry refers to audience non-cooperation as audience

"fatigue." In other words, "fatigue" refers to exhaustion wrought by the demands of the user/technology interface.

Technological and interface designs also affect the properties of viewer/consumer data. A more "passive" or "active" interface results in, respectively, more so-called objective or subjective data. Of course, these valuations shouldn't be taken at face value; rather these objective/subjective suppositions reflect differently problematic politics of veracity. Both of these kinds of data have been valued throughout the history of audience measurement, to different ends. They also manifest in a different surveillance experience and have different political implications. This is an issue I will return to in the Conclusion.

Methodology

In "Television Ratings: From Audimeter to Big Data," I recuperate a technology-centered history of television ratings that is informed by contemporary critical data studies and digital media theory, and this only possible via a multi-modal and innovative methodology. My historical research relies on what can best be described as formal and informal archives. I have conducted research at the Broadcast History Archive at the University of Maryland; the FCC Collection in Washington D.C.; the John W. Hartman Center for Sales, Advertising, and Marketing History at Duke University; the NBC Collection at the University of Wisconsin, Madison; the Media Ratings Council in New York; and the British National Archives in London. However, one of the most compelling aspects of my methodology, is my use of informal archives. Through my research process, I have gained access to the personal archives of five former ratings industry professionals; this has provided me with an abundance of documents, ratings data, and video content that has

not previously been accessible to scholars. Even beyond archival materials, the relationships I've formed with these industry professionals has enabled me to gain a deeper, more personalized understanding of how many of the (experimental) technologies that I write about were used. A couple of these industry contacts have even gifted me devices (in addition to other swag like old Nielsen/Arbitron calendars and coffee mugs), including an Arbitron portable peoplemeter from the 1980s and unmarked Nielsen viewer diaries from the 1990s. Being able to handle and interact with these technologies has given me greater insight into how panelists interfaced with them.

In addition to archive research, I've utilized methods from industry studies and technology studies, conducting interviews with ratings industry professionals and engineers; analyzing technology patents, legal briefs, and trade documents; and conducting field work at trade conferences. Moreover, I've combined this top down industry analysis with ethnographic-inspired approaches. In particular, I've been influenced by seminal work in audience reception studies, including work by Ien Ang; David Morley and Charlotte Brundson; Janice Radway; and Ellen Seiter.[32] Through audience ethnographies, these scholars demonstrated that audiences are not passive receivers of information, but rather active in making meaning from their media texts and devices. In the same way, I recognized that one of the best ways to recuperative the active participation (or cooperation) of ratings panelists in the measurement process would be to interview them. Thus, I constructed an oral history archive from interviews that I conducted with former Nielsen panel participants, which I utilize in Chapter 2. As an historical project, this dissertation adds to a (somewhat implicit) methodological intervention being made within television studies, which demonstrates the dynamic insight into television history that exists beyond the constraints of

institutional archives.

Chapter Breakdown

The chapters of "Television Ratings: From Audimeter to Big Data" constitute a loose chronology from roughly the mid-1940s to today, and they center on particular technologies or moments of technological disruption: the introduction of mechanized meters; viewer diaries; peoplemeters; and finally, the active/passive meter and its audio footprint technology, which Nielsen uses to track viewing across devices in the digital landscape. Each chapter also focuses on a particular mode of surveillance and logic of data veracity: mechanized meters' formulation of "big" audience data; the viewer diary's reliance on self-tracking and subjective data; the peoplemeter's turn toward biometrics; and finally, the "black box apparatus" logics that characterize contemporary audience measurement.

In Chapter One, I recuperate a history of experimental mechanized television ratings technologies from the mid-1940s, including C.E. Hooper's Programeter and Cooperative Analysis of Broadcasting's (CAB's) Radio Graph. The successes and failures of these devices demonstrate the problematic epistemologies of veracity that are inherent to mechanized, data-driven consumer research. These devices also paved the way for the dominance of automated meters, with the success Nielsen's audimeter and American Research Bureau's (ARB's) arbitron in the 1950s. First, drawing on Lisa Gitelman's and Rob Kitchin's work on epistemologies of big data, I argue the advent of mechanized audience measurement devices in the late-1940s/1950s made audience data *big*, establishing a precursory reliance on technological veracity and consumer surveillance that persists today. Mechanized meters kept a minute-by-minute time stamped record of tuning, 24 hours a day.

This afforded the collection of diagnostic information and a wider array of audience analytics, including program flow, turnover, and frequency. Mechanization also created a data store, which meant that the record could be inspected and rejected and that data could be used for retroactive/predictive analysis. By the end of the decade, Nielsen hosted over 100 machines dedicated to tabulating and decoding information collected by the audimeter, and even opened a separate engineering laboratory across from its main headquarters, solely for designing, maintaining, and improving ratings technologies. Throughout the 1950s, the consumer information economy evolved from its reliance on surveys, to become electronic, data-driven, and entrenched in our daily lives in a way that's much more akin to what we experience today. In the second part of this chapter, I argue that the installation of mechanized TV ratings devices in homes during the 1950s (the first form of constant technological surveillance of the domestic space) normalized the private sphere as an appropriate domain of consumer research. In fact, the success of these devices motivated ratings industry experiments with a range of out-of-the-box audience measurement systems designed to capitalize on the living room space.

While mechanized set-top meters remained Nielsen's and Arbitron's method for collecting audience data in their national ratings panels throughout the 1960s and 1970s, in local markets, both companies used viewer diaries due to their lower cost and ease of turnover. Viewer diaries were also the rating industry's main method for collecting audience demographic information, until the advent of the peoplemeter. While Chapter Two tracks the long-duration of viewer diaries, from their wide-scale implementation in the late-1940s to their demise in 2018, it focuses its analysis on the 1960s and 70s, a period when audience demographics were becoming increasingly important and the Ratings Family became an

iconic figure of popular culture.

In Chapter Two, I analyze the viewer diary's reliance on self-report surveillance and the unique function of subjective data in consumer research. I take the viewer diary—complete with the illusory TV viewing figure it materially signifies—as a technology of data production. In its design logics, its utility, and even in its failures, the viewer diary is a political technology; it mediates subject agency and corporate power, leisure and labor, individual identity and collective status. Chapter 2 also focuses on the depictions and experiences of ratings panelists, called the Arbitron/Nielsen Families. I analyze how the "Ratings Family" was portrayed in the popular press and television news reports throughout the 1960s and 1970s. The Ratings Family was depicted as, at once, an illusory icon of our shared television culture and an epistemologically problematic technology of data production—the latter of which was evident, in particular, in the countless press reports that focused on Ratings Families' tendencies to purposefully falsify or fail to record their viewing accurately. After analyzing these cultural representations of Ratings Families and their problematic use of their viewer diary, I put the semantics of these depictions up against the ways that former Arbitron/Nielsen panelists recount their own experiences of being Ratings Families. Utilizing interviews that I conducted with 37 former Nielsen/Arbitron panelists, I analyze how panelists recount their own experiences of thwarting the viewer diary data collection process, by cheating, faking, or otherwise manipulating diary entries. In the process of falsifying their data, panelists often contend with the politics of their own tastes and cultural identity, both within their own households and the nation at large. In this way, their self-tracking of their viewing becomes also a subconscious exploration of their selfhood.

Since their inception, both of these methods—mechanized meters and viewer dairies—were widely criticized. Electronic meters, it was argued, measured TV turning without regard for whether people were actually watching the TV. And viewer diaries were prone to inaccuracies because data could easily be made-up or misremembered. Yet, these methods persevered until industry disruption throughout the late-1970s and early 1980s (including the proliferation of cable channels and the increasing popularity of the remote control) and increased competition in the ratings market forced Nielsen to replace it household mechanized meters with remote control peoplemeters in its national panel in 1985.

In Chapter Three, I examine the range of competing peoplemeter measurement technologies that existed between 1985 and 1995. Following the implementation of the remote control peoplemeter, the resulting decline in ratings sparked criticism regarding whether viewers could reliably push the buttons. Throughout the next decade, a number of audience measurement companies, including Audits of Great Britain, Nielsen, Percy Co., and Arbitron raced to develop a passive peoplemeter method—an era of competition which the press coined the peoplemeter wars. These technologies ranged from ultrasonic motion detectors, to infrared body heat sensors, facial recognition technology, and wearable devices. I argue that this era of peoplemeter experiments marked a turn in audience measurement toward recognition of the body as the ultimate verifiability of audiencehood. Be it the struggle to get a child's body to reliably push a remote-control button, controversy over using body heat or face scans to measure television engagement, or the challenge of getting participants to wear portable meters, the body was at the center of the struggle over cooperation that shaped the trajectory of peoplemeter technologies. Indeed, as the ratings companies experimented to develop more inventive metering technologies, the body became

itself a technology: one that, if properly disciplined and utilized in the process of commodification, could make viewers more reliable consumers.

By the mid-1990s the ratings industry had more or less adapted to the new multichannel television landscape. But, after failing to develop a viable passive system, they were still relying on remote control peoplemeters to track viewership in the national ratings panel. In 1999, Nielsen introduced their new active/passive (A/P) meter, and in 2005 it became the main method for acquiring national ratings (replacing the peoplemeter). The A/P meter combines the push button remote control peoplemeter with a set top digital box that passively measures television tuning. It works by detecting a unique high frequency UTPC code that is embedded in the soundtrack of television programs in order to identify what program a viewer is watching.

In Chapter Four, I track Nielsen's endeavors to use the audio code footprinting systems of the A/P meter to track non-linear television viewing across platforms and devices. I argue that throughout the new millennium, television ratings have evolved to become what I call a "black box apparatus"—simultaneously inherently opaque and necessarily collaborative. There are four characteristics of this new logic of audience metrics. First, data collection technologies are built into the very media devices that they measure. Along with making the body/tech interfacing that is necessary for consumer surveillance more seamless, it enhances users' incognizance about their participation. Second, data collection programs are often multi-processual, meaning they are automated to collect multiple, often very different kinds of data at once, which are then integrated to greater effect (and, in turn, greater bias). Third, black box metrics rely on algorithms and machine learning processes to collect, interpret, sort, and utilize data. And fourth, as black box apparatuses, television

ratings operate as part of an assemblage. Because of the array of media options and platforms (and the ways that they can be utilized together) in the connected-viewing landscape, it's nearly impossible for a single metric to be applicable to every viewing situation. For this reason, the industry relies on a grab bag of diverse metrics that are designed to be associated. Nielsen's unique trajectory—as an incumbent, trying to maintain their status as the industry's go-to audience currency while also adapting to these new black box logics—provides a fruitful case study to for understanding contemporary evolutions of media/data regimes.

In concluding, I examine the future outlook of the "ratings panel," by examining two of Nielsen's current undertakings with somewhat contradictory logics. On the one hand, Nielsen is turning toward increased automation and machine learning processes, through their new Nielsen Artificial Intelligence arm. But on the other hand, somewhat contradictorily, Nielsen's insists that what sets them apart from their data farming competitors is its access to its nationally representative panel of real human viewers, which binds a potential disarray of disembodied data to real subjective experience. This comes into play especially in regard to Nielsen's next generation portable peoplemeter (PPM), which they demoed in 2018. The next generation PPM is a smart watch device that, along with measuring user's biometrics like a Fitbit, detects the audio codes embedded in the soundtrack of television programs to track what viewers are watching. Thus, the next generation PPM relies on the subjectivity and mobility of panelists' bodies, as part of its ratings technology, to enhance the data collection capabilities of the device.

Conclusion

The contemporary proliferation of data economies and culture of surveillance was not

borne out of a digital rupture, but has been slowly cultivated throughout modern history, in part as a result of the mergence the consumer information industry and computational technologies (along with a host of other neoliberal socio-economic factors). Nielsen's historical trajectory, both as a consumer data collection company and an engineering firm, emblematizes this evolution. But moreover, through the history of audience measurement, we can begin to contend with the role that commercial media has played in cultivating contemporary cultures of datafication. Ultimately by pairing rigorous historical research with a contemporary digital media theory and critical data studies, "Television Ratings: From Audimeter to Big Data" argues that the US commercial television system was founded on and has always been grounded in these cooperative regimes of data-driven consumer surveillance, which continue to shape contemporary media culture.

Notes

[1] Chenda Ngak, "Can Your 'Smart TV' Watch You?" *CBS New*, 7 August 2013.

[2] David Goldman, "Your Samsung TV Is Eavesdropping On Your Private Conversations," *CNN*, 10 February, 2015.

[3] "Vault 7: CIA Hacking Tools Revealed," WikiLeaks, 7 March 2017, wikileaks.org/ciav7p1/cms/index.html, accessed 17 March 2019; Russel Brandon, "Wikileaks: CIA Can Turn Your Smart TV Into A Surveillance Device," technobuffalo.com, 7 March 2017, www.technobuffalo.com/wikileaks-cia-can-turn-your-smart-tv-into-a-surveillance-device, accessed 17 May 2019; Sam Biddle, "Wikileaks Dump Shows CIA Could Turn Smart TVs Into Listening Devices," The Intercept, 7 March 2017.

[4] Ben Popken, "Your Smart TV is Watching you Watching TV, Consumer Reports Finds," *NBC News*, 7 February 2019; Karlin Lillington, "Are you watching your TV – or is your TV watching you?" *Irish Times*, 17 January 2019; Brian Barret, "How To Stop Your Smart TV From Spying On You," *Wired*, 7 February 2017; Summer Hirst, "How to Keep Your Smart TV from Spying On You," Privay News Online, 30 November 2018.

[5] Karen Buzzard, *Chains of Gold: Marketing the Ratings and Rating the Markets* (New Jersey: Scarecrow Press, 1990); Karen Buzzard, *Tracking the Audience: The Ratings Industry from Analog to Digital* (New York: Routledge, 2012); Hugh Malcolm Beville, *Audience Ratings: Radio, Television, and Cable* (Routledge**,** 1988).

[6] Mark Balnaves and Tom O'Regan, *Rating the Audience: the business of media* (London: Bloomsbury, 2011); Eileen Meehan, *Why TV Is Not Our Fault: Television Programming, Viewers, and Who's Really in Control* (Lanham, Maryland: Rowman & Littlefield, 2005); Philip Napoli, *Audience Economic: Media Institutions and the Audience Marketplace* (New York: Columbia University Press, 2003); Thomas Streeter, "Viewing as Property: Broadcasting's Audience Commodity," *Selling the Air: A Critique of the Policy of Commercial Broadcasting in the United States* (University of Chicago Press, 1996), 275-308; James G. Webster, Patricia F. Phalen, and Lawrence W, Lichty, *Ratings Analysis: Audience Measurement and Analytics*, fourth edition (New York: Routledge, 2014).

[7] Ien Ang, *Desperately Seeking the Audience* (London: Routledge, 1991); Philip M. Napoli, *Audience Evolution: New Technologies and the Transformation of Media Audiences* (Columbia University Press, 2011).

[8] Todd Gitlin, "By the Numbers," *Inside Prime Time* (London: University of California Press, 1983. 41-48; Amanda Lotz, "Recounting the Audience: Measurement in the Age of Broadband," *The Television will be Revolutionized* (New York University Press, 2014), 207-232.

[9]Mark Alvey, "'Too Many Kids and Old Ladies': Quality Demographics and 1960s US Television," *Screen* 45, no. 1 (2004); Ron Becker, "Prime Time Television in the Gay '90s: Network Television, Quality Audiences, and Gay Politics," *Velvet Light Trap* 42 (Fall 1998), 37.

[10] Buzzard, *Chains of Gold*; Buzzard, *Tracking the Audience*; Hugh Malcolm Beville, *Audience Ratings: Radio, Television, and Cable* (Routledge**,** 1988).

[11] James Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA: Harvard University Press, 1986); Greg Elmer, *Profiling Machines: Mapping the Personal Information Economy* (Cambridge, MA: MIT Press, 2004).

[12] Lotz, "Recounting the Audience," 230.

[13] Ang, *Living Room Wars: Rethinking Media Audiences for a Postmodern World* (London: Routledge 1996), 59.

[14] Marshall McLuhan, *The Medium is the Massage: An Inventory of Effects* (London, UK: Penguin Books, 1967); Raymond William, "The Technology and The Society," *Television: Technology and Cultural Form* (London: Fontana, 1974), 1-23; Arnold Pacey, *The Culture of Technology* (Cambridge, MA: MIT Press, 1983); Beniger, *The Control Revolution*; Langdon

Winner, "Do Artifacts Have Politics," *Daedalus* 109, no. 1 (1980), 121-136; Wiebe Bijker, Thomas Hughes, and Trevor Pinch, eds. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, MA: MIT Press, 1987).

[15] Dallas W. Smythe, "On the Audience Commodity and its Work," *Dependency Road: Communications, Capitalism, Consciousness, and Canada* (Norwood, NJ: Ablex, 1981), 22-51.

[16] Eileen Meehan, "Gendering the Commodity Audience: Critical Media Research, Feminism, and Political Economy." *Media and Cultural Studies*, Ed. Meenakshi Gigi Durham, Douglas M. Kellner (Malden, MA: Blackwell, 2013), 311-321; Streeter, "Viewing as Property," 275-308.

[17] Streeter, "Viewing as Property," 307.

[18] Jeremy Bentham, *The Panopticon Writings*, 2nd edition (New York: Verso, 1995); Michel Foucault, *Discipline & Punish*, trans. Alan Sheridan, 2nd edition (New York: Vintage Books, 1995).

[19] Mark Andrejevic, *Reality TV: The Work of Being Watched* (Lanham, Maryland: Rowman & Littlefield Publishers, 2004).

[20] Elmer, *Profiling Machines*, 30.

[21] Reg Whitaker, *The End of Privacy*: *How Total Surveillance is Becoming a Reality* (New York, NY: The New Press, 2000.

[22] Elmer, *Profiling Machines*, 30; Joseph Turow, Michael Hennessy, Nora Draper, "The Tradeoff Fallacy: How Marketers are Misrepresenting American Consumers and Opening Them Up to Exploitation," *A Report from the Annenberg School for Communication, University of Pennsylvania* (June 2015), www.asc.upenn.edu/sites/default/files/TradeoffFallacy_0.pdf.

[23] Anders Albrechtslund, "Online Social Networking as Participatory Surveillance," *First Monday* 13, no. 3 (March 2008), www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2142/1949.

[24] Ibid.

[25] Ang, *Depserately Seeking the Audience*, 53-67.

[26] Claudia H. Deutsch, "The Battle to Wire the Consumer," *The New York Times*, 26 July 1987.

[27] Elmer, *Profiling Machines*; Turow, Hennessy, and Draper, "The Tradeoff Fallacy"; Rita Raley, "Dataveillance and Counterveillance," in *"Raw Data" Is An Oxymoron*,

edited by Lisa Gitelman (Cambridge, MA: MIT Press, 2013), 124-146.

[28] See, for example, Deborah G. Johnson and Gerald E. Galloway, Jr., editors, "Special Issue on Engineering Ethics," *The Bridge: Linking Engineering and Society*, special publication of the National Academy of Engineering, 47, no. 1 (Spring 2017), www.nae.edu/File.aspx?id=168633; "Putting Humanity at the Heart of Technical Education," Open Letter from the Consortium of Engineers, 2018, https://foundation.mozilla.org/en/initiatives/responsible-cs/industry-support/; Nancy Giges, "Embedding Ethics in Engineering Education," *American Society of Mechanical Engineers*, July 2012, www.asme.org/engineering-topics/articles/engineering-ethics/embedding-ethics-in-engineering-education.

[29] Foucault, *Discipline & Punish*, 203.

[30] Buzzard, *Chains of Gold*; Meehan, *Why TV Is Not Our Fault*.

[31] Winner, "Do Artifacts Have Politics," 123.

[32] Ien Ang, *Watching Dallas: Soap Opera and the melodramatic imagination* (New York: Methuen & Co., 1982); David Morley and Charlotte Brundson, *The 'Nationwide' Television Studies* (London: New York, 1999); Janice A. Radway, *Reading the Romance: Women, Patriarchy, and Popular Literature* (Chapel Hill: University of North Carolina, 1984). Ellen Seiter, *Television and New Media Audiences* (Oxford University Press, 1999).

Chapter 1

Mechanized Meters:
'Big' Audience Analytics and the Domestication of Consumer Research

In the US, the rise of mass media was concurrent with the growth of the consumer information economy. Throughout the late 1800s, increases in mass production and the circulation of ad supported mass media beget the rise of consumer survey research, which became institutionalized 1920s with the empiricization of survey science and the professionalization of the pollster. The development of the radio ratings industry was part of this. Throughout the 1930s and early 1940s, the radio ratings industry was dominated by Archibald Crossley's Cooperative Analysis of Broadcasting (CAB) and Claude E. Hooper's Clark-Hooper Inc., both using telephone survey methods, calling people in their homes to ask about their listening habits. But between the late 1940s and early 1960s, the consumer information economy evolved from its reliance on surveys, to become electronic, data-driven, and entrenched in our daily lives in a way that's much more akin to what we experience today.

In this chapter, I draw attention to an overlooked history of ratings industry experiments with mechanized technologies in the 1940s. The successes and failures of these devices demonstrate the problematic epistemologies of veracity that are inherent to mechanized, data-driven consumer research. These devices also paved the way for the dominance of automated audience measurement, with the eventual success of Nielsen's audimeter and the American Research Bureau's (ARB) arbitron in the 1950s. I argue that we can characterize this original period of mechanization in the late-1940s and 1950s as an era when audience data became *big*—scalable, farmable, predictive, and more rationalized, establishing a precursory reliance on data over-abundance and veracity that persists today. At

the same time, this era of audience measurement was also characterized by onslaught of engineering experiments in effort to manage these new scales of data, searching out tech solutions for the collection, transferral, storage, and interpretation of audience data. Indeed, while some scholars have characterized Nielsen's corporate strategy as being reactive rather than innovative,[1] the history of Nielsen's engineering firm reveals another story. Nielsen's patent history shows that even though the ratings industry has borrowed much of its technological innovations from the banking, health care, and national defense industries, it is also constantly designing, building on, and patenting new devices that capitalize on the opportunities of early technological convergence, the tractability of the domestic space, and the technology/body interface. While these technologies didn't always come to market, these engineering experiments tested the capacities of computational labor and the possibilities of consumer surveillance in prescient ways.

This leads to my second argument. The installation of audimeters and arbitrons in homes constituted the first form of round-the-clock (two-way) electronic consumer surveillance in the domestic space, normalizing the private sphere as an appropriate domain of consumer surveillance. In fact, the success of these devices motivated ratings industry experiments with a range of out-of-the-box audience measurement technologies designed to capitalize on the tractability of the living room setting. While a significant trajectory of audience studies stemming from Dallas Smythe's 1981 essay "On the Audience Commodity and its Work" focuses on characterizing the nature of and economic function of audiencehood as labor, questions of audience labor have rarely been approached from a technology studies perspective.[2] However, the technologies that ratings companies installed in the domestic space, converted not only the experience television of television viewing but

even the tangible physical design of the living room space into a corporately controlled, political, cartographical arena of commodification. This implicated the nature of audience labor in the domestic space and the gendered relations therein.

A Revolution in Control: From Survey to Surveil

In *The Control Revolution* James Beniger tracks the proliferation of electronic media and computational technologies and the rapid development of rationalization and bureaucracy, including the emergence of an institutionalized citizen/consumer information economy, all of which coalesced in what he describes as a revolution in control, occurring roughly between 1880 and the mid-20th century. He argues that, during this period, the industrialization of mass society, including the increasing rate and scale of the production, distribution, and consumption of goods and services resulted in a control crises. The need to regulate these exchanges led to a succession of new information-processing and communication technologies, the emergence of the so-called Information Society. While this "control revolution" manifested through many facets society, here I am particularly interested in this contextual motivation for the coalescence of the consumer information economy and entertainment media.

Scholars like Joseph Turow and Cynthia Meyers have described how a proliferation in mass production around the turn of the century necessitated more efficient advertising to communicate information about goods and services, brand and differentiate products, and stimulate consumer demand.[3] This, in turn, created industry demand for more specific market research to gather information on audience preferences and the behaviors. Beniger says that information processing and reciprocal communication are complementary factors in any form

of control "not only to communicate influence from the former to the latter, but also to communicate back the results of the action."[4] Thus, he refers to the range of market research technologies that appeared by the late 1910s and continued to develop steadily through the 1930s as "feedback technologies."[5] In 1900 Lord & Thompson became the first advertising agency to establish a formal research department, and over the next a few years research divisions popped up in most top agencies. By 1910 market research became widely adopted and institutionalized with the establishment of organizations devoted to consumption analytics such as the Harvard Bureau of Business Research, which collected statistics on retail operations, and the Association of American Advertiser's Audit Bureau of Circulation, which systematically measured magazine circulation.[6] Throughout the 1920s and 1930s, market research became increasingly empiricized, professionalized, and informed by psychological and social sciences. Ad agencies like Young & Rubicam and J. Walter Thompson dedicated significant resources to training survey men and experimenting with survey methodologies. Meanwhile, public pollsters like George Gallup and Elmo Roper "transferred the techniques honed for selling soap and cereal from the buying to the voting public" conducting citizen surveys and publishing weekly newspapers poll results on the public's disposition toward politicians, social issues, and current events.[7]

Meanwhile, throughout the 1920s, radio penetration increased rapidly, and as the listening audience grew the cost of commercial time also rose. Advertisers, educated by their experience with research on print media circulations, demanded to know more about who their advertisements were reaching and the cost relative to other media. In 1929 the Cooperative Analysis of Broadcasting, Inc. (CAB), an organization of radio advertisers, hired Archibald Crossley, a statistically trained methodologist who was working with George

Gallup on opinion polls, to develop a radio audience metric. Crossley's method involved searching through telephone directories, calling subscribers, and asking them which radio programs they had listened to that day, a survey method called telephone recall. Throughout the 1930s the Crossleys were used as the primary radio audience metric. In the early 1940s, Claude E. Hooper entered the radio audience metrics business with a telephone coincidental survey method, which involved calling phone subscribers to ask which radio program they were listening at that moment of the call. By publicly promoting the scientific benefits of his methodology and releasing weekly Hooper Ratings in the press, Hooper made his name—and the phenomenon of broadcast ratings in general—part of popular culture. The rivalry between Crossley and Hooper beget methodological debates, posing important questions about how the audience is defined and valued. Hooper's coincidental method was ultimately deemed to produce more detailed accurate data, and although CAB eventually switched to using the telephone coincidental surveys, by 1943 most networks and ad agencies were subscribing only to Hooper's service.[8] Crossley and Hooper established many of the conventions for television ratings that are still used today, and audience surveys for TV ratings would persist in local markets in the form of viewer diaries (which I discuss in the next chapter). But behind the scenes, the 1930s were also an era of rapid technological experimentation that would come to revolutionized the audience measurement industry in the 1940s and 50s.

As Beniger details, the advancements in consumer research were happening concurrently with the professionalization of computer engineering and implementation of computational equipment in almost every social and economic institution. He writes that, during the critical transitional period between 1880-1939 "four separate but interrelated

technologies—calculators, punch-card processors, digital and analog computers—all flourished."[9] The merger of the consumer/citizen information industries with new computational developments coalesced toward a larger societal information age. In taking a technology-oriented approach to the history of audience measurement, I argue that technological artifacts (and their inherent uses and values) are embedded in and inscribed with complex implicit and explicit entanglements of corporate/consumer power. In short, technological artifacts are political. A central aspect of the "control revolution" was is the emergence of technological logics that changed our relationship with information—with data—in ways that continue to manifest (in much enhanced form) today. For example, in 1890 Herman Hollerith (one of the founders of IBM) engineered one of the earliest technological devices for counting people at mass scale—an electric hole punching tabulation system designed to make the processing of census information more efficient. In Hollerith's system, each individual's census card would be hole-punched in locations that corresponded to certain data points—for example, a hole in one location on the card would designate "married," and a hole in a different spot would represent "single." The cards where then put through the tabulating machine, where electromagnets would register the punches, translate the information onto a dashboard, and sort the cards accordingly. The device was algorithmic with its preselected data correlations and sorting processes. For the 1951 census, this same process was replicated by first-generation UNIVAC I computers.[10] Aspects of Hollerith's system were implemented in multiple early mechanical ratings devices, including Nielsen's audimeter and its tabulation machine.

Beniger's account of how this integration of the consumer information and computer engineering industries manifested in a control revolution glaringly disregards the term

"surveillance." However, these socio-technological changes ultimately established the foundations of a 21st century consumer surveillance culture, establishing an orientation toward increased oversight that was not just institutional, but cultural and interpersonal. Moreover, by neglecting to make this connection explicit, Beniger shortchanges discussions about how the mechanization of consumer surveillance devices changed the nature, utility, and implications of data collection (note, for example, his surprisingly limited discussion of the audimeter).[11] The audimeter—a constantly operating electronic device permanently stationed in panelists' living rooms—vastly enhanced the scale and utility of audience data and normalized consumers' role as subjects of an unrelenting techno-corporate eye.

In describing this period of mechanization as a moment when audience data became *big* (in a precursory way) I mean that the data collected from these devices demonstrates many of the ontological scales, epistemological logics, and cultural effects of Big Data as it has been conceived in more contemporary critical data studies. Rob Kitchin says that descriptions of what constitutes "big data" range from "trite proclamations that Big Data consists of data sets too large to fit in an Excel spreadsheet or be stored on a single machine to more sophisticated ontological assessments that tease out its inherent characteristics."[12] Kitchin goes on to describe some of these characteristics,

> Big Data is "huge in volume, consisting of terabytes or petabytes of data; high in velocity, being created in or near real-time; diverse in variety, being structured and unstructured in nature; exhaustive in scope, striving to capture entire populations or systems; fine-grained in resolution and uniquely indexical in identification; relational in nature, containing common fields that enable the conjoining of different data sets; and flexible, holding the traits of extensionality and scaleability.[13]

As I demonstrate in this chapter, the automation of audience data made it big in size—manifesting in technological issues with its storage, transferal, management, and farmability. Moreover, Nielsen and ARB characterized many variations of Kitchin's aforementioned

qualities as epistemological values of mechanized audience measurement, including its ability to create large and scalable quantities of data; its status as simultaneously structured and unstructured; its aggregability and farmability; its transferal and storage capacities; and its rationalization.

In the rest of this chapter I analyze the early history of mechanized ratings technologies, first going back to Crossley's and Hooper's overlooked experiments with mechanized systems and then discussing the wide-scale implementation of mechanized meters like Nielsen's audimeter and ARB's arbitron. By integrating analysis of technology patents, archival material, and interviews with ratings industry engineers with digital media theory and critical data studies, I analyze the Big Data characteristics and implications of early automated audience metrics. In the final part of this chapter, I analyze a second revolution in audience surveillance that started during this era—the implementation of round-the-clock mechanized surveillance devices in the domestic space.

The Mechanization of Audience Measurement

Nielsen is often thought of as the godfather of mechanized ratings. In *Rating the Audience* Mark Balnaves and Tom O'Regan write, "If Crossley instigated the first revolution—audience ratings themselves and exposure as they key measure—it was Art Nielsen who embedded technology into the ratings."[14] In fact, both Crossley and Hooper experimented with electronic meters throughout the 1930s and 40s. These early experiments with mechanized technologies are laregely overlooked in existing scholarship on broadcast ratings. As early as 1929, CAB experimented with a meter called the Radio Graph, installing the device in 160 homes in Kentucky. The devices were prone to error, and thus the resulting data was "un-digestable."

In 1937 Claude E. Hooper tested a device called the “Programeter” in homes in Connecticut and Kentucky. Hooper shared some of the data in a report to the Joint Committee of Radio Research, including findings that ¼ of all measured radios operated for long periods of time when no one was in the room; and in early evening periods, 52% of all tunings lasted for five minutes or less. This lead Hooper to conclude that while mechanized recorders may yield a reliable measure of set operation and dial position, the method revealed little factual data about actual listening. Interestingly, despite Hooper’s methods (primarily phone surveys) seeming quite basic and non-technological to us now, Hooper’s experiments with mechanic devices created an image of the ratings collection process as being steeped in inaccessible technologies and mysterious tabulation processes. But ultimately, instead of seriously pursuing mechanical methods, Hooper used these experiments to decry the utility of electronic meters. Hooper also tested another mechanical device invented by two MIT professors, Robert Elder and Lewis Woodruff. He ultimately resolved that the device would take years to develop and require an astronomical financial investment.

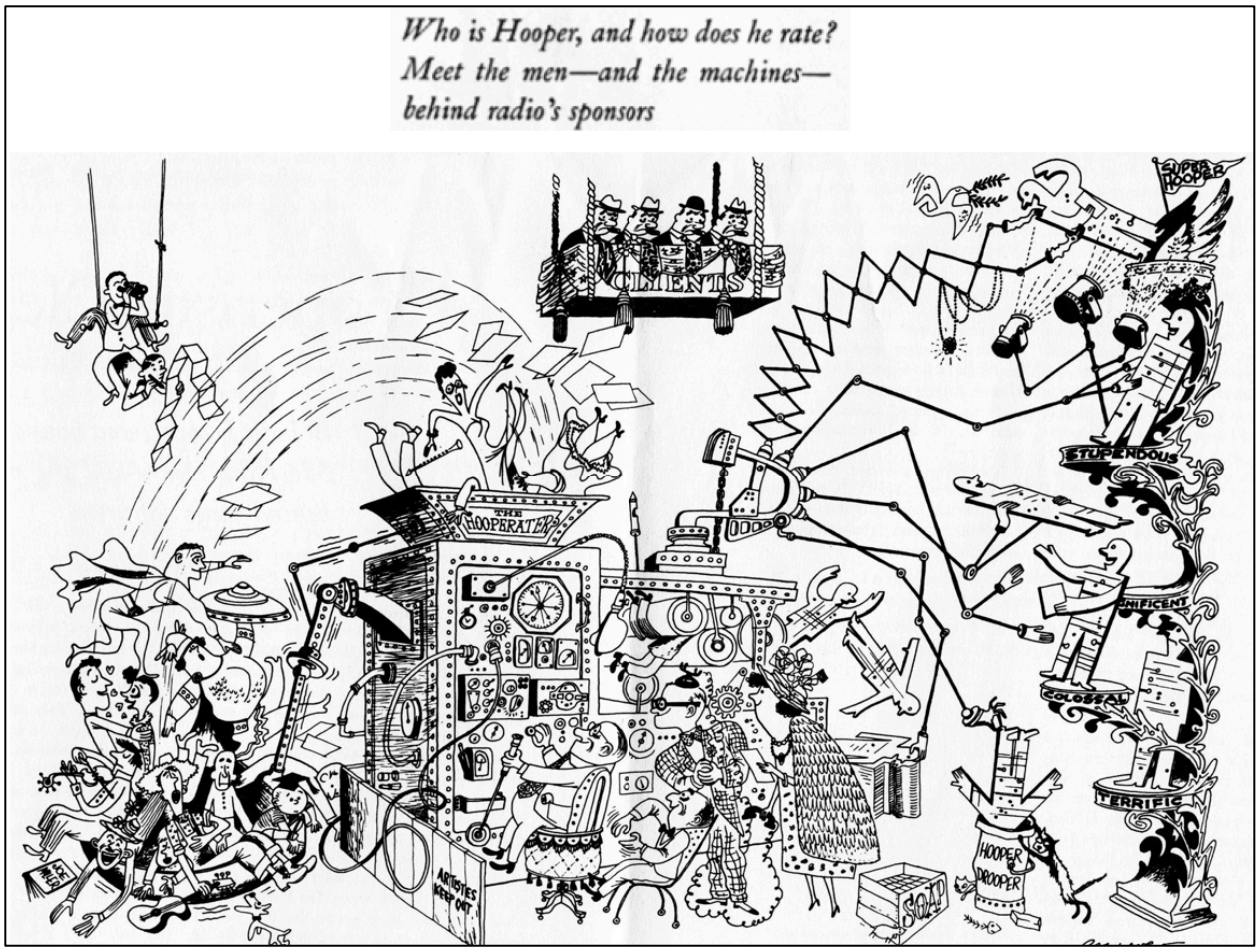


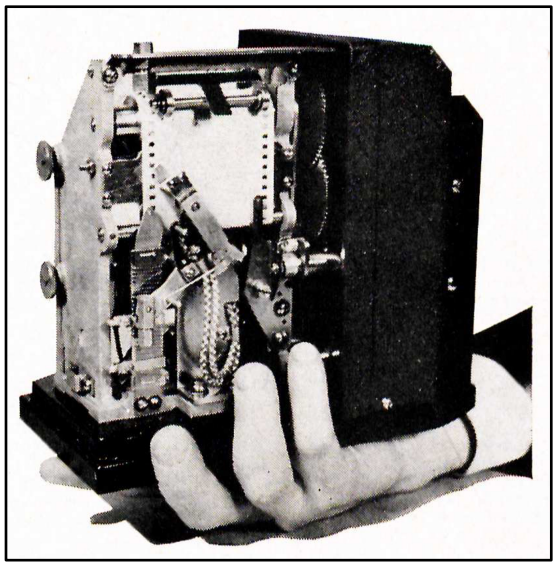
Figure 1: As this comic demonstrates, Hooper's mechanical experimentation motivated a public perception of ratings as steeped in inaccessible technologies and mysterious tabulation processes[15]

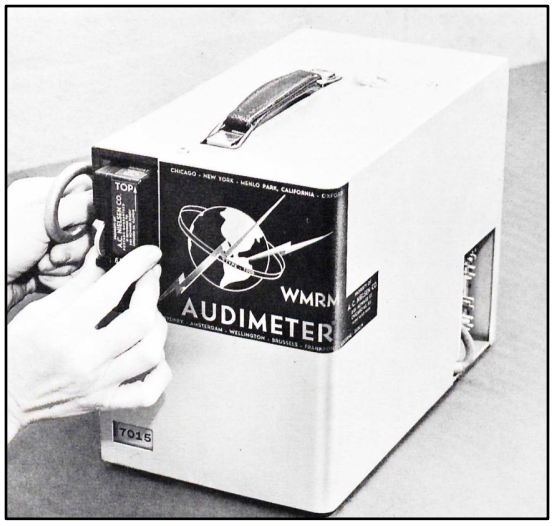
Just three years later, Elder and Woodruff sold the patent for their device, called the audimeter, to Arthur C. Nielsen. While Crossley and Hooper were statisticians by trade, Nielsen was an engineer, which influenced his believe in computer-age solutions to audience tracking. In a letter titled, "One Man's Version of How the Whole Thing Got Started," that Arthur Nielsen Jr. shared with clients in 1987, he describes Nielsen Co.'s engineering consulting origins:

> The company's original work was done in factories, measuring the performance of industrial machines. The company's reports revealed which particular machine was the most suitable for the client's requirements. The data was obtained by observations

> and analysis of records such as the amount of electricity the machine used, the number of units produced, the spoilage rate, the final cost per unit, and so on.[16]

Art C. Nielsen's engineering origins informed his technological-solutionist logic toward consumer research; in fact, throughout the 1950s, the top three executives at Nielsen were engineers by trade. This predilection toward constant technological experimentation not only shaped Nielsen's early history, but was emblematic of a mid-twentieth century shift toward a highly computerized information industry, reliant on an economic and social integration of tech engineering and data science. Nielsen's audimeter worked by keeping a stamped minute-by-minute record or tuning on a film strip, which was then mailed in to the Nielsen headquarters. After a 4-year pilot operation in 200 homes, the audimeter panel was implemented commercially in 1942. By 1943 the audimeter sample was projectable, meaning it was representative of a national cross-section, and that same year Nielsen used that data to distribute its first National Radio Index. In 1948, Nielsen started measuring television, and by 1950 Nielsen released its first National Television Index. CAB dissolved in 1946, and in 1950 Nielsen bought Hooper's national service, putting Nielsen in a monopoly position in the national ratings market.





Figures 2 & 3: The audimeter kept a time stamped record of tuning on a film strip, which panelists would return to Nielsen via mail[17]

Much of Nielsen's corporate correspondence with networks and advertisers during this era involved advocating for the benefits of mechanical measurement, which centered on its ability to make data *big*. Karen Buzzard writes, "Nielsen used many analytical tools made possible by the fact that he owned the world's largest computer installation. At the heart of the [Nielsen Television Index] rating system was a belief not only in electronics but also in computerization."[18] The audimeter could capture data at a faster pace, in greater abundance, and with less human error than any telephone method. The audimeter kept a minute by minute record of tuning, 24 hours a day. As Nielsen put it, compared to Hooper's telephone survey method, "800 audimeter homes were the equivalent of 800 coincidental calls made each minute of each measured program."[19] Moreover, because of the statistically projectable design of Nielsen's panel, audimeter data was scalable. In other words, it was exhaustive in scope.

The scale of data was not only big, but aggregative—meaning that as new data was collected from panelists' meters, it could be compared to, integrated with, or contraposed to the large store of data already in hand to indicate ever more multiplicitous kinds information about listening/viewing. Lisa Gitelman and Virginia Jackson consider this a fundamental quality of Big Data. They write, "*Data are aggregative*. They pile up. They are collected in assortments of individual, homologous data *entries* and are accumulated into larger or smaller data *sets.* This aggregative quality of data helps to lend them their potential power, their rhetorical weight."[20] In particular, the audimeter's automation—fitting Gitelman and Jackson's description of Big Data ubiquity where "every click, every move has the potential to count for something, for someone some-where somehow"— made it aggregative.[21] With

the audimeter, every switch of the dial not only meant something specific about listening/viewing (i.e. structured data), but as it was aggregated with other data, in its unstructured capacity it could be utilized to determine the success of an advertisement in its timeslot or whether one radio/screen presenter's style has more audience pull than another.

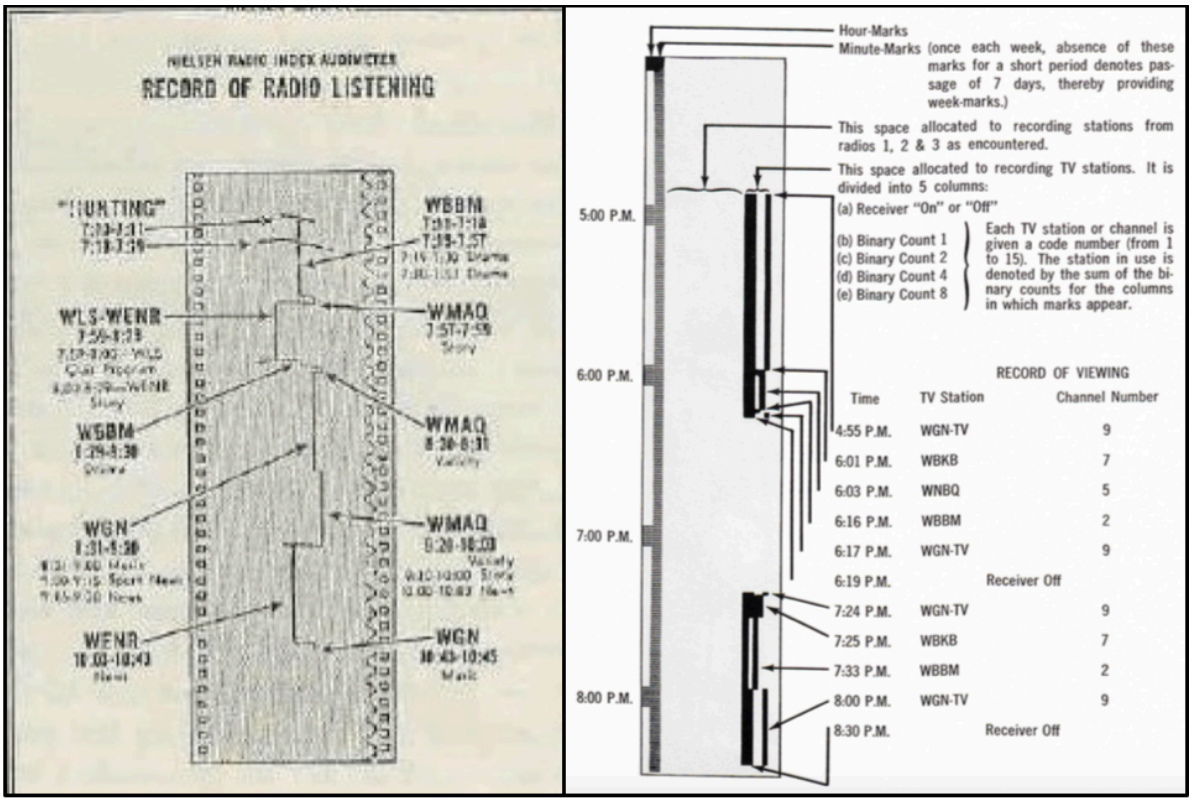


Figure 4: These two pictures show the increasing quantity of information collected on audimeter film strips between 1949 and 1957[22]

Thus, the larger scale of data produced through automated measurement also had *big* characteristics. In other words, the scale of data made it farmable; it could be used to decipher average audiences at a national cross-section, program flow (how and when people navigate between channels), turnover (how many people leave a channel during/after a certain program), and frequency (how frequently viewers tune in to a given program). Kitchin writes that, "Big Data analytics enables an entirely new epistemological approach for making sense of the world; rather than testing a theory by analyzing relevant data, new data

analytics seek to gain insights 'born from the data."[23] For example, one diagnostic report regarding program turnover (for an anonymous program) showed that "by shifting commercials from minutes 11 and 17 to minutes 1 and 30, the audience reached by the commercials can be increased 39 percent."[24] All in all, Nielsen's Television Index was said to produce 87 different interpretations of data (or types of information).[25] Insights born from audimeter data were invaluable to the advertising and television industries during the 1950s, especially as they transitioned from program sponsorship to buying advertising spots (magazine model advertising) and from undifferentiated marketing to segmented marketing. Ad agencies hired research personal whose job it was to respond to analytics as they came in, by promoting successful ad runs to clients or altering/removing content that did not play well. In the television industry, these insights born from big audience data motivated the networks to hire programmers to plan and shift programming and advertising both in response to and in prediction of audience data.

Another benefit of the audimeter was that since filmstrips from each audimeter in operation could be archived, it afforded a data store. In one of his promotional addresses, Nielsen boasted that the company's store of 40,000,00 punched cards, if arranged in one pile, "would be about twenty times the height of the 86-story Empire State Building in New York."[26] According to Nielsen, this record of tuning meant that the audimeter's accuracy was verifiable, and at any moment, the record could be inspected and rejected if defective. In a report published in the *Journal of Marketing*, Nielsen wrote, "When unexpected changes take place, hind-sight can be used to determine the type of information which is necessary to measure the nature of change, and that type of data then will be available, in most cases, as far back as it is needed. Few sciences have had all the facts affecting their operations

available to them *retroactively!*"[27] This data store allowed Nielsen not only to locate trends over time, but also to address specific client concerns (such as half-hour turnover or the effects of a new time slot competitor).

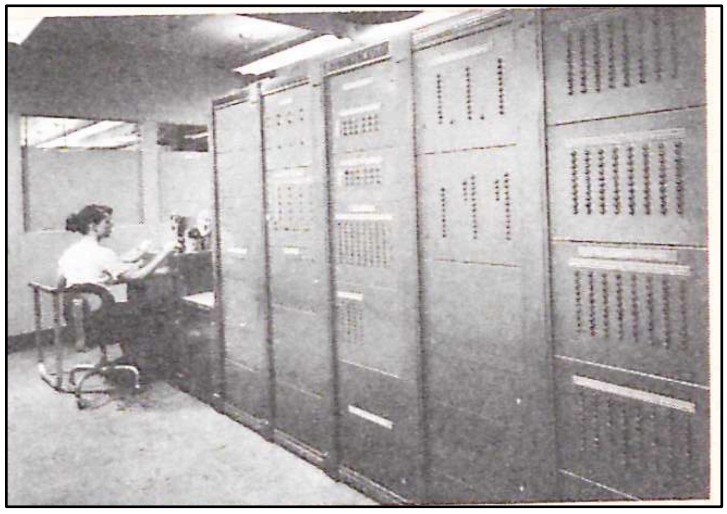


Figure 5: With the advent of mechanized meters came the need for large data storage facilities[28]

By the late 1950s, Nielsen headquarters hosted over 100 machines dedicated to tabulating and decoding information collected by the audimeter. In 1957, Nielsen also opened a separate engineering laboratory across from its main headquarters, solely for designing, maintaining, and improving ratings technologies. Nielsen described it in promotional material as "a well-equipped laboratory staffed with twenty electronic and mechanical experts."[29] During this era that Beniger characterize as the first computer age, Nielsen positioned itself as being on the forefront of "compunication" innovation. Nielsen emphasized his company's high tech foundation in order to dispel, as he described it, the impression that "marketing research is conducted in dingy attics by a few long-haired statisticians, each equipped with a rusty adding machine."[30] In their promotional material, Nielsen included images of its highly technical processes with captions that flaunted their computational capacities, like: "We operate one of the world's largest installations of IBM

electronic tabulating and computing equipment—which punches over 50,000,000 cards each year and processes them in what is generally considered the most complex procedure for which IBM machines have ever been employed."[31] In her work on cloud computing infrastructure, Jennifer Holt has referred to the technology-fetishizing promotional images of data farms distributed by companies as Google as a sort of "server porn."[32] Nielsen's early promotional material aestheticized a similar technological fetishization, featuring image after image of its highly technical and esoteric computation equipment, often arranged in seemingly endless symmetrical rows.

Figure 6: Nielsen headquarters hosted over 100 machines dedicated to tabulating and decoding data[33]

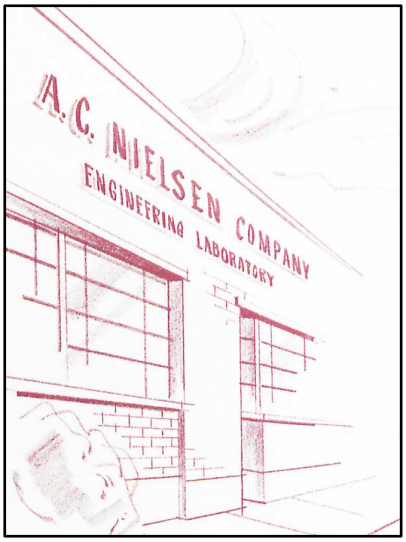
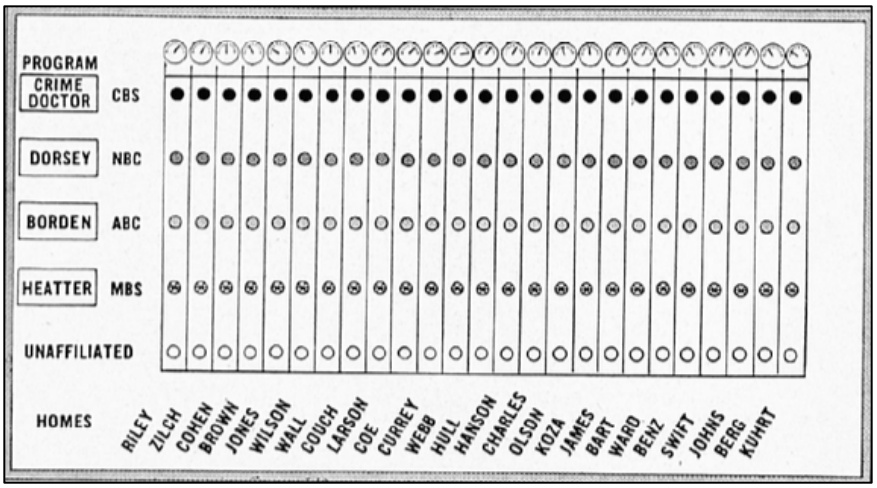


Figure 7: Nielsen's engineering laboratory where it designed and improved ratings technologies[34]

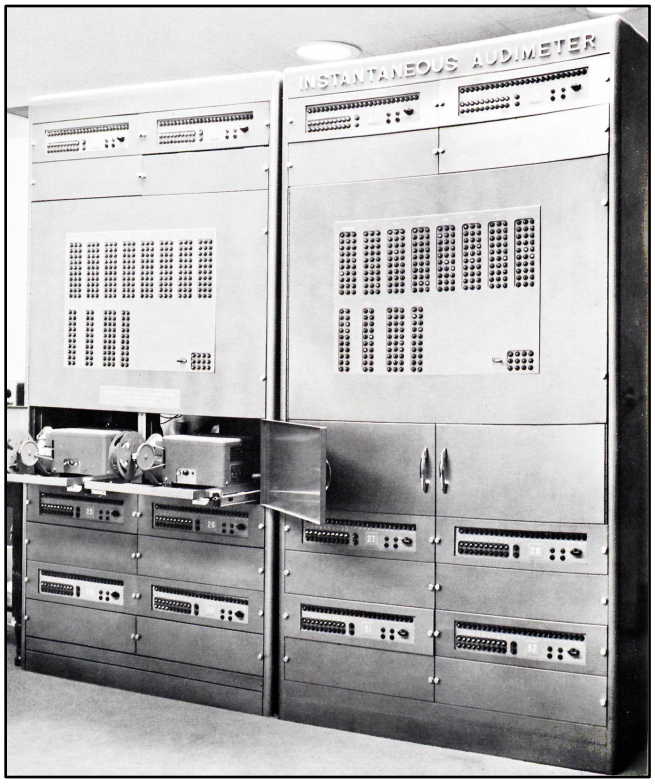
Throughout the 1950s, both Nielsen and James Seiler's American Research Bureau (ARB) experimented with data transmission methods that could take advantage existing telephone line infrastructure, which provided instantaneous connection between individual rural households and urban centers. In 1956 Nielsen filed a patent for a device that emitted an

audio pulse in the voice coils of the speakers in panelists' radios or televisions in accord with whichever channel the set was tuned to. The resulting audio pulse could not be heard by listeners/viewers, but would be transmitted via a phone line to Nielsen, where it would be matched to its corresponding broadcast station.[35] While this device never came to fruition, both companies engineered similar processes of instantaneously transmitting data across telephone wires. In 1957 ARB entered the national scene with their mechanized meter called the Arbitron. Unlike Nielsen's audimeter, which required participants to mail in a film strip record of tuning, data delivery with the Arbitron was automatic; the device flashed every ninety seconds, sending tuning and channel information from television sets through a phone line to the ARB headquarters. This was the start of instant ratings. Nielsen's engineering laboratory had also been working on and testing a similar instantaneous device, which later that year, they implemented at mass scare. Nielsen's system increased the data collection intervals to every sixty seconds. Instant ratings lead to the creation of "overnights," which are ratings calculated and reported on a day by day basis. Journalist Val Adams argues that instant ratings also cast watchful eye on the broadcast industry itself. Whereas the Crossleys or Hooperatings were based on measurements made during one or two weeks of the month, the constant measurement of the audimeter meant that a show had to hit the ratings mark at all times. Adams writes, "In effect, the audimeter will be a statistical Big Brother for the television performer and his associates," and she adds, "with Big Brother's electronic eye ever on alert, a show would have no place to hide."[36] Indeed, during their pilot program, where they installed and tested thee 50 instantaneous audimeters, Nielsen kept a switchboard at headquarters that showed an hour by hour record of which station each household's audimeter was tuned to.



Figures 8: Nielsen headquarters hosted a master switchboard that displayed the hour by hour tuning results from the 50 instantaneous audimeters in its pilot program.[37]

One challenge that Nielsen faced with the instantaneous audimeter was that it was highly expensive to transport data constantly, essentially for each household it was like making a 24-hour duration long distance call every day. Therefore, one of the engineering priorities upon implementing the instantaneous audimeter was to computerize its storage. In his "How the Whole Thing Got Started" letter, Nielsen Jr. writes, "The next significant development took place when our engineers found the means of building a small computer into each audimeter that would store broadcast information for several days."[38] This made it possible for Nielsen to retrieve data in intervals.



Figures 9: Starting in 1957, Nielsen and ARB used phone lines to transfer data instantaneously from panelists' set top meters to the regional headquarters[39]

By 1964 Nielsen possessed 27,872 audimeters, recordimeters, and related patented devices for collecting data on television viewing and 2,826 calculating machines.[40] All in all, the audimeter, in all its version, and its related decoding equipment were covered by at least 59 patents—a paper trail indication of the onslaught of technological experimentation and invention that characterized the origins of television audience measurement, and consequently, of commercial television culture more generally.

Hooper's early contention that tuning did not equate to listening sparked a central debate of audience measurement throughout the 1940s—essentially constituting a question of the potentials and limitations of subjective verses objective data. In response to such critiques, Nielsen argued that while tuning could be measured with precision, survey methods

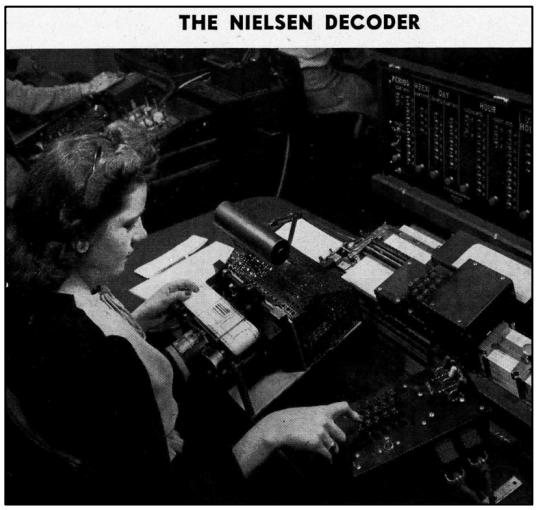
particularly could not provide a reliable measurement of listening because "each respondent, on being asked whether he is 'listening,' is obliged to make his own decision as to the *degree of attentiveness* which should be defined as 'listening.'"[41] One person might only consider full attentiveness as "listening," while another might describe themselves as "listening" whenever the radio is on, even if heard only incidentally. Thus, Nielsen argued that in surveys, listening was based on an arbitrary, instantly conceived definition of listening, which is also subject to participants' refusals to give reliable replies and errors made by children. In critique of Crossley and Hooper's survey methods, Nielsen argued, "The data obtained from each individual radio home are the *starting* point…and unless such data are accurate and sound, the rest of the structure has little practical value."[42] In other words, Nielsen argued that mechanically-derived data was more rationalized. Efforts to enhance data rationalization are a key aspect of the "control revolution" and what many scholars call "the data age." Elmer explains that in pursuit of full rationalization, all sectors of business have actively sought to "automate the collection of personal information, increasingly within the very act of consumption."[43] While the ratings industry often equates this property with objectivity or greater accuracy, rationalization rather implies a simplification of information that, on the one hand decreases its variability, but on the other hand makes it less complete. Thus, rationalized data is not necessarily *less* but just *differently* inaccurate and subjective. This quality of rationalization or invariability makes data more aggregative or farmable, but on the other hand, it also enhances the effects of the data's inaccuracies and the efficiency of its biases.

Indeed, while automated data collection was said to be more objective, it was nonetheless "constructed" both through its collection processes and the painstaking labor of

data interpretation. In a step-by-step description of the data mediation process Nielsen explains:

> [1.] Electronic inspection automatically rejects any record not meeting Nielsen's high standards of accuracy. [2.] Automatic decoders convert audimeter records into IBM punched cards—which are automatically converted to magnetic tape. [3.] Electronic computers, using magnetic tape, make the hundreds of millions of computations required in preparing reports. [4.] Automatic printers, actuated by magnetic tape, print master copies for the final reports, suitable for mechanical reproduction.[44]

This labor of "data cleaning" was often gendered. While the engineers and the "geniuses behind the machines" were often depicted as male, the more mundane task of decoding data often went to women. Beniger points out that early computational innovations were often said to de-skill the office work force. He quotes the British journal *Engineering*'s declaration that "[Manual bookkeeping] would need the personal attention of someone of marked ability...but when the data are punched on cards, the job can be put in the hands of a girl."[45] Indeed, when women entered the work force in unprecedented quantities during WWII (on both sides of the war), many took on low-skill computation jobs. For example, Stan Augarten writes about a computational office of thirty women at Henschel Aircraft Company tasked with calculating and recording the wing flutter of Nazi flying bombs.[46] In the postwar era, women trained in computational practices were hired in droves in industries like health care, insurance, and market research. In fact, 47% of the decoders in Nielsen's Chicago headquarters between 1954 and 1956 were female. Although women's labor was rarely explicitly discussed in Nielsen's promotional material, the company's pamphlets, brochures, and commercials featured image after image of female employees working tirelessly with filmstrip or typing into computers.



Figures 10 & 11: Women often did the painstaking job of decoding hundreds of hours of audimeter data each week[47]

In their early years, Nielsen's reports took 11 weeks to produce; thus, one of Nielsen's development priorities was to increase the efficiency of this decoding process in order to produce faster reports. In a speech at the Radio Executives Club of New York, Nielsen stated, "During the past few years this [decoding] work has been mechanized to such an extent that the labor required for this one operation has been reduced 83 percent (saving, ultimately about 1000 people), and the work has been made 90 percent automatic, with assurance of virtually complete accuracy."[48] These advancements decreased time needed to produce reports from 11 weeks to 3 weeks. But even once mechanized, each tabulation machine required an operator, many of which were women. Even into the 1980s, women filled this unique labor role of "loggers and coders" for the ratings industry. At Percy Co. (an audience measurement company that entered the ratings market in the 1981), for example, these (usually female) employees were tasked with logging the exact time every ad started and ended in order to create a second-by-second record of which commercials aired; syncing that data with channel turning; and then assigning an identifying code to each and every

commercial, promo, public service announcement, and program. Roger Percy describes these workers as the "unsung heroes" of Percy's audience ratings operation. [49]

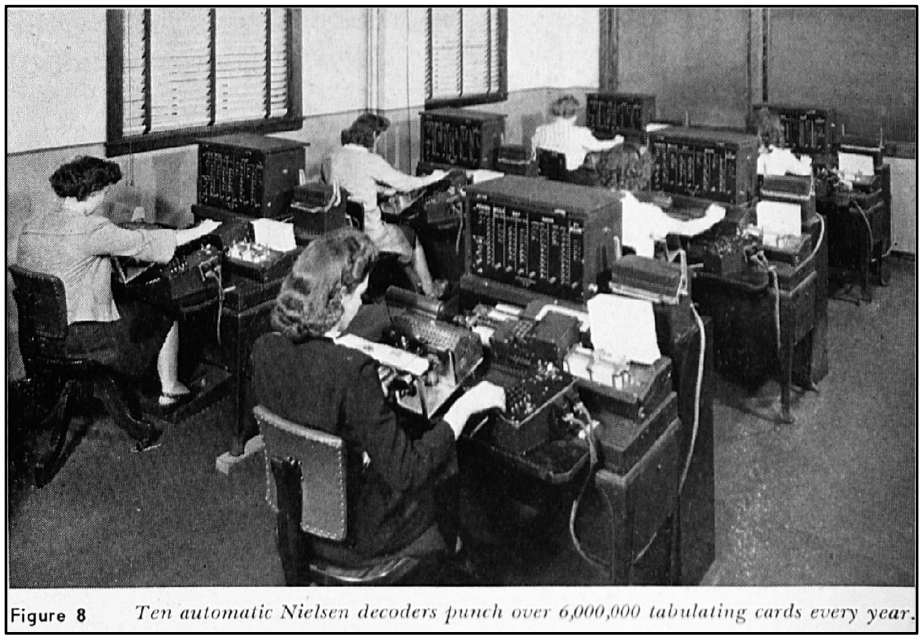


Figure 12: Women who logged and coded ratings data were the "unsung heroes" of ratings operations[50]

The scale of data collected by the automated meters resulted in type of infoglut, a term Mark Andrejevic uses to describe when the abundance of data we encounter overwhelms our ability to manage or comprehend it.[51] For example, a 1963 Congressional investigation of Nielsen's methods focused on the 11 Nielsen audimeters (9 radio, 2 TV) placed in Louisville homes in 1961. Upon investigation, the House committee determined that a substantial number of audimeters provided incomplete or dubious information. Issues included numerous days of missing information; completely missing tapes; radios recorded as on for entire 24-hour periods; and radios recorded as on, but no channel information recorded. The investigation also found that Nielsen neglected to take power outages into consideration when calculating overnights. In total, the investigators estimated, based on the sample, that likely 10% of all of all Nielsen audimeters in use were somehow faulty.[52]

In 1965 Nielsen also faced criticism regarding its data security when former Congressional investigator Rex Sparger stole Nielsen's sample participant data from the dumpsters outside Nielsen's corporate office. Sparger claimed that he did it to show how easy it would be to rig the ratings, in preparation for a book he was writing. Sparger called Nielsen sample homes and told them, "Tell your wife she will see someone she knows in Vietnam on the Bob Hope Show tonight."[53] He also mailed many Nielsen panelist households $3 in cash with an offer to send an additional $5 if they watched the "Carol Channing Special," filled out an attached questionnaire to prove they watched the show, and sent it back. The *Washington Post* reported that "the Hope Special won the highest rating ever for a program of its type" and "the Channing show had a bigger rating than any of its competitors."[54] Nielsen discovered Sparger's activities by tracking the return address for the "Carol Channing Special" questionnaires. Sparger bragged, "I didn't *try* to rig ratings. I *did* rig ratings and on more shows than the one they claim."[55] In 1966 Nielsen sued Sparger for 1.5 million for appropriating trade secrets, interfering with contracts, fraudulent misrepresentation, and unfair competition.[56] Sparker's implication of ratings households in his illegal efforts to thwart the Nielsen ratings—acquiring their phone numbers and home addresses, making unsolicited contact with them—is quite similar to the processes undertaken by ratings companies and market research firms to recruit and equip ratings households. In addition to altering the scale and characteristics of audience data, mechanized ratings technologies beget a new relationship between audience research and the domestic space. Requiring invasive technological set ups and inflicting constant oversight, mechanized meters turned the living space into a corporate, political, arena of surveillance.

The Domestication of Audience Measurement

In Stanley Rogers Resor's reports for the J. Walter Thompson ad agency, he writes about the consumer survey expeditions he oversaw in the 1910s, which entailed ringing hundreds of doorbells, interviewing housewives, and taking inventory of household purchases.[57] In the 1920s, the research department of Curtis Publishing regularly conducted "saturation surveys," surveying every household within a certain square mileage—one such survey boasted contacting all but 727 of the 28,930 households in Watertown, New York. Curtis also conducted "Dry Waste Surveys," in which they collected the trash from, for example, fifty-six households for a period of a month, in order to track family purchases.[58] These examples illustrate the growing coalescence of consumer surveillance and the domestic sphere throughout the early 21st century. But the presence of television, and then (for the first time with mechanized audience measurement devices) the installation of automated observation devices in homes, turned households into "connected homes," primed as 24/7 nonstop surveillance enclosures by the end of the 1950s.

In the 1920s, Herbert Hoover spent much of his tenure as the Secretary of Commerce decrying the use of advertising on radio, arguing that such a significant corporate presence in listeners' living rooms would destroy the sanctity of the domestic space. But just 30 years later, we see even greater integration of the consumption sphere and the private sphere. The presence of radio, television, and advertising in the home redefined the domestic space as an arena of commodification and commercialization. The more regular and more private encounters with marketing in the domestic space motivated the industry's need to "control" such encounters through observation—a task ratings companies achieved through domestically-installed surveillance devices like the audimeter and arbitron. Whereas with

early audimeter models, Nielsen would simply deliver and retrieve audimeter data, with the advent of instant ratings Nielsen's corporate headquarters could use two-way phone line electronically interject into participants living rooms at any moment. By 1959, Nielsen had the ability to detect instantly if devices in sample households were operating properly. A built in electronic device ran a minute-by-minute check on the phone lines that linked the Audimeter to participants' living rooms; if for any reason the telephone company opened a circuit, it was known at once.[59] In addition, every morning at 4am the equipment would send out a signal, which in effect, turned each sample home's TV set on, in order to confirm the correct operation of the audimeter itself.[60]

The stability of the domestic space provided an ideal condition for ratings companies to surveil, entrench, encipher, and map viewing subjects. Thomas Streeter writes, "Life in living rooms is not all that predictable, but it is a safe sociological generalization that it is much more predictable than most other parts of everyday life outside the workplace. Relatively speaking, the audience 'holds still' because within the domestic space it can be counted on to return to the set in fairly predictable ways."[61] Since the early 1960s, the ratings industry has experimented with a wide range of out-of-the box audience measurement methods designed to capitalize on the tractability of the living room space. For example, in 1962 Nielsen experimented with using electromagnetic sensing mechanisms within the seat cushions of panelists' living room furniture, installing the devices in 15 homes in Chicago and Seattle. The press mockingly referred to it as the "Nielsen whoopee cushion."[62] The device would detect electromagnetic waves from the television, indicating when the television was on or off, and would also detect when a member of the family was seated on each seat cushion.[63] Seat cushion sensors had to be placed at least three feet from each other

(so chairs had to be positioned far apart, and there could only be one sensor placed in the sofa). To maintain consistent, verifiable data, each family member was assigned a seat/sensor from which they would always watch television.[64]

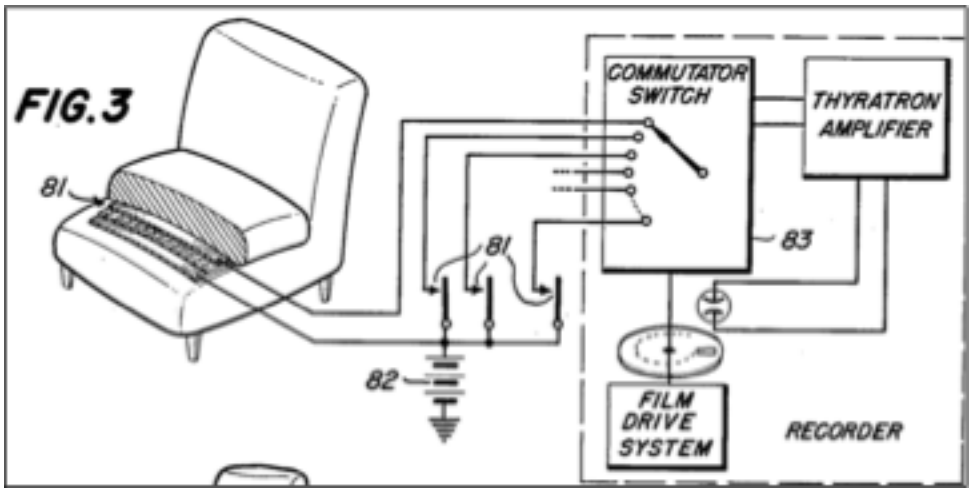


Figure 13: (Patent figure 3) The patent for Nielsen's seat cushion electronic sensing technology outlines the components of system. The sensors picked up electromagnetic waves from the television set and detected body weight to account for both when the television was on and who was watching it[65]

Nielsen's electronic sensing seat cushion technology physically altered domestic viewing practices and the gendered familial relations therein. By establishing minimum spacing requirements between furniture seating and assigning seating, television viewing became a spatially individualized activity with an established hierarchy of comfort that usually privileged the family patriarch. Journalist Paul Richter's description alludes to this gendered hierarchy. He says, "their idea was to put a specially wired cushion on father's easy chair, a second on the sofa where mother reposed, and others where the children usually sat."[66] Indeed, while Nielsen's seat cushion device is a relatively obvious example, consumer surveillance in the home inevitably implicates domestic familial and gender politics. Dallas Smythe writes, "As most audience 'work' centers in the home, all the other functions of the

family become involved in considering the implications of the proposition."[67] With their seat cushion system, Nielsen took effort to downplay their technological imposition on the sanctity of family life. When creating the household recruitment material for these devices Nielsen was in close correspondence with domestic tastemakers, including Frank Nye, former advertising manager of *Today's Housewife* and the publishers of *Lady's Home Journal*. In advocating for the device, Nielsen engineers argued that while panelists would likely display hyper-awareness of the technology's presence in the beginning, it would eventually blend into the background of domestic life. Indeed, one could make the same argument at a macro-cultural level—perhaps the easy familiarity of the domestic space facilitated a smoother integration and normalization of intrusive technological surveillance into private life.

To further validate viewer demographics, Nielsen also installed small film cameras in these experimental panelist homes, which would be activated at various intervals to take photographs of the audience members seated in the television viewing space.[68] The technology patent attempts to preemptively address some of the surveillance concerns the system entails. It states:

> It will be appreciated that many persons are often in a relaxed state while viewing television receivers and, therefore, may not be clothed, etc. in a manner in which they would desire to be photographed. In order to respect their privacy and at the same time obtain information indicative of the audience composition of the television receiver, a diffusion screen may be included in the optical system of the camera so as to blur the image of the audience by a controlled amount thereby permitting identification of the individuals in so far as audience composition is concerned but not to a degree to provide any detail of the costume or the like.[69]

The element of the film camera technology that the passage refers to was called the "privacy control unit," which consisted of a switch that viewers could adjust in order to blur the photographic images taken for a designated time of a half-hour.[70] At one point Nielsen also

considered implementing a camera component, such as this, that "takes continual photographs of the viewers" alongside audimeters in their national panel, but decided against it due to its "characteristics which might not be welcome in typical homes."[71] Ultimately, the electronic sensing seat cushion installations were prone to mechanical failure, and thus short lived.

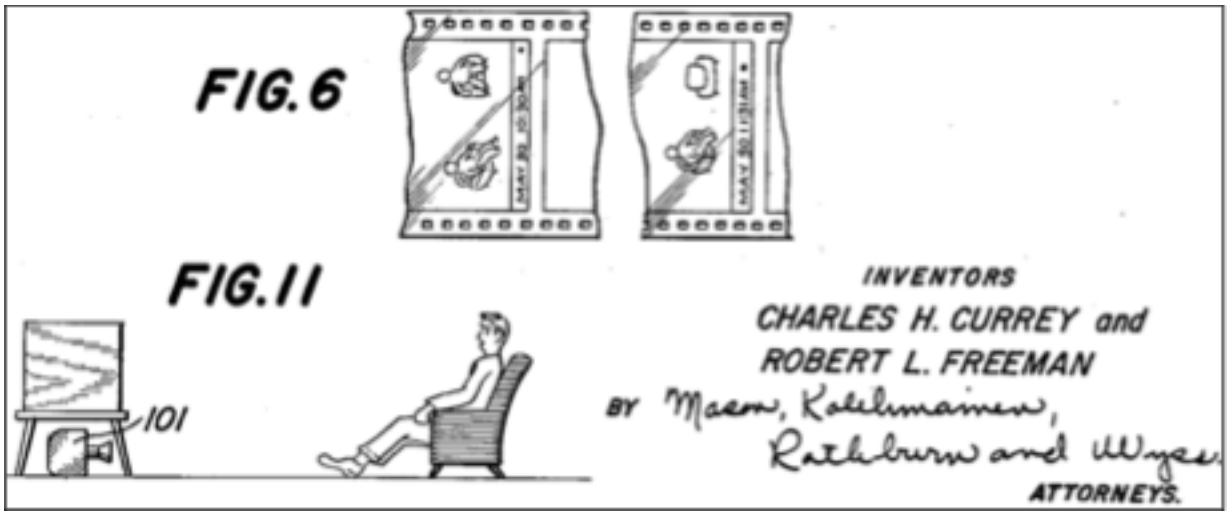
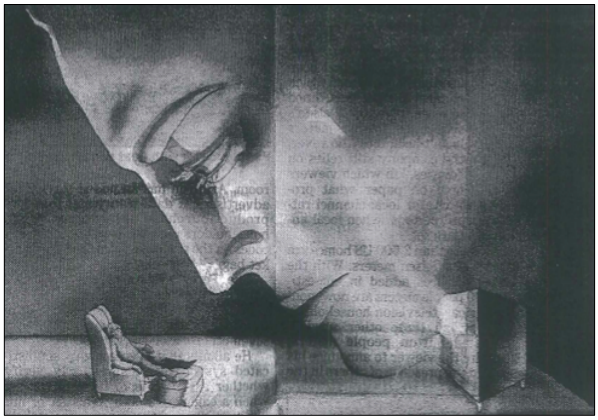


Figure 14: (Patent figures 6 and 11) Top: The electronic sensing technology includes a supplemental camera that created a time stamped record of who was in the living room. Bottom: Depending on television placement, the film camera could be placed below or on top of the television set[72]

In *Make Room for TV* Lynn Spigel discusses the "prying eye" rhetoric that emerged in the popular press and in the content of early television programs, characterizing television as a "problem window" that could potentially peer into the domestic space. Spigel quotes an article from *The Saturday Evening Post* that warns: "[Now comes] another invasion of your privacy…TV's prying eye may well record such personal frailties as the errant husband dining with his secretary." While these early concerns about television's "prying eye" are often discussed now as humorously neurotic, they were nonetheless valid. Television was indeed returning the gaze. However, it wasn't the television screen that was doing the

peering; it was the small ratings box on top of the set. Or, in the case of the participants of Nielsen's seat cushion system, it was an actual camera sitting ominously on top of the set.



Figures 15 and 16: Peoplemeters reignited warnings about television's "watching eye" and Big Brother in the TV set[73]

The installation of automated ratings technologies in the domestic space in the mid-20th century established panelists' living rooms as an appropriate and efficiently cartographical arena of consumer surveillance, and this recognition influenced the future of surveillance engineering. In Chapter 3 I return to this issue, demonstrating how biometric ratings technologies capitalized on the containability and tractability of the domestic space, and the body's labor within it, in effort to implement a so-called passive peoplemeter system.

Conclusion

The evolution of the broadcasting industry in the 1950s occurred synergistically with the growth and evolution of the ratings industry. On the one hand, ratings companies improved their methods and technologies to offer more efficient, abundant, and accurate data in order to stay competitive and relevant in a changing television industry. But, at the same time, the sophistication of audience data influenced the television industry's relationships with sponsors, programming practices, and content choices—so much so, that by the end of

the 1960s this symbiotic relationship led to congressional investigations of the influence of television ratings on television programming and content. But moreover, radio and early television shaped modern regimes of consumer surveillance. Namely, the growth of electronic media motivated the turn toward mechanized/computerized regimes of audience research, in turn, making audience data *big*: farmable, predictive, and storable. The successes and failures of devices like the Radio Graph, the Programeter, the audimeter, and the arbitron demonstrate the problematic epistemologies of veracity that are inherent to mechanized, data-driven consumer research. The installation of audimeters and arbitrons in homes also constituted the first form of 24/7 electronic consumer surveillance in the domestic space, normalizing the private sphere as an appropriate domain of consumer research. In other words, ratings devices converted televisions into surveillance devices; thus, any TV with a ratings box was a smart TV, even in the 1950s.

Datafication has, in some ways, been taken for granted as a recent phenomenon. For example, critical data studies only recently became a common sub-discipline of media studies, despite the fact that our entertainment media industries were founded on and have always beholden to audience data and consumer surveillance. I do contend, however, that are many aspects of data culture are quite "new." As Gitelman and Jackson write, "The economy of data has an accelerated recent history."[74] Digitization has made our everyday lives more susceptible to and more reliant on datafication, and the impacts of this on politics, economy, and culture are immense. There's also—what Beniger describes as a new stage in the development of the Information Society since the early 1970s —a "progressive convergence of all information technologies—mass media, telecommunications, and computing—in a single infrastructure of control at the most macro level."[75] This is perhaps why the discipline

of media studies in such an apt positon to grapple with the so-called contemporary data age. Finally, contemporary data culture contends with the capabilities and social consequences of new analytical techniques like artificial intelligence and machine learning that computationally mine data, detect patterns, build predictive models, and attempt to optimize outcomes. I discuss some of these aspects of digital data collection in the Conclusion. But in this chapter, in describing the automation of TV ratings methods as a turn toward Big Data, my aim is to use the unique locus of audience measurement to recuperate the historical techno-economic and cultural roots of contemporary data culture. This so-called recuperative outlook is only possible because of the headways that critical data studies have gained toward understanding the logics and implications of contemporary data regimes.

Notes

[1] Karen Buzzard, *Chains of Gold: Marketing the Ratings and Rating the Markets* (New Jersey: Scarecrow Press), 1990; Eileen Meehan, *Why TV Is Not Our Fault: Television Programming, Viewers, and Who's Really in Control* (Lanham, Maryland: Rowman & Littlefield), 2005.

[2] Dallas W. Smythe, "On the Audience Commodity and its Work," *Dependency Road: Communications, Capitalism, Consciousness, and Canada* (Norwood, NJ: Ablex, 1981), 22-51; Thomas Streeter, "Viewing as Property: Broadcasting's Audience Commodity" *Selling the Air: A Critique of the Policy of Commercial Broadcasting in the United States* (University of Chicago Press, 1996), 275-308; Eileen Meehan, "Gendering the Commodity Audience: Critical Media Research, Feminism, and Political Economy" *Media and Cultural Studies*, Ed. Meenakshi Gigi (Durham, Douglas M. Kellner. Malden, MA: Blackwell, 2013), 311-321.

[3] Joseph Turow, *Breaking up America: Advertisers and the New Media World* (University of Chicago Press, 1998); Cynthia Meyers, *A Word from Our Sponsors: Adman, Advertising, and the Golden Age of Radio* (New York, NY: Fordham University Press, 2013).

[4] James Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA: Harvard University Press, 1986), 8.

[5] Ibid., 378.

[6] Ibid., 378, 382.

[7] Sarah E. Igo, *The Averaged American: Surveys, Citizens, and the Making of a Mass Public* (Cambridge, MA: Harvard University Press, 2010), 133.

[8] Mark Balnaves and Tom O'Regan, *Rating the Audience: the business of media* (London: Bloomsbury, 2011), 21-25.

[9] Beniger, *The Control Revolution*, 399.

[10] Greg Elmer, *Profiling Machines: Mapping the Personal Information Economy* (Cambridge, MA: MIT Press, 2004), 58-60.

[11] Beniger, *The Control Revolution*, 384.

[12] Rob Kitchin, "Big Data, New Epistemologies and Paradigm Shifts," *Big Data & Society* (2014), 1.

[13] Kitchin, "Big Data, New Epistemologies and Paradigm Shifts," 1-2.

[14] Balnaves and O'Regan, *Rating the Audience.*

[15] Thomas Whiteside, "Hooperism Clears the Air," *New Republic*, 5 May 1947, 4-5.

[16] Arthur C. Nielsen Jr, "Here Goes – At Least One Man's Version of How the Whole Thing Got Started," Personal letter to Nielsen clients, 30 November 1987, 1.

[17] Arthur C. Nielsen, "Television Audience Research," An Address to the Executives of Unilever, N.V. Rotterdam, Netherlands, 23 April 1959; Arthur C. Nielsen, "Trends Toward Mechanization of Radio Listening Research," *Journal of Marketing*, 1942.

[18] Buzzard, *Chains of Gold*, 53.

[19] Arthur C. Nielsen, "Two Years of Commercial Operation of the Audimeter and the Nielsen Radio Index," *Journal of Marketing*, 1 January 1945, 247.

[20] Lisa Gitelman and Virginia Jackson, "Introduction," *'Raw Data' is an Oxymoron*, ed. Lisa Gitelman (Cambridge, MA: MIT Press, 2013), 5.

[21] Gitelman and Jackson, "Introduction," 2.

[22] Arthur C. Nielsen, "Television Audience Research"; Arthur C. Nielsen, "Trends Toward Mechanization of Radio Listening Research."

[23] Kitchin, "Big Data, New Epistemologies and Paradigm Shifts," 2.

[24] Arthur C. Nielsen, "New Facts about Radio Research," An Address to the Radio Executives Club of New York. Hotel Roosevelt, New York, 21 March 1946, 53.

[25] Arthur C. Nielsen, "Greater Prosperity Through Market Research: The First Forty Years of A.C. Nielsen Company," Address to the Newcomen Society for the study of the history of Engineering and Technology. Ambassador West Hotel, Chicago, Illinois, 30 April 1964, 32.

[26] Arthur C. Nielsen, "Television Audience Research."

[27] Arthur C. Nielsen, "Two Years of Commercial Operation," 247.

[28] "Nielsen Television Index (NTI) In Action," Publication of A.C Nielsen Company, February 1962.

[29] Arthur C. Nielsen, "New Facts about Radio Research," 21.

[30] Arthur C. Nielsen, "Greater Prosperity Through Market Research," 54, 56.

[31] Arthur C. Nielsen, "Television Audience Research."

[32] Jennifer Holt, "Cloud Policy: Researching a Regulatory Crisis." Keynote address delivered at "The Social and Political Life of Methods." University of Helsinki, Finland. 23 October 2018; See also, the Reddit forum dedicated to such images, r/ServerPorn: www.reddit.com/r/ServerPorn/.

[33] "Nielsen Television Index (NTI) In Action," Publication of A.C Nielsen Company, February 1962.

[34] Ibid.

[35] Chauncey Richard Evans, assignor to A.C. Nielsen Company, "Automated Audience Rating System." U.S. Patent 2,958,766, filed 26 November 1956, and issued 1 November 1960.

[36] Val Adams, "A New Product: Instant Ratings," *New York Times*, 29 Decenber 1957, X 11.

[37] Arthur C. Nielsen, "New Facts about Radio Research," 62.

[38] Arthur C. Nielsen Jr, "Here Goes," 4.

[39] Arthur C. Nielsen, "Television Audience Research."

[40] Arthur C. Nielsen, "Greater Prosperity Through Market Research," 53.

[41] "Introduction to the NRI Complete Report," Nielsen Radio Index, 24 June 1949, 19.

[42] Moreover, Nielsen-conducted surveys revealed that, in typical households, tuning exceeded listening by about 3%—the difference between a 10 and a 10.3 rating. Arthur C. Nielsen, "New Facts about Radio Research," 26; "Introduction to the NRI Complete Report," Nielsen Radio Index, 24 June 1949, 19.

[43] Elmer, *Profiling Machines*, 57.

[44] Arthur C. Nielsen, "Greater Prosperity Through Market Research," 29.

[45] Beniger, *The Control Revolution*, 424.

[46] Stan Augarten, *Bit by Bit: An illustrated History of Computers* (New York: Ticknor and Fields, 1984), 97.

[47] Arthur C. Nielsen, "New Facts about Radio Research," 53

[48] Arthur C. Nielsen, "New Facts about Radio Research," 10.

[49] Personal e-mail correspondence with Roger D. Percy, April 29, 2016.

[50] Arthur C. Nielsen, "New Facts about Radio Research," 53.

[51] Mark Andrejevic argues that the vast quantities of data being collected, stored, shared, and interpreted in the digital age results in an "infoglut," where the abundance of data we encounter overwhelms our ability to comprehend it. Mark Andrejevic, *Infoglut: How Too Much Information is Changing the Way We Think and Know* (New York: Routledge, 2013).

[52] "Louisville's 11 Audimeter Reports Questioned," *Broadcasting*, 1 April 1963, 34.

[53] Lawrence Laurent, "Prober Tells How to Rig Ratings for Fun, Profit," *Washington Post*, 26 March 1966, A1.

[54] Ibid., A5.

[55] Ibid., A1.

[56] Ibid., A4.

[57] Stanley Rogers Resor, "Correspondence with James Walter Thompson—Re: Advancements in Market Research," 1 October 1918. (Stanley Resor Papers at Hartman Center for Sales, Advertising & Marketing History, accessed June 2017)

[58] Beniger, *The Control Revolution*, 387.

[59] "New Research Tools For Radio/TV," *Sponsor*, 31 October, 1959.

[60] Richard Trubo, "A.C. Nielsen and the TV Numbers Game," *Chicago Tribune*, 22 October 1978, 32.

[61] Streeter, "Viewing As Property," 546.

[62] Paul Richter, "Eyes Focus on 'People Meter' as it Gauges TV Viewing," *Los Angeles Times*, 10 May 1987.

[63] Inventors Charles H. Currey and Rober L. Freeman, "Method and Apparatus for Automatically Determining the Listening Habits of Wave Signal Receiver Users," U.S. Patent 3,056,135, filed 9 July 1957, and issued 25 September 1962. Page 2.

[64] Personal interview with Lee Cooper (technology consultant, Nielsen, 1979-88), 20 September 2016.

[65] Currey and Freeman, "Method and Apparatus for Automatically Determining the Listening Habits of Wave Signal Receiver Users." U.S. Patent 3,056,135, page 2.

[66] Richter, "Eyes Focus on 'People Meter.'"

[67] Smythe. "On the Audience Commodity and its Work," 230.

[68] Personal interview with Lee Cooper (technology consultant, Nielsen, 1979-88), 20 September 2016.

[69] Currey and Freeman, "Method and Apparatus for Automatically Determining the Listening Habits of Wave Signal Receiver Users." U.S. Patent 3,056,135, quoted from sections 11 and 12.

[70] Personal interview with Lee Cooper (technology consultant, Nielsen, 1979-88), 20 September 2016.

[71] Arthur C. Nielsen, "Television Audience Research."

[72] Currey and Freeman, "Method and Apparatus for Automatically Determining the Listening Habits of Wave Signal Receiver Users." U.S. Patent 3,056,135, page 3.

[73] Doug Garr, "People Meter Revolution," *Video*, September 1987, 166; Arthur Unger, "TV's Watching You," *Christian Science Monitor*, 20 April 1988, 18.

[74] Gitelman and Jackson, "Introduction," 2.

[75] Beniger, *The Control Revolution*, 25.

Chapter 2

Viewer Diaries: Ratings Subversion and the Labor of Self-Report Surveillance

The first two decades of broadcast audience measurement, between the mid-1930s and mid-1950s, were when many of its defining logics were formed and crystalized. By the end of the 1950s, the television ratings industry was largely dependent on technological automation and entrenched in big data logics. Nielsen and the American Research Bureau (ARB)[1] used mechanical audimeters and arbitron devices, respectively, to measure television audiences for their national ratings indexes. These mechanical meters were praised for their objectivity and efficiency as well as their reduced dependency on viewer participation. These black-box like devices monitored viewers from within their own living rooms, from atop their television sets, sending viewing data every 30-seconds back to Nielsen's headquarters to be cleaned, aggregated, farmed, and stored. But these mechanical methods also induced criticism—many argued that a metered record of television set tuning did not equate to a real viewer watching the television.

Meanwhile, the number of television stations on the air increased throughout the early 1950s, creating demand for more comprehensive local station coverage information and audience data that could help attract local advertising revenue. Since local television stations were more financially strapped and local audience markets more volatile (requiring more frequent panelist turnover), mechanical meters were unaffordable and impractical. Instead, viewer diaries, which the ratings industry had been experimenting with throughout the 1940s, became the preferred method for local markets.[2] Television viewer dairies have been the longest-standing and most consistent method for collecting audience data. If mechanized meters were defined by and valued for their objectivity, the utility of the viewer diary is in its

subjectivity, in its very dependence on active participation. The viewer diary precludes a human hand behind its data—confirmation of a conscious person behind the mechanical set.

In this chapter, I contend with the viewer diary as a form of self-tracking or self-report surveillance. Gina Neff and Dawn Nafus define self-tracking broadly as "the practices and the social phenomenon of people keeping track of themselves."[3] Contemporary scholarship on self-tracking traces its roots to the time-honored technologies of pen and paper and the practices of recording everyday thoughts, goals, or measurements in diaries or journals. Michel Foucault traces how these practices of "knowing oneself" through confession or reflection, which he describes as "technologies of self," have worked throughout history as mechanisms for integrating the autonomous self into modern regimes of discipline and morality.[4] More recently, the contemporary proliferation of self-tracking wearable devices and apps have motivated scholars to analyze practices of quantifying the self through sociological and data politics frameworks.[5] Of course, many practices of self-tracking are shaped by top-down technological design or directed toward commodifiable utility, and moreover, self-tracked data is often coopted by corporations who use it in ways that are outside of consumers' control. For this reason, many forms of self-tracking are also forms of surveillance. But still, many scholars and quantified self-enthusiasts argue that self-tracking is an empowering way to "know oneself" on a deeper level or enact agency within capitalist regimes that constantly deny subjects' ownership of their own data. This inherent contradiction within the politics of self-tracking aligns with Foucault's claim that "the self" is formed through the mutual effects of technologies of domination and technologies of the self.[6] While the viewer diary, as a brick and motor technology, doesn't map seamlessly onto contemporary tech-centric definitions of self-tracking, more than making an ontological

claim, I'm interested in using the theoretical issues that contemporary practices of self-tracking and surveillance are bringing to light—such as questions about what constitutes legitimate/reliable knowledge and how "the self" gets defined and negotiated in the relationship between data and community—in order to contend with the viewer diary's historical role within audience measurement.

The subjective nature of the viewer diary means that its data is less verifiable. Can viewers remember to record everything they watch? Can their viewing even conform to the diary's program-centric design? Are viewers truthful about the programs they watch and record? Just as the friction of mechanical limitation is intrinsic to meter devices like the audimeter and arbitron, the friction of user agency is inherent to the technology of the viewer diary. In this chapter, more than just pointing out the fallibility of the viewer diary method, I am interested in what the method can tell us about the unique function of subjective data in consumer research. Indeed, whether the viewer diary's longevity is due to happenstance, market failure, or utility, its durability has meant something to audience data regimes. I take the viewer diary—complete with the illusory TV viewing figure it materially signifies—as a technology of data production. In its design logics, its utility, and even in its failures, the viewer diary is a political technology; it mediates subject agency and corporate power, leisure and labor, individual identity and collective status.

In this chapter, while I track the long history of viewer diaries—from their wide-scale implementation in the mid-1940s to their demise in 2018—I focus particularly on the 1960s and 70s, a period when the industry's increasingly frenzied "ratings race" and a growing emphasis on demographics manifested in a public fascination with the problematic epistemologies of ratings and the mystical band of panelists whose viewing dictated them,

called the Arbitron/Nielsen Families. Starting in the 1960s and 1970s, the Ratings Family became a sort of cultural imaginary signifier, frequently depicted in the news and in popular culture as a locus where the incongruences of popular culture and cooperative consumer surveillance were enacted. The Ratings Family has the power to stand in for the collective citizenry and influence the nation's programming, to decide how to represent their own tastes and identities as well as that of their representative demographic groups, and even to determine the fate of industry careers. At the same time, the Ratings Family performed an (often taxing) underpaid labor for the television industry, under constant surveillance, forced to share their domestic life (in mediated form) with corporate America. Countless press articles and newscasts (and also the plots of fictional TV programs) have focused on Ratings Families' tendencies to purposefully falsify or simply fail to record their television viewing accurately. Thus, the Ratings Family has been depicted in the media as, at once, an illusory icon of our shared television culture and an epistemologically problematic technology of data production.

Scholars who write on self-tracking and self-quantification often use interviews or pseudo-ethnographic methodologies in order to center subjects and their agency in self-tracking practices. I do the same here, focusing on how panelists describe their labor of being a Ratings Family and their own experiences of enacting agency while self-recording their viewing. First, using textual analysis, I analyze how the labor of being a Ratings Family is depicted (reflexively) in newscast. I then put the semantics of these depictions up against the direct ways that former Arbitron/Nielsen panelists recount their own experiences of being Ratings Families. Utilizing interviews that I conducted with 37 former Nielsen/Arbitron panelists (all of which were panelists prior to 2000), I analyze how panelists recount their

own experiences of thwarting the viewer diary data collection process, by cheating, faking, or otherwise manipulating diary entries. In the process of falsifying their data, panelists often contend with the politics of their own tastes and cultural identity, both within their own households and the nation at large. In this way, their self-tracking of their viewing becomes also a subconscious exploration of their selfhood.

Viewer Diaries and Local Ratings

The number of television stations on the air increased from 16 in 1948 to 354 in 1954, creating demand for more comprehensive local station coverage information and audience data that could help attract local advertising revenue. While Nielsen is often thought of as the godfather of mechanized ratings, despite Hooper's experiments with using diaries for measuring radio throughout the 1940s, it was James Seiler, the founder of ARB, who broke ground in gaining industry-wide acceptance for the viewer diary method, promoting the methodology to networks and advertisers throughout the late 1940s.[7] A 1962 ARB press release recounted:

> Even before the formation of ARB in September 1949, Director James Seiler became firmly convinced that the best way to measure actual viewing [of] television programs was to obtain this information directly form the persons who were doing the viewing. Early experiments led to the choice of the diary as the most accurate and efficient ways of doing this, and today, many thousands of diaries later, Mr. Seiler's respect for this method is still growing.[8]

In advocating for the viewer diary, Seiler focused on the value of self-reported viewing, on data derived directly from the viewer him/herself. The subjectivity of this data, he argued, held a unique value.

ARB published its first local television ratings report in 1950, which they called the City Report, and Nielsen followed, entering the local ratings market in 1954 with the

publication of the first Nielsen Station Index (NSI). Arthur Nielsen, ever the technological solutionist, chose to run a dual-method in the 50 largest local markets, supplementing viewer diaries with a much-less technologically advanced (and thus cheaper) electronic meter called a recordimeter, which was attached to panelists' television sets. The recordimeter detected when the television was turned on, but not which channel it was tuned to (panelists had to record this in their viewer diaries). It also reminded viewers to fill out their diaries by flashing a light and buzzing every quarter-hour.

While the process of recruiting panelists has varied throughout Nielsen's and Arbitron's histories, Nielsen's process often involved sending a postcard to panelists to tell them that they've been chosen to be a Nielsen family, assigning a representative to follow up with a recruitment pitch over the phone, and then once panelists agree to participate, sending them multiple reminders ahead of and during each Sweeps period.

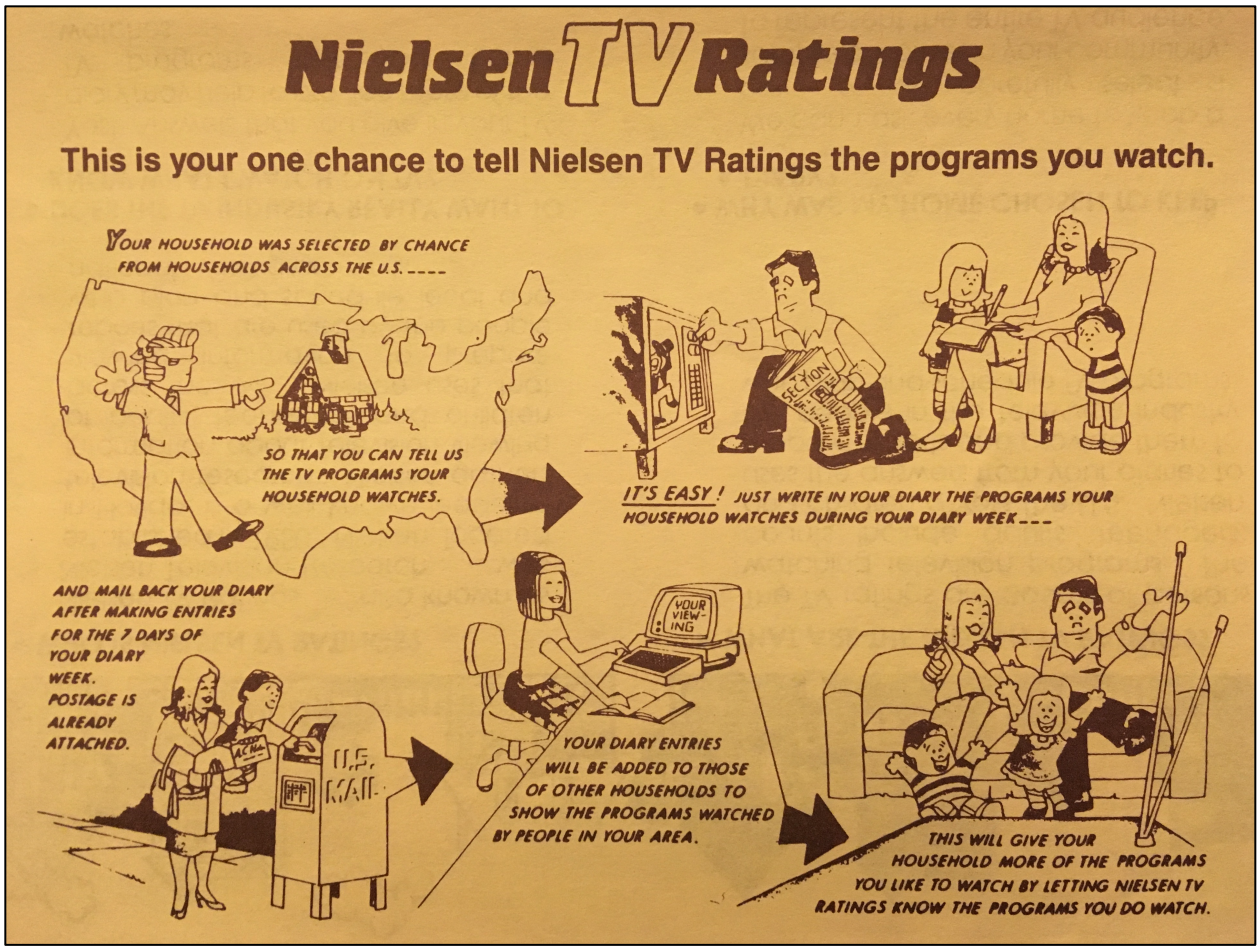


Figure 1: Nielsen panelist promotional material from 1994[9]

While the monetary incentive provided for panelists also varied, for a large part of Nielsen's history, it included a $25 flat fee in the beginning, and then $1 for each diary entry period, which was later raised to $5, and then $15. Nielsen also agreed to pay for half of any TV repair bills, contribute $25 toward the purchase of any new television set, and give panelists an additional $5 a month for each television set they owned.[10] The rate at which recruited families agreed to participate as panelists, or the cooperation rate, also varied throughout Nielsen's history, between 60% to 80%.[11] Throughout the 1950s, panelists recorded all viewing in a household diary, but starting in 1964, they were given a diary for each television in their household.

Both ARB and Nielsen put together panels of households that were selected to be statistically representative within a designated geographical area. The process of creating this market geography for local ratings was a much-contested methodological conundrum throughout the 1950s and 1960s, with ARB organizing its station indexes around urban centers, which they called Areas of Dominant Influence (ADIs), and Nielsen designing a geographical index based on station signal reach, which they called Demographic Market Areas (DMAs).

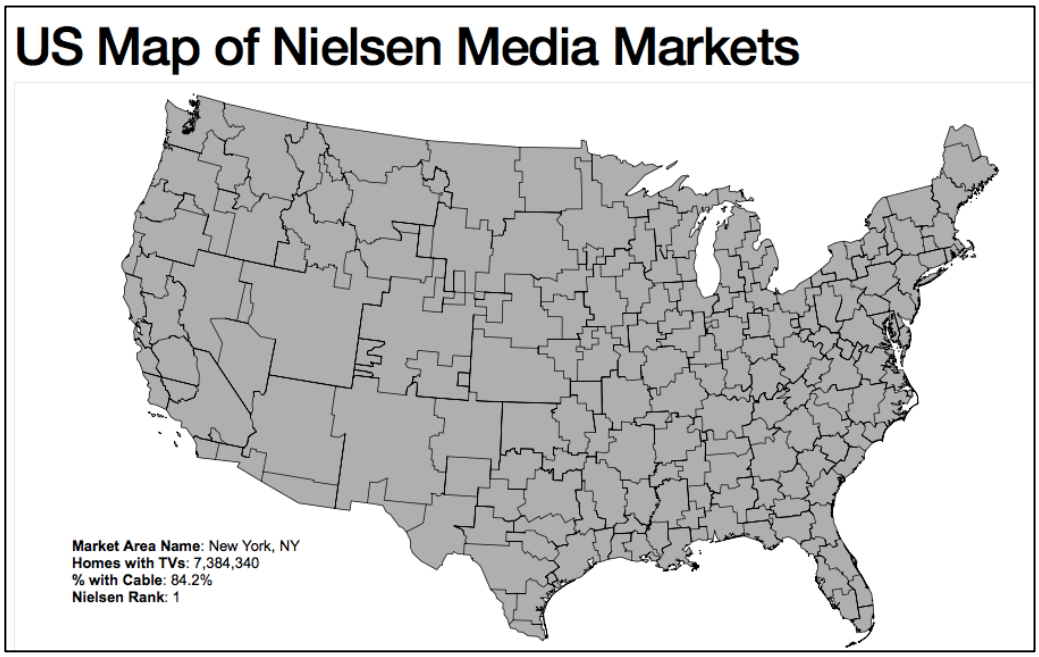


Figure 2: Current map of Nielsen's 210 Demographic Market Areas[12]

In their early years, ARB's and Nielsen's different approaches to market geography changed the character of their ratings reports, with ARB's privileging programs geared to urban audiences (with their city-centric ADI's) compared to Nielsen's more representative capture of rural audiences (with their more geographically dispersed DMAs). The politics of ARB's and Nielsen's different market geographies, combined with the geographical distribution of CBS's, NBS's, and ABC's local affiliates, had substantial effects on the networks'

approaches to programming and advertising procurement throughout the 1960s. Mark Alvey details these different strategies in his article, "'Too many kids and old ladies': quality demographics and 1960s US television."[13] Following their late 1950s and early-60s success appealing to mass audiences with programs like *Gunsmoke, The Ed Sullivan Show*, *I Love Lucy*, *The Red Skeleton Show*, CBS continued this strategy into the 60s' with a string of programming aimed at rural audiences (motivated, in part, by the fact that a majority of the network's local station affiliates were in rural areas), such as *The Beverly Hillbillies*, *Green Acres*, and *Hee Haw*. NBC responded with its own strategy, arguing that that, although lower in numbers, its upscale urban demographics were more *valuable* (younger, higher income). ABC used a similar strategy of catering to the youth market, with 7 of their top 10 shows being geared toward younger demographics.[14]

Indeed, for the first four and a half decades of television audience measurement, until the implementation of the peoplemeter in 1985, diaries were the main method for collecting demographic information. The first thing panelists do when they agree to become a Ratings Family is complete a demographic survey, where they report their sex, age, race, ethnic background, education, and income. Part of the value of the diary was that it could easily be altered to collected different or additional viewing or demographic information. In an industry promotional pamphlet, ARB explains:

> In addition to viewing and audience composition information, the diary is also designed to gather information on the age, sex and number of school years completed by each person in the household; whether or not the housewife works outside the home more than 35 hours a week; occupation of the male head of household and type of employment; which commercial during the week was considered 'best' by family vote; number of television sets being used in the home; whether or not the home has a color television set; whether or not the home subscribes to a community antenna or cable system and the name of the company; county and state of diary home residence, the time zone, channel number, call letters and city locations of all television stations that can be received; and comments and suggestions of the diary keeper.[15]

Nielsen's standard diary requested panelists' age groups (broken out into ~4-year ranged groups), whether they are "of Spanish/Hispanic origin or descent," their race (broken out into the limited categories: White, Black, Asian, Pacific Islander, and Other), and the education level of the male and female head of the house.

The diaries themselves were ~5 by 7-inch pamphlets with, what one panelist describes in a press interview as, "cutaway corners and shaded columns like and elementary schoolteacher's grade book."[16] Families are asked to record, for each fifteen-minute period, every program watched or if the set was not in use; they were also asked to note the station name and channel number. Starting in the early 1960s, panelists also wrote down the names of each member of their family, indicating with a check mark whether that family watched the listed program.

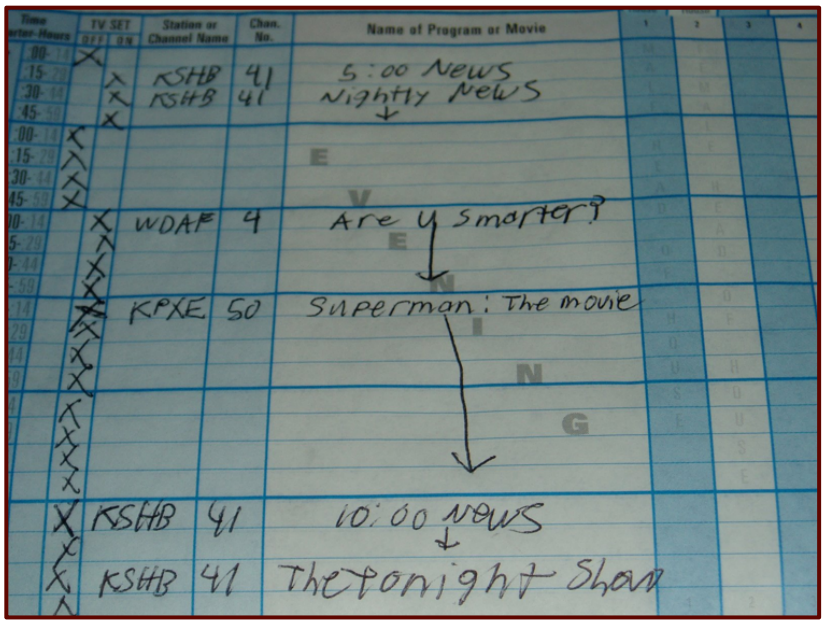


Figure 3: For each 15-minute time period, viewers recorded whether their TV set was turned on or off. And then for each period it was on, the station name, channel number, and name of program[17]

Starting in the mid-1990s, panelist also recorded their t*ype* of viewing; diaries included options for Live TV, DVR, or "other" viewing.

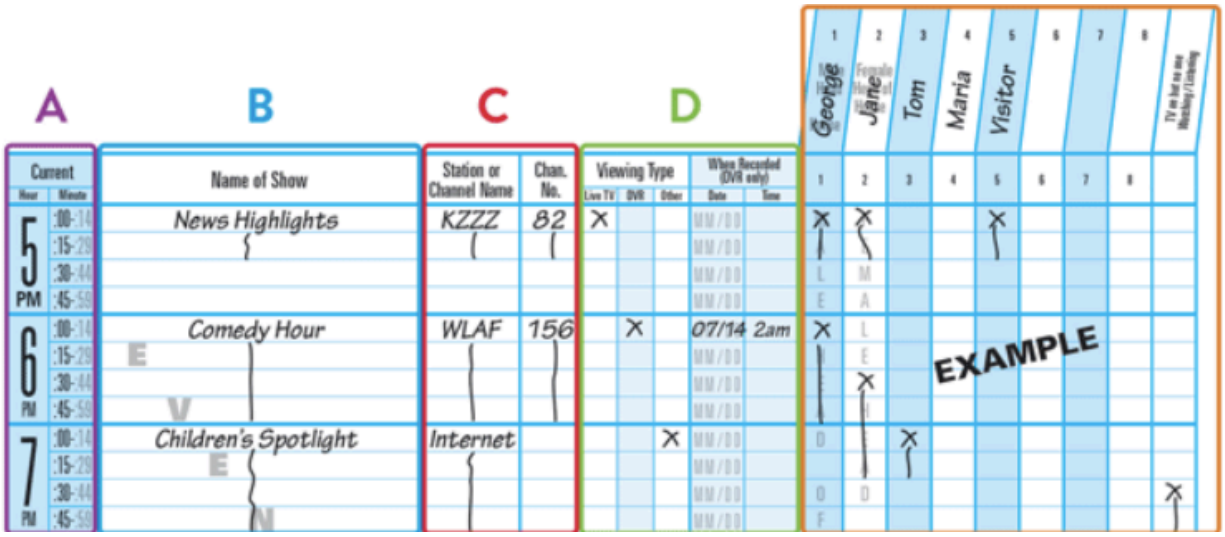


Figure 4: In the post-DVR, and later, the streaming media era, viewer diaries requested panelist to indicate their type of viewing[18]

Both ARB and Nielsen utilized a system of measuring local ratings in "sweeps," distributing diaries for their panelists to fill out for a four-week period each quarter—in February, May, July, and November—and releasing quarterly station indexes and local ratings reports based on the data. Sweeps periods have also had a substantial influence on television programming, shaping when, throughout the year, new series are put to air and encouraging networks and local stations to save their series' cliff-hangers, television specials, and event programming for sweeps periods. Sweeps periods have also had a substantial influence on television programming, shaping when, throughout the year, new series are put to air and encouraging networks and local stations to save their series' cliff-hangers, television specials, and event programming for sweeps periods. In addition to these programming strategies, some local stations have used more sinister methods to try to increase their ratings during sweeps. In 1987 KABC aired an "Eyewitness News" segment on

the ratings during the May sweeps period. After complaints from competitor stations, Nielsen published its May 18-25 ratings book without the 11pm ratings for all LA stations. Nielsen claimed that KABC's program constituted an attempt to single out panel members and unfairly lure them in.[19] And still, other stations have appealed to ratings families in even more direct ways. In July 1999, WHLT in Hattiesburg, Mississippi, aired a pitch to viewers: "I'm Rex Thompson, chief forecaster for WHLT 22 Daily News. If you're keeping track in a television diary which programs you are watching this week, write us down.... Without you, we wouldn't be able to continue providing 22 Daily News at 5, 6 and 10 p.m. So, if you've got a television diary or know someone who does, make sure, write us down: WHLT 22 Daily News."[20] And two sweeps periods prior, another station, WSAV in Savannah, Georgia aired a short pitch: "You're watching News 3 at 6 on WSAV. If you have a ratings diary, please write it down now."[21] In November 2000, Nielsen sent a letter to all its clients informing them that stations caught targeting diary panelists would get one warning before being d-listed.

Ratings in the 1960s and 70s: Numbers & Demos as Lifeblood

Just a decade after Nielsen published the first national ratings index, the television industry's over-reliance on ratings resulted in an abundance of lowest common denominator (LCD) programming. At the National Association of Broadcasters convention in 1961, FCC Chairman Newton Minow famously described of the state of television programming as a "vast wasteland." These factors, in conjunction with the quiz show scandals, motivated a 7-year series of Congressional investigations (1957-1964) into the networks' over-reliance on ratings and their influence on programming. During the hearings, the House Sub Committee

on Television Ratings investigated Nielsen's and Arbitron's measurement methods. In Chapter 1, I detailed some of the Committee's findings regarding the audimeter and arbitron, including their frequent mechanical failures that rendered around 10% of them inoperable at any given time and an overall lack of oversight of the quality of data collected. The methodological problems with viewer diaries also came to light in a very public way. During one hearing, Representative Robert Richardson introduced samples extracted from Nielsen viewer diaries. In one, a viewer had written: "Turned TV on this morning so baby could watch it. I had too much to do today because I had to go away for a while." Richardson pointed out that the entry was counted valid by Nielsen.[22] The resulting FTC report concluded that some viewer diaries "contain hearsay reports and estimates of the diary keeper" and "all viewing by all members of the family is not always recorded in the ARB diary at the time of viewing."[23] In the end, what resulted from these investigations was a mandate for Nielsen and Arbitron to be more upfront about their methodological flaws and a new industry-funded oversight and accreditation board called the Broadcast Ratings Council (later called the Media Ratings Council [MRC]). But perhaps the most significant outcome was a widespread public awareness of the inherent flaws in the ratings process.

Still, throughout the 1960s and 1970s, audience ratings increasingly became the life blood of the television industry, creating intense competition between the networks. In particular, the industry's growing reliance on "overnights" created what Todd Gitlin characterizes as a "frenzy of short-term thinking" that shaped industry programming strategy.[24] Gitlin writes, "By the late seventies, major newspapers were listing the week's top-rated shows, stock market analysts and major investors as well as fans were paying heed, and all this attention was cycling back to the networks in the form of still more intense

competition."[25] This frenzied, environment of competition, meant ratings became a sort of industry "watch dog," keeping network executives, producers, and creatives talent constantly on their toes, with their jobs hanging on the numbers. Journalist Richard Trubo wrote, in a 1978 *Chicago Tribune* article, "Each morning, as the ratings from the previous night arrive by teletype at network headquarters, there is a masochistic tension pervading the executive suites. Did their shows do well last night? And if not, are their jobs in jeopardy because of it?"[26] The networks all hired programmers whose jobs it was re-arrange schedules in order to capitalize on minute changes in viewing trends, a practice called "competitive scheduling," which included strategies like "floating," moving programs around in the schedule, and "stunting," rescheduling programs at the last minute in the hope of increasing ratings. Since programs were given less time to succeed, life spans for series programming were reduced. Moreover, in attempt to remove the uncertainty, the networks became increasingly reliant on repetitive program formats, such as spinoffs, copies, and recombinants (by the early 1960s, there were 100 off-network series in syndication).[27]

This ratings frenzy took equal hold in local markets, where a few ratings points could mean vast changes in a local station's operating budget. In 1969, Jack Harris of *Variety* described the growing impact of ratings on station programming: "There are many stations that preempt many of the network public service special because they are bad for ratings—or preempt new programming on the network to carry last year's reruns as spot carriers to produce more revenue. There are stations that program for the lowest common denominator—offering horror, sex, and violence—because they believe this is the way to ratings and revenue."[28] Moreover, the smaller number of ratings panelists in local markets means that each panelist has an impact on the numbers. Television market analyst Tony

Hoffman explained, “You get a bad number one morning and people start calling up from headquarters saying what happened? You start trying to figure out what happened and what may have happened is that one Nielsen viewer decided not to watch your news last night, and that can change your Nielsen ratings dramatically…”[29] Local ratings are especially important for local news, the ad revenue for which often accounts for 40% of a station’s profits.[30] In the *Los Angeles Times* Robert Scheer writes, “The local news ratings then take on the same significance for the local stations that prime-time ratings do for the networks… In Los Angeles, it is estimated that each extra rating point in the early news is worth $1 million in additional annual revenue.”[31] As a result of the heightened ratings competition, by 1977 67% of stations (84% in major markets) hired full-time ratings consultants. Scheer describes them as, “A new breed of media manipulators who have helped make local news broadcasting almost unrecognizable by past journalistic standards and profitable beyond a station manager’s wildest dreams.”[32] In 1978, *Entertainment Industry Magazine* published a profile on local news ratings consultant, in which they interviewed one of the most industry’s most in-demand ratings consultants at the time, Frank Magid. They write, “A few fast rating points is all in fact that some stations want. Every time a ratings book comes out, [sic] Magid says, he receives a handful of phone calls from stations that want him to tell them how to make some points before the next book comes out.”[33] By the late 1960s and 1970s, the quest for competitive ratings numbers underlie almost all of local stations’ programming decisions, even permanently changing the face of local news into short-segmented, banter-filled, violence and drama driven entertainment, often relegating “informative” to an after-thought in order to bring in and sustain a large audience

By the late 1960s and 70s, local newscasts' constant proclamations of their "ratings lead" and the popular press' frequent critiques of the industry's "numbers game" increased public awareness of ratings. Many viewers were able to connect the increasing emphasis on ratings to the changes in their local news content as well as the curious patterns of "high quality" programming that occurred across the networks at specific times throughout the year. In 1979, the *New York Times* published an article titled, "What's Behind the 'Sweeps' Mania?," in which journalist Peter Funt wrotes, "The just-concluded television season will probably be remembered best as a time when the 'sweeps' competition went wildly out of control. Once a trade secret of sorts, the month-long local audience ratings known as the sweeps, which determine the prices local stations can demand for commercials, have recently become heavily publicized focal points for the entire television season."[34] He adds, "Viewers now realize that program quality improves dramatically during the sweep months…the cutthroat programming and counter-programming efforts often make the sweeps battles more interesting than the sweeps programs."[35] By the 1970s, the increasing influence of ratings race changed the face of television programming and shaped the public's relationship to commercial television—the ratings race itself became very public entertainment, even if still obscure in its operations.

During this same period, the networks began selling programs as packages, called availabilities, often practicing "scatter buying," packaging weaker programs/timeslots with stronger ones. Advertisers chose availabilities by comparing the packages' "cost-per-thousand household" for a commercial minute. Spot advertisement slots also became shorter—whereas in 1961 spots they were sold on a minute by minute bases, by 1967 they were sold in 30 second blocks. Advertisers moved away from purchasing by program, and

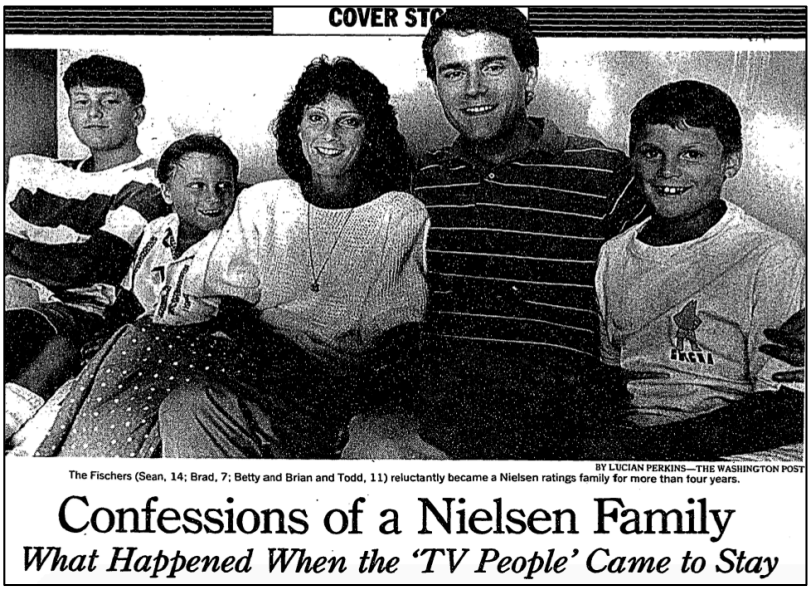
instead, focused on more specific aims such as budget, gross rating points, demographic specifications, and reach and frequency. For this reason, demographics became increasingly important, and central to network strategy. But moreover, by the mid-1960s, the networks and local stations were increasingly interested in "quality" audiences. In the previous section, I discussed CSB's and NBC's early approaches to programming with, respectively, rural-centric shows meant to appeal to the masses and more urban content meant to attract "quality" audiences. By 1963, NBC started releasing regular bulletins promoting its higher "quality" audience, calling itself "the leading network for upper income, upper educated young adults."[36] Advertisers shift toward these "quality" demos was so pronounced, that by the 1970s, CBS dumped its rural-themed programming for what Jane Feuer, Paul Kerr, and Tise Vahimagi describe as a turn toward "social relevancy programming," with shows like *The Mary Tyler Moore Show* and *All In The Family.*[37] In local markets, the "numbers" race also became frenzied pursuit of "demos." In 1977, journalist Robert Scheer wrote, "The local evening news is an advertiser's first crack at working men and women after a daytime of soaps and variety for housewives. It is also thought to be viewed by a more affluent and sophisticated buying group. As a result, automobile, refrigerator and institutional advertisers prefer it as a market."[38] Even as this period of relevancy programming came to an end in the late 1970s, the emphasis on demos remained, and increasingly, with impending emergency pay-television and cable, a focus on understanding audience niches. Coupled with the greater public awareness of and interest in ratings more generally, the increasing importance of demographics throughout the 1960s and 70s fed industry analysts' as well as the public's interest in knowing *who* the viewers behind the ratings were.

Cultural Depictions of the "Ratings Family"

Throughout the 1960s and 70s, the industry's ever-increasing reliance on ratings and the well-publicized criticism of Nielsen motivated more interest in the "mystical band of families who determine which television shows shall live and which shall die."[39] During this time, the press characterized the Ratings Family as epistemologically problematic, well-labored, and practically illusory, with articles like, "Where Duty Lies for Nielsen Family," "Nielsen Viewers Bear Big Load," and "Confessions of a Nielsen Family: What Happened when the 'TV People' Came to Stay," among others.[40] Articles like these often feature interviews or field visits with Ratings Families, who discuss the work they do for Arbitron or Nielsen. Indicated by the common use of the word "confession" in their titles, the panelists who were profiled often divulged stories about how they often unintentionally, but sometimes purposefully, mis-recorded their viewing information. Like a confession, in the process of recounting their uncooperative practices, panelists often contend with their self-hood, whether it be through negotiating their tastes or reflecting on their cultural identities.

In 1965, *CBS Reports* aired one of the first televised features on the topic of TV ratings.[41] The episode included interviews with ratings industry executives and an investigation of Nielsen's sampling procedures, which emphasized the power given by Nielsen to a shockingly small number of families. Reviewing the episode, Jack Gould of the *New York Times* wrote, "What the C.B.S program did do was make a Nielsen family the medium's foremost celebrity off screen."[42] He continued, "The greatest challenge confronting modern communication is how to get in touch with the Nielsen homes. Congressional investigators once located a Nielsen family or two and C.B.S is reported to have stumbled upon members of the cathode artistocracy, albeit the networks documentary

[sic] failed to offer a sampling of their appearance."[43] However, throughout the next couple of decades, the Ratings Family became a somewhat common figure in televised newscasts.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BY LUCIAN PERKINS—THE WASHINGTON POST

The Fischers (Sean, 14; Brad, 7; Betty and Brian and Todd, 11) reluctantly became a Nielsen ratings family for more than four years.

Confessions of a Nielsen Family

What Happened When the 'TV People' Came to Stay

Figure 5: In the 1960s and 70s, the Ratings Family, became an icon of ratings culture, and its depiction was often tied the problematic epistemologies of viewer diaries [44]

In 1977, the NBC Evening News featured a three-part series on television ratings; the second of which focused on one of the families who participated as a Nielsen panelist. News anchor, David Brinkley, explains, "The identities of these families are kept secret. But we have found one and talked to them." The camera then cuts to a high-angle bird's-eye shot of a family—a father, a mother, and three kids—sitting on a couch in their living room and watching television, as the feature reporter, Douglas Kiker, explains via voiceover, "This is not just another family watching television. Far from it. What this one family chooses to watch or not watch on television makes a difference in which programs are made available to everyone in the country." The segment then cuts to an interview with the mother, dressed in business casual attire, who explains, "We use the TV when we feel there's something really good to watch. Sometimes we're relaxing, but usually it's because there's something on it we

really want to see." Kiker continues, "Because the identities of the Nielsen Families are so closely guarded and because what they watch is so important, they're looked on with a certain awe by the people who work in television." The feature exemplifies this by cutting to Michael Dann, former Vice President of programming at CBS, who jokes, "I think A.C. Nielsen keeps them in an igloo someplace. And then immediately after the box is removed, that family is eliminated from the face of the earth."

While the camera cuts back to the bird's-eye shot of the living room, Kikir responds, "Well this Nielsen Family does not live in an igloo. These people live in a comfortable home in one of the nation's largest metropolitan areas. They're middle class, and they do not wish to be further identified… They wonder why the Nielsen Company chose them in the first place…" We then cut back the mother's interview, where she explains, "We aren't the greatest TV watchers in the world. We probably fall into the category of people who don't watch the idiot box all the time." And then the father adds, "I've heard of a lot of shows that we thought were excellent that were knocked off the air for what reason I don't know. We thought they were excellent." In its final shot, the feature cuts back to the anchor's desk, where Brinkley explains, "Since this family we've seen is now known, and since they're moving soon anyway, they will no longer be a Nielsen Family." Throughout the feature, the fly-on-the-wall cinematography gives the report the aesthetic of an observational documentary, while the expository voiceover works to abstract the viewer from the setting, working to position the Ratings Family as an object of analysis under close scrutiny.[45]

In 1988, the *MacNeil/Lehrer News Hour* also aired a news featurette on a Nielsen Family.[46] The featurette opens a family eating dinner at a kitchen table, and reporter Peter Graumann says in voiceover, "It's dinner time in California, and the Wollman family of San

Luis Obispo is just sitting down to eat. Michael Wollman is a college professor. His wife Linda is a nurse. Along with the couple's three kids, two guests, friends of the children, are sharing tonight's meal." And as the camera slowly zooms in from the table to the television set in the corner, Graumann says, "And there in the corner shines another regular dinner guest at the Wollman household, the television set." The featurette then cuts to an interview with Michael and Linda, while they sit in medium shot on the couch, and Michael explains, "It's probably on 5-6 hours a day, although I don't think that anyone in the house watches it extensively." Graumann ask, "Are there certain shows that the whole family watches together?" And Michael and Linda answer, "Wheel of Fortune…and the nature programs on public broadcasting." After a short expository segment, the featurette cuts back to Linda, who explains, "I call us Ozzie and Harriet Nielsen. I mean we're supposed to keep it a secret that we're a Nielsen Family. But I did tell my mother, and she was very impressed. She thought, my daughter…the Nielsen people!"

The featurette then cuts to a scene in the Wollman's living room (presumably later in the evening), where the rest of the family sits on the couch laughing at the television program they are watching while Linda Wollman and her son, Nick, stand at the counter filling out their Nielsen diary. Graumann explains, "The Wollman's have to manually record their [viewing] information, along with who's watching, in a weekly diary. It's 14-year-old Nick's job to keep up the diary." Meanwhile, in the background audio, we hear Nick saying, "I would've watched *Cheers*, so let's write that down so it doesn't go off." Then the featurette cuts to an interview with Nick, who explains, "I normally can't keep tabs on everybody, so I just sort of guess. I guess what people watched, and I ask. And the programs that I like I'll look up in the TV Guide, and I'll write those down so that my vote will be counted for that

show." Graumann asks, "So when you fill out your diary, it's not always watched?" Nick smirks and answers, "No it isn't always what I watched… It's what I'd like to watch. It's what I like to see." Graumann follows up, "And you don't see a problem with filling out your vote rather than really recording actually what you do watch and what your family watches?" And Nick responds, "Well, not really, if it's what I think I like, and I think that my tastes will be good enough for everybody else..." After some expository information and interviews with television professionals, the featurette cuts back to Linda and Nick continuing to fill out their diary, while Graumann's voiceover ends the segment with, "…And families like the Wollmans will continue to fill out their diaries, largely unaware of how powerful they really are."[47]

News reports on Ratings Families, such as those by the *NBC Evening News* and the *MacNeil/Lehrer News Hour* display a number of common tropes. Their cinematography, including fly-on-the-wall camera placement, high-angle wide shots, and camera zooms, in conjunction with their proclamations about the rarity of encountering a Ratings Family, help to characterize Nielsen Families as illusory, almost-mythical, objects of observation. Moreover, the common shots of the families watching television in oblivion, which are often intercut with interviews with industry professionals who explain the business side of how these families' viewing gets calculated and commodified, characterize these families as mere incognizant laborers in the machine of the television industry. The constantly glowing television in the background of most of the camera shots and the clips of the family members flipping through pages after pages of viewer diary also demonstrate the entrenchment of this labor within their domestic lives. While the families themselves often verbally express their oblivion about the ratings collection process or perform indifference toward their role in it,

their interviews inevitably betray their constant awareness of the fact that their viewing is being watched and assessed. During their interviews, they often perform their social identities, whether it be their upper-middle class status or their occupation as professor, in describing their television viewing practices. Meanwhile, the news reports too highlight these identity features, which are always the same: white, average, respectable, likable, middle-class families. In effect, the newscasts actually trade on the "normalcy" of these families to not only establish them as icons of hegemonic American Culture, but to convey that the epistemological problems of the viewer diary are inherent to the technology itself rather than the bad behaviors of the people who fill them out.

Both of these tropes—the Nielsen Families' performance of labor, often disguised within the routines of domestic life, and the play on identity performance, by both the panelists themselves and the news reports—are tied in complex ways to a third common trope: the tendency of panelists ton thwart the diary collection process by unintentionally misremembering or purposefully faking their diary entries. I argue that this reframes how we think of the Ratings Family's role as laborers, from incognizant to active (and highly cooperative). Moreover, when panelists describe the logic behind and process of manipulating their diary entries, it often entails a (more or less conscious) negotiation in relation to and, at other times, in contention with their performed social identities. Popular newscast depictions of Nielsen Families are valuable texts for analysis because of their common tropes, and also their (more or less conscious) performative reflexivity. However, since the viewer diary's function as a consumer surveillance technology is inherently reliant on user subjectivity, in the remainder of this chapter, I turn to how panelists themselves recount their experiences of being a Ratings Family. I draw on an archive of oral histories,

collected from interviews that I conducted former Nielsen Families, all of which were panelists between the years of 1984 and 1998. Drawing on the aforementioned tropes, I analyze the (sometimes subtle) ways that these former panelists experience their role as labor as well as ways that data recording becomes an act of identity negotiation and taste performance.

The Viewer Diary as Domestic Labor

In both of the newscasts, the families' Nielsen Family status is presented as almost an after-thought to them. In the NBC report, Kikir states, "they wonder why the Nielsen Company chose them in the first place…" and in the McNeill/Lehrer report Graumann describes the Wollmans as "largely unaware" of their role. Both families insist that they rarely watch television (even though they're shown watching it throughout the newscasts). But the camera's capture of the television's omnipresence, in the case of NBC report, with the birds-eye shots into the televisual space, and in the first show of the McNeill/Lehrer report, when the camera slowly zooms into it from the kitchen table scene. Moreover, in the McNeill/Lehrer report, we see Nick's process of filling out the diary, which montaged across multiple cuts throughout the newscast, entails flipping through page after page, consulting the television guide, and conducting mental assessments about which television shows are deserving of recognition and negotiations about how he will manipulate his viewing data, all while mom Linda watches on.

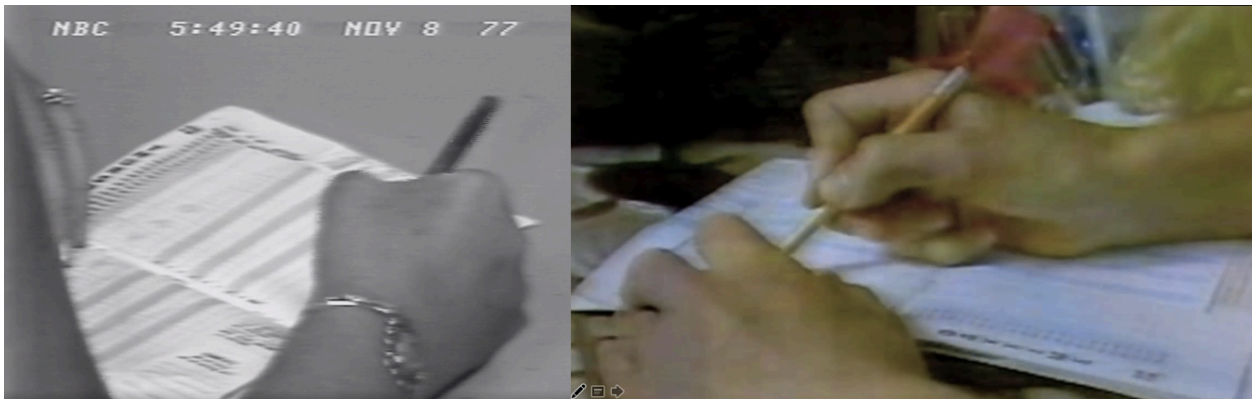


Figure 6: The NBC Reports and the McNeil/Lehrer Report contain almost mirrored depictions of their panelists families filling out their diaries[48]

Nick alludes to the fact that filling out the diary accurately would require an unrealistic need to "keep tabs on everybody." The very subtlety with which this labor is presented enacts the ways that surveillance is routinized into the background of domestic life and appropriated through interactivity and incognizance.[49]

Indeed, the omnipresent labor of being a panelist family came across in many ways during my interviews with former Nielsen panelists. While some of the Nielsen Families I interviewed explicitly described their participation as "a lot of responsibility," many others articulated an inescapable sense of responsibility or duty, or at least an acknowledgement that TV viewing felt more mindful. One panelist, Charlotte, described it as, "…feeling constantly tethered to the television. Whenever I wasn't watching television I couldn't help but be thinking, 'is there something airing right now that I *should* be watching?'"[50] And another panelist, Gina explained, "Having to fill out a TV viewing diary made TV viewing less of a casual event…especially since the diary required you to list any program you watched for at least 5 minutes. You had to always be thinking 'how long did I watch that for?' I would avoid perusing channels for that reason. But after the first week or so, I didn't record that kind of stuff. I'd wager a lot of other people didn't."[51]

Nielsen and Arbitron provided a small monetary incentive to panelists for their participation, which most panelists described as "insignificant." Still, it seems, to many families the monetary incentive had somewhat of a psychological effect, making them feel responsible to Nielsen, almost like "compensated" employees. For example, one woman named Faith mentioned that on multiple occasions she rescheduled pre-planned visits with her in-laws in order to work around times when her family were scheduled to fill out viewing diaries. She explained, "[Nielsen] tells you that you can just put down that you were on vacation for the week, but since I knew our viewing really counted, I felt like we would be messing up the system—or whatever Nielsen's plans were for the diaries—if we left. Also, completing the diaries just felt like the honorable thing to do. I felt like I should fulfill the task I promised to do."[52] And another couple, Tom and Barbara from Wisconsin explained that, even though Nielsen explicitly tells panelists *not* to record their viewing while on vacation or away from their place of residence (since they'll be outside of their local market), during regular camping trips through Minnesota in their RV, they still recorded their viewing, Barbara explained, "Since our RV had a television, it seemed like it made more sense to not skip days, especially since we were being paid either way."[53]

Among journalist and industry professionals, it became a generally-accepted understanding that the responsibility of filling out viewer diaries often went to kids or to women. A 1958 article in the *Los Angeles Times* stated, "Huge decisions turn on the whimsical memory of woman jotting in a diary."[54] And on the topic of Nielsen's rumored implementation of peoplemeters to local markets in the early 1990s, "Richard Kostyra, executive vice president and U.S. director of media services for J. Walter Thompson, wrote in an internal memo that warned, "because of the way most dairies have been filled out—by

the women of the household at the end of the week—the switch to peoplemeters will bring a number of shifts in the demographic results for many programs: women numbers will be down and men numbers up; day time ratings will go down and late-night will go up."[55] Many panelists descriptions confirmed this trend. Melissa, whose family kept diaries for Arbitron during her teenager years, mentioned, "We'd fill out our diaries for the first couple of days, and then we'd forget, and my mom would just guess and fill in the rest at the end of the week before sending them out."[56] In the case of the aforementioned couple, Tom and Barbara, Tom originally responded to my ad—but after we talked on the phone, he realized he couldn't answer my questions and recommended that I speak with his wife, "since she was the one who handled that stuff."[57] But beyond the actual task of filling out the diaries, in my conversations with panelists, women were more likely to describe their experiences in terms of the emotional labor involved with the task, more likely to express concerns about the "value" of the programs their family recorded, and more likely to ask me about how "typical" their answers to my questions were.

Ben, a husband and father of 5 in upstate New York, described maintaining the four diaries that his family had to keep for their four television sets as a "seemingly full-time job."[58] He said, "My wife really wanted to do it, so I just went along with it. But I did eventually get fed up with it. Since we were filling out more than one diary, I thought we should be paid for each one. I sent in a letter telling [Nielsen] that, and they did add in a couple of extra dollars, but nothing significant."[59] He explained that his wife was in charge of the living room and master bedroom dairies/sets and the kids were in charge of the two additional diaries/television sets located in their bedrooms, but the entire family often forgot to fill them out. Ben mentioned that it was "always a conversation in the house. It was just

another item on the list of chores that my wife was always on the kids about."[60] Ben said that he never really thought about how his family's viewing influenced television program. He figured "They [the TV networks] were going to do what they want anyway."[61] But he recalled, "My wife was always telling the kids to erase things like…too many cartoons, mindless, violent stuff. She didn't want it to reflect badly."[62] Ben described his disposition toward being a Nielsen Family as "indifferent" and his wife's as "excited about it, but always needlessly stressed."[63] Taking Ben's description at face value, his wife treated the diaries as a domestic chore, stressing about how their completeness and appropriateness represented the family's domestic values. On the other hand, while Ben performed as almost "coolly indifferent" about how his family recorded their viewing, he became very excited when describing his correspondence with Nielsen representatives to negotiate the family's monetary incentive. He explains, "As high income, large family of frequent TV watchers, with multiple vehicles and expendable income, I knew we were valuable to them."[64] He seems to describe it as having gamed the system, outsmarting Nielsen. By knowing the value of his family's data and consumer capital, he proudly earned something on behalf of his family—even if it was a materially insignificant two extra dollars per sweeps period.

In my interviews, it seemed women were more likely to treat the labor of being a panelist as yet another domestic chore, experience it as emotional labor, or approach it as a performance of family values. Scholars like Eileen Meehan, Thomas Streeter, and Wendy Wahl have compared the form of unpaid labor that audiences take on in the task of viewing/interpreting commercials to earn the networks money from advertisers to "women's work," the domestic labor traditionally undertaken by women which, despite its functional role in cultivating familial and national economic prosperity, has historically gone unpaid.[65]

These scholars argue that this analogy elicits other shared characteristics between the social construction of audiences as passive and that of women as docile. Tiziana Terranova and Kylie Jarrett have made this comparison too in regard to the immaterial forms of labor users enact when contributing information and data to the digital sphere.[66] Whether it be Linda Wollman's subtle supervision of Nick's diary completion; Charlotte's nagging feeling that she should be watching *more* TV for Nielsen, Faith and Barbara's refusal to leave their Nielsen duties behind while on vacation, or Ben's wives' constant reminders to her kids to complete the diaries, it could be said that part of the strategic ontology of the viewer diary as a data collection technology is its jurisdiction within the domestic space; it discreetly slip into the space between labor and leisure and disguises itself within the abundance of domestic labor that already exists. And as a physical form itself, whether it be through the handwriting it contains or the programs that it over/under represents, it physically documents the gendering of audience labor.

Demography, Self-Tracking & Identity Performance

Both the NBC newscast and the McNeil Lehrer newscasts work to establish their Nielsen Families as a typical upper-middle class households, and both families perform their class status by insisting "we probably fall into the category of people who don't watch the idiot box all the time"[67] and insisting that "nobody in the house watches television extensively," really only an "occasional nature program."[68] At the same time, with their three children (in both cases) gathered around the television laughing and the cozy décor visible in their houses, both families are conveyed as likable and relatable. The newscast relies on their very "typicalness"—their normalized or privileged race, class, and family statutes—to show

that data mal-entry is in fact inherent to the technology. We're not meant to see them as inept, unqualified, or scheming (if anything, young Nick's flippancy comes off as endearing). We're meant to think, if this family can't do it correctly, then really, how could anyone? Moreover, both the father's (in the NBC News report) and Nick's confidence that their own taste can suffice for everyone else's trades on their own perceived typicalness (or, phrased another way, their privileged identities).[69] This becomes apparent especially when put up against the many conversations I had with panelists who reported constantly doubting the value of their own tastes or the representativeness of their viewing behaviors.

In my interview with Maria, who was a panelist in the early 1990s, she mentioned, "One thing I thought was funny about the Nielsens was that they asked what my nationality was and I said I was Hispanic, so when they sent the diaries, the instructions on the box were in Spanish. And even when they called the house, on the phone, it was a Spanish-speaking person."[70] However, Maria explained, her family spoke English as their primary language. In fact, her two children were not fluent in Spanish at all. She continued, "It's funny that they assume because you are Hispanic you only speak Spanish. Spanish was my parents' first language, but I learned English first. Not all Hispanics speak the same amount of Spanish."[71] Maria used the Spanish language diary, since she could make-do with it, but she admitted, "It was always on my mind that I was maybe being used as a quota or something. Which worried me, because I've heard that sometimes Spanish language programming gets ignored. And of course, a real Spanish speaking family would watch those programs, but we didn't."[72] Maria also explained that she didn't know whether she should fill the diary out in English or Spanish, so the children often wrote in English, but she wrote her responses in Spanish. In our conversation, Maria spent a good amount of time describing how she thought it was

important to teach her children Spanish, but with working long hours, and needing to help her children in other areas they were behind in like English reading comprehension and hand writing, it regrettably slipped through the cracks. But, she explained, the Nielsen situation made her extra regretful about "neglecting" the children's Spanish fluency. Thus, on top of the extra labor of having to fill out a diary that was not in her family's preferred language and the extra emotional labor of having to consider whether her family's viewing was sufficient for the Spanish speaking populations she was meant to represent, the identity profile that Maria was placed into by Nielsen led her to (more or less consciously) contend with her own identity intersectionality.

Other former Nielsen panelists told me stories about how they used their status as a Ratings Family to build community or advocate for the wider thoughts/preferences of their social groups. April, along with her husband and his mother, participated as a Nielsen panelist while living in Virginia in the late 90s. After designating her ethnicity as Black on her intake survey, April says she felt "singled out" by her Nielsen representative. For example, she recalled a phone conversation with a Nielsen representative where he mentioned it was *extra* important for her to fill out the diary accurately and return it on time since families in "urban" areas tend to do so less frequently. April explains, "I don't know what he meant by 'urban,' since our family didn't live in the city. I think that was his ways of saying Black."[73] While being an Arbitron family didn't really change the way she actually watched TV, April says, it was something she talked about a lot with her coworkers and friends. She said, "They were always really excited during the weeks that I was filling out the diary. They would often tell me about good shows or which things they were watching, and I would look them up on the TV guide and write them down too."[74] She said she liked filling

out the diary that way because it felt like more of a "team effort." When I asked her if she felt it was wrong to add programs to her diary that she did not watch, she said, "Well, I never thought of it that way, not really. Actually, I thought that it was fairer that more people other than myself should have a say in what shows they like, especially when it comes to Black shows."[75]

In my interviews, countless other panelists reflected on how their social/cultural identities were performed and negotiated in complex ways through recording their TV tastes. For example, although Missy (different from the aforementioned Melissa) wasn't a Ratings Family herself, she answered my ad to recount her experience of spending a summer with her grandma, Dawn, who kept a diary for Nielsen. Missy said that Dawn took the diary duties really seriously, and regularly boasted about the fact that she was working to oppose the spread of "trash TV," a category in which Dawn included salacious talk shows like *Jenny Jones* or *Jerry Springer*, soap operas, and most popular sitcoms, which her grandma disliked because they were too sexually suggestive. Dawn's favorite shows, as Missy recounted, were *Touched by an Angel* and *Dr. Quinn, Medicine Woman*. When I asked Missy what she took away from her time living in her grandma's Nielsen household, she said, "during the time, as a teenager, I thought it was weird that television was in the hands of my 67-year-old grandmother in Kentucky."[76] Dawn represents yet another example of how some panelists' reporting of their viewing for Nielsen became a (more or less explicitly) political endeavor—in Dawn's case an effort to influence the moral content of television to her (in her granddaughter Missy's view, out of touch) liking.

In pointing out its inherently contradictory nature, Neff and Nafus write, "Self-tracking data refers to an individual person, but it is fundamentally social."[77] While

contemporary self-tracking practices have been characterized as tactics for self-development, they have also motivated the rise of communities like the Quantified Self Movement, a group of self-tracking enthusiasts committed to self-improvement through data.[78] Moreover, the data that is produced via self-tracking often gains its meaning or its (commodifiable) utility only once it is socialized (compared to others' data) or aggregated. Thus, self-tracking data inherently entails relationships between self and community. While panelists' task of writing down their personal television viewing is often (more or less consciously) self-reflective, it also encourages them to imagine their private television viewing as social—to imagine how their viewing compares to other people's viewing or how it will get integrated by Nielsen into a rating. Sometimes this task of experiencing their viewing as social takes a literal form, such as when April discusses her viewer diary with her friends and includes their tastes and recommendations in it, and sometimes it is more implicit, such as when Maria is forced to contend with what her television viewing might indicate about the demographic group she is meant to represent. Maria's concerns gesture toward a certain peculiarity regarding the viewer diary's function as a method of self-report surveillance: in Nielsen's process of constructing its array of "representative" individual viewing data into a single program rating, the traces of viewers' individuality (their preferences and tastes that they carefully content with while making the record) seemingly becomes superfluous. But even if the traces of panelists' individual tastes are not recognizable in the audience metric, perhaps they live on in an abstract form. Neff and Nafus write, "Whether we intentionally self-track, or are tracked with or without our consent, our personal data…connects us to wider social systems. Our data contains a virtual, if partial, version of the self—a "data double" living on

servers around the world. When it travels, a part of us does, too. In this way, our data has a social life. It is both personal and political at the same time."[79]

Still, filling out diaries is one of the few occasions during the audience surveillance process when viewers have the opportunity to contend with how their selfhood is shaped or negotiated through their relationship with commercial television. For many of the panelists I interviewed, this created anxiety about what their TV tastes say (or should say) about them. One panelist admitted, "It was fine having people know that I watched *Frasier*, and I even felt a little smug when I watched *Dateline NBC*, but it was a little harder admitting that I never missed an episode of *Sally Jesse Raphael*."[80] And another panelist, Karen, explained, "I was embarrassed even admitting that there were television sets in both of the kids' rooms, but then on top of that, the fact that they watched hours of *Ren & Stimpy* and *Dragon Ball Z* made it even worse, especially with me being a single mom, and a 2nd grade teacher at that. But quite frankly, as long as they were good kids, I didn't care if they watched junk."[81] Neff and Nafus write about how self-tracking often leads individuals to contend with whether their data is "normal." They write, "'Am I normal?' then becomes a question about how societies create categories for people—old or young, laborer or desk jockey—and how people then use those categories.[82] In this way, while participating in this institutionalized form of audience data collection, panelists often implicitly contend with their own identity role within both their own households and their communities.

But beyond these forms of anxiety that panelists experienced, what stuck out most from these conversations with Nielsen panelists was how the very process of having their TV viewing surveilled motivated them to explore, contend with, and negotiate their

cultural/social identities and tastes ways they hadn't before. For example, one panelist, Shani, remarked:

> You know, I hadn't thought about it this way before, but as a third generation of immigrants and a working mother when it was still not that normal, it was always sort of in the back of my mind: Should I watch this show? What does it say about me? It forced me to think like: Is this what other sophisticated people watch? Is this what other moms let their kids watch? I guess it was always in the back of my mind.[83]

Scholars, like Deborah Lupton and Lisa Parks have looked toward the growing trend of body tracking to think about how self-tracking can afford unique epistemologies of selfhood; that is, seeing ourselves through self-produced data can allow us to know ourselves and our relationship to our communities in new ways.[84] In "Plotting the Personal" Parks uses her own GPS self-tracking data to demonstrate how GPS "movement footprints" enable uniquely political reflections on one's movement and positionality. While there is little commonality between GPS systems and the viewer diaries, I argue here that the viewer diaries also "plots the personal"—but instead of spatially, viewer diaries do it temporally along a pre-formatted schedule grid (recorded largely through recall). And rather than a signature of movement that "code[s] social differences in ways that that expresses the subjective experience and memory of the user," the viewer diary creates a unique taste signature or lifestyle signature for panelists, which they then contend with in reflecting on their identity positionality.[85]

Differently from the mechanical audience measurement methods that Nielsen and Arbitron used in their national panels, which trade on abstractive models of surveillance in their endeavor toward objectivity, viewer diaries trade on these very forms of identity performance that get enacted through self-reported viewing. However, where the viewer diary departs from the GPS and many other forms of contemporary self-tracking technologies is that its pen and paper form means that participants have the ability to "plot their own

personal." Thus, inherent in the technology of the viewer diary is a routinization of falsification and noncooperation. While noncooperation with viewer diaries is sometimes due to carelessness or fatigue, for some panelists, it is a very intentional enactment or negotiation of social identity or cultural taste. In these processes of purposefully manipulating or unintentionally misreporting their viewing, panelists recover the "self" in audience tracking, recuperating their identity beyond that of "commodity subject."

Conclusion: The Legacy of the Viewer Diary

While diaries have always faced criticism; in the midst television's convergence with the internet, diaries have been taken by many as a staple of Nielsen's inadequate adaptation—an artifact of a defunct era when linear, broadcast television was the norm. Since the start of the new millennium, Nielsen has gradually been fading out viewer diaries, replacing some with local peoplemeters and others with a simplified version of the A/P (active/passive) set top meter that is currently used in the national panel, which measures programs by detecting the UTPC codes embedded in their soundtrack (discussed in Chapter 4). By 2014, out of Nielsen's 210 DMAs, 25 used local peoplemeters (LPM), 31 used the A/P set top meters, and 154 of the more rural or financially strapped DMAs still used only diaries.

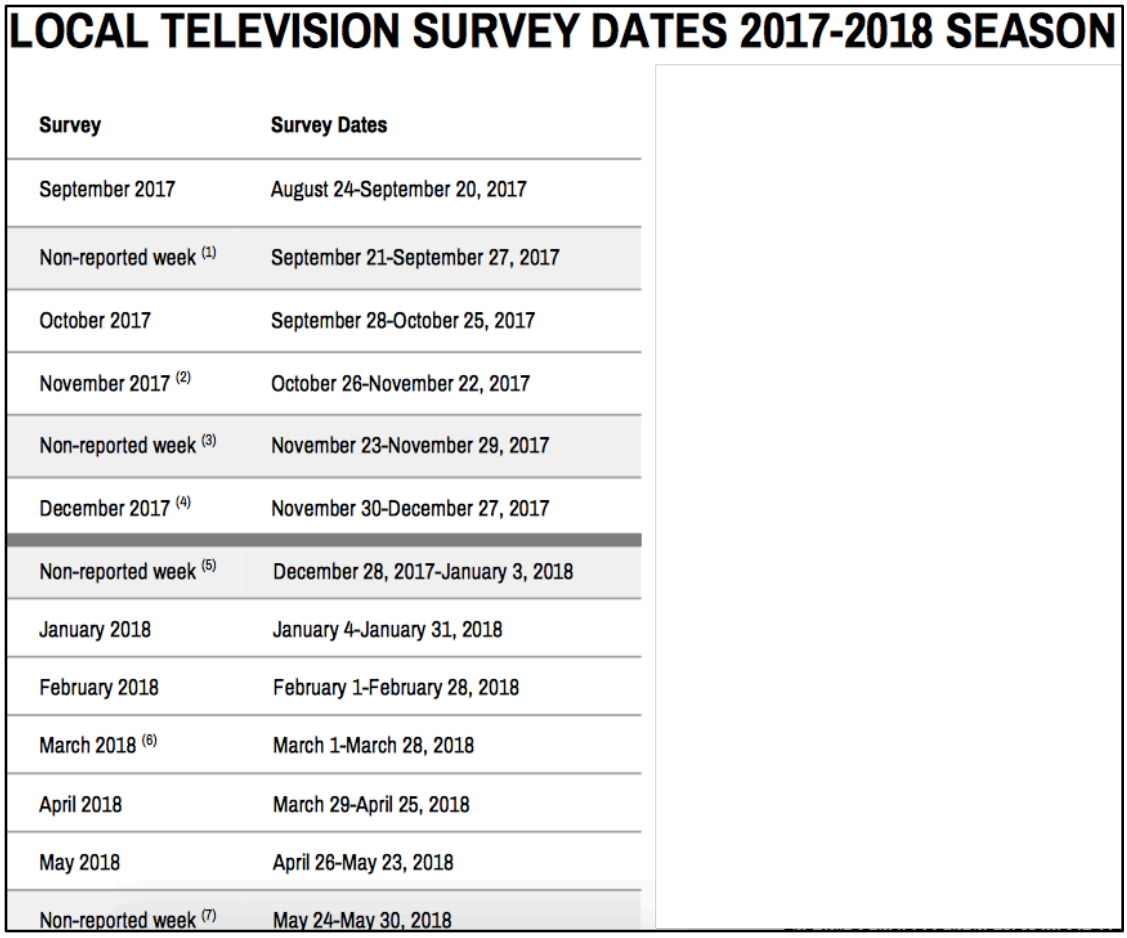
25 LPM Markets				
Atlanta	Baltimore	Boston	Charlotte	Chicago
Cleveland-Akron	Dallas-Ft. Worth	Denver	Detroit	Houston
Los Angeles	Miami-Ft. Lauderdale	Minneapolis-St. Paul	New York	Orlando
Philadelphia	Phoenix	Pittsburgh	Portland, OR	Sacramento
San Francisco	Seattle-Tacoma	St. Louis	Tampa-St. Petersburg	Washington, DC

31 Set-Meter Markets					
Albuquerque	Austin	Birmingham	Buffalo	Cincinnati	Columbus, Oh
Dayton	Ft. Myers-Naples	Greensboro. NC	Greenville-Spart, SC	Hartford, CT	Indianapolis
Jacksonville	Kansas City	Knoxville	Las Vegas	Louisville	Memphis
Milwaukee	Nashville	New Orleans	Norfolk-N News, VA	Oklahoma City	Providence
Raleigh-Durham	Richmond	Salt Lake City	San Antonio	San Diego	Tulsa
West Palm Beach-Ft. Pierce					

154 Diary Only Markets (Top 30)					
Grand Rapids	Harrisburg, PA	Fresno-Visalia	Wilkes-Barre Scranton	Little Rock-Pine Bluff	Mobile, AL
Albany, NY	Lexington, KY	Wichita, KS	Honolulu	Charleston, WVA	Green Bay, WI
Roanoke, VA	Tucson	Flint-Saginaw, MI	Des Moines-Ames, IA	Spokane	Omaha
Springfield, MO	Rochester, NY	Toledo, OH	Columbia, SC	Huntsville, AL	Portland, ME
Madison, WI	Paducah, KY	Shreveport, LA	Syracuse	Champaign, IL	Harlingen, TX

Figure 7: The breakdown of Nielsen's Local Measurement Methodology (2014)[86]

In 2016, Nielsen announced that they would do away with the dairy completely by 2017, which was then delayed until 2018. But, alas, throughout summer 2018, Nielsen gradually retired viewer diaries from the remaining 140 DMAs that were still using them (which constituted 7,000 households). Since Nielsen's "sweeps" method was originally adopted to conform to the unique challenges of the viewer diary—diaries take time to be mailed out and returned, and users tire when of the task when asked to fill out diaries for too long of a period—Nielsen also planned to do away with the sweeps during summer 2017, replacing them with monthly local ratings reports. However, Nielsen later announced that they would push back the adoption of monthly local ratings reports until summer 2019.



LOCAL TELEVISION SURVEY DATES 2017-2018 SEASON

Survey	Survey Dates
September 2017	August 24-September 20, 2017
Non-reported week [1]	September 21-September 27, 2017
October 2017	September 28-October 25, 2017
November 2017 [2]	October 26-November 22, 2017
Non-reported week [3]	November 23-November 29, 2017
December 2017 [4]	November 30-December 27, 2017
Non-reported week [5]	December 28, 2017-January 3, 2018
January 2018	January 4-January 31, 2018
February 2018	February 1-February 28, 2018
March 2018 [6]	March 1-March 28, 2018
April 2018	March 29-April 25, 2018
May 2018	April 26-May 23, 2018
Non-reported week [7]	May 24-May 30, 2018

Figure 8: Nielsen's new local audience survey schedule will collect and distribute audience data for three weeks out of every month, which will be published in monthly reports (This new schedule was original announced in 2017, but later pushed back to 2019)[87]

While the death of the viewer diary is long overdue, it's longevity has meant something to the history of audience data regimes. In conjunction with the highly technologized, constantly adapting, automated meters that Nielsen has used in their national panel, the viewer diary has been mediation of the human experience of commercial television, subjected to the active participation and subjective agency of its users. While the viewer diary is often discussed as an, almost-contingent technology, used in local ratings markets because of their cheapness and ease of turn-over, their subjective data has had a

unique utility to Nielsen. Even today, Nielsen argues that what gives the company its competitive edge over its data farming competitors like Comscore or Netflix is its direct access to a panel of real television viewers. Throughout Nielsen's history, the viewer diary has been its most direct mediation of this subjective feedback. Moreover, different from the data store that electronic meters propagate, diaries are as textual artifacts, containing the cultivations of taste, negotiations of identity, and challenges of self-tracking that panelist enact while being a Ratings Family. The interviews in this chapter shed light on the community building characteristics and opportunities for self-articulation enabled through self-reporting one's data that motivate viewers to participate in cooperative consumer surveillance regimes.

Notes

[1] The American Research Bureau (ARB) changed their name to Arbitron in 1973. Since the content of this chapter spans an historical timeframe before and after that, for historical accuracy, both names will be used.

[2] C.E. Hooper, "How Accurate is the Hooper Diary?" *Hooperratings: Highlights*, 30 March 1947.

[3] Gina Neff and Dawn Nafus, *Self-Tracking* (Cambridge, MA: MIT Press, 2016), 33.

[4] Michel Foucault, "Technologies of Self," *Technologies of The Self: A Seminar with Michel Foucault,* ed. Luther H. Martin, Huck Gutman, and Patrick H. Hutton (University of Massachusetts Press, 1988).

[5] See, for example, Deborah Lupton, *The Quantified Self: A Sociology of Self-Tracking* (Malden, MA: Polity Press, 2016); Mark Hoogendoorn and Burkhardt Funk, *Machine Learning for the Quantified Self: On the Art of Learning from Sensory Data* (Springer, 2018); Jennifer R. Whitson, "Gaming the Quantified Self," *Surveillance & Society* 11 no.1 (2013); Phoebe Moore and Andrew Robinson, "The Quantified Self: What Counts in the Neoliberal Workplace," *New Media & Society* 18 no. 11 (2016); "Probing the Limits of the Quantified Self: Human Agency and Knowledge in Literature and Culture of the Information

Age," Research Initiative, American Studies Department, University of Mannheim, quantified-self.org/the-project, accessed 15 May 2019.

[6] Foucault, "Technologies of Self."

[7] C.E. Hooper, "How Accurate is the Hooper Diary?" *Hooperratings: Highlights*, 30 March 1947.

[8] James W. Seiler, "ARB Press Information," 1962.

[9] Nielsen promotional flier included in a Nielsen TV Viewing Diary for the week of November 3, 1994, mailed to a panelist in California.

[10] Todd Allan Yasui, "Confessions of a Nielsen Family: What Happened when the 'TV People' Came to Stay," *Washington Post*, 27 December 1987, TV 7.

[11] "The Influence of Non Cooperation in the Diary Method of Television Audience Measurement," A Publication of the American Research Bureau, 1963.

[12] Created by Simon Zou, "US Map of Nielsen Media Markets," updated 15 February 2019, http://bl.ocks.org/simzou/6459889, accessed 1 April 2019.

[13] Mark Alvey, "'Too Many Kids and Old Ladies': Quality Demographics and 1960s US Television," *Screen* 45, no. 1 (2004).

[14] Ibid.; Les Brown, *Television: The Business Behind the Box* (New York, NY: Harcourt Brace Jovanovich, 1971).

[15] American Research Bureau, "Television Audience Research Basics," 1964.

[16] Richard B. Woodward, "True Confessions of a Nielsen 'Family,'" *New York Times* 14 July 1991, H25.

[17] "KFMB Wins November Despite Nielsen Change," *TV News Check*, 30 November 2016.

[18] "Nielsen TV Diary Support," Publication of the Nielsen Company, 2015, https://www.nielsen.com/content/panel/tvdiary8b-en-feb2014/home.html, accessed 8 March 2019.

[19] Mark Potts, "A New TV Ratings War Heats Up," *Washington Post,* 27 September 1987.

[20] Steve McClellan, "Write Us Down, Or We May Go Dark," *Broadcasting & Cable* 20 November 2000, 12.

[21] Ibid.

[22] Lawrence Laurent, "Memo Shows Nielsen as Wary of Probers," *Washington Post*, 29 March 1963, A10.

[23] "Ratings Majors Sign FTC Consent Order," *Broadcasting* 7 January 1963, 1, 66.

[24] Todd Gitlin, *Inside Prime Time*, revised edition (London: Routledge, 1994) (originally published in 1983), 47.

[25] Ibid., 42.

[26] Richard Trubo, "A.C. Nielsen and the TV Numbers Game," *Chicago Tribune* 22 October 1978, H26.

[27] Gitlin, *Inside Prime Time*, 55-74.

[28] Jack Harris, "Local Station in Key Role Towards Perpetuation of Present TV System," *Variety* 8 January 1969, 98.

[29] Robert Scheer, "The Selling of Local TV News Shows," *Los Angeles Times*, 06 June 1977, b1.

[30] Ibid.

[31] Ibid.

[32] Ibid.

[33] "The First Amendment and the Fifth Estate: Local Television's Best Foot Froward," *Entertainment Industry Magazine,* 5 January 1976, 83.

[34] Peter Funt, "What's Behind the 'Sweeps' Mania?" *New York Times*, 17 June 1979, D3.

[35] Ibid.

[36] Alvey, "'Too Many Kids and Old Ladies,'" 47.

[37] Jane Feuer, Paul Kerr, and Tise Vahimagi, *MTM: "Quality Television"* (London: British Film Institute, 1984).

[38] Scheer, "The Selling of Local TV News Shows," b1.

[39] Frank Mankiewicz, "Waiting for Rain: Down the Tube with Arbitron," *Washington Post*, 5 June 1977, 244.

[40] Hal Humphry, "Where Duty Lies for Nielsen Family," *Los Angeles Times* 1 June 1966, C14; Jack Gould, "TV: Nielsen Viewers Bear Big Load," *New York Times*, 16 July 1965, 55; Yasui, "Confessions of a Nielsen Family," 7.

[41] "The Ratings Game," *CBS Reports* (CBS), aired 12 July 1965.

[42] Gould, "TV: Nielsen Viewers Bear Big Load," 55.

[43] Ibid.

[44] Yasui, "Confessions of a Nielsen Family," 7.

[45] "Segment 3: The Ratings," *NBC Nightly News* (NBC), 8 November 1977 (Vanderbilt News Archive, #491660), accessed 27 March 2019.

[46] "The MacNeil/Lehrer NewsHour" *PBS* (NewsHour Productions), aired 30 October, 1986 (American Archive of Public Broadcasting, ID: cpb-aacip/507-xg9f47hr1r), accessed 14 June 2017.

[47] Ibid.

[48] "Segment 3: The Ratings," *NBC Nightly News* (NBC), 8 November 1977 (Vanderbilt News Archive, #491660), accessed 27 March 2019; "The MacNeil/Lehrer NewsHour" *PBS* (NewsHour Productions), aired 30 October, 1986 (American Archive of Public Broadcasting, ID: cpb-aacip/507-xg9f47hr1r), accessed 14 June 2017.

[49] Ibid.

[50] "Charlotte," interviewed by author, 24 May 2018.

[51] "Gina," interviewed by author, 12 August 2016.

[52] "Faith," interviewed by author, 2 August 2017.

[53] "Tom" and "Barbara," interviewed by author, 10 February 2018.

[54] Cecil Smith, "Just How Accurate Are Those Ratings?" *Los Angeles Times*, 29 June 1958, G5.

[55] Internal memo from Richard Kostyra (J. Walter Thompson), "Re: Internal Memo: Changes on the forefront with peoplemeters," 24 August 1987.

[56] "Melissa," interviewed by author, 1 October 2016.

[57] "Tom" and "Barbara," interviewed by author, 8 February 2018.

[58] "Ben," interviewed by author, 27 August 2016.

[59] Ibid.

[60] Ibid.

[61] Ibid.

[62] Ibid.

[63] Ibid.

[64] Ibid.

[65] Eileen Meehan, "Gendering the Commodity Audience: Critical Media Research, Feminism, and Political Economy," *Media and Cultural Studies*, Ed. Meenakshi Gigi Durham, Douglas M. Kellner (Malden, MA: Blackwell, 2013), 311-321; Thomas Streeter, "Viewing as Property: Broadcasting's Audience Commodity," *Selling the Air: A Critique of the Policy of Commercial Broadcasting in the United States* (University of Chicago Press, 1996), 275-308; Thomas Streeter Wendy Wahl, "Audience Theory and Feminism: Property, Gender, and the Television Audience,"*Camera Obscura* (1994) pp 243-258.

[66] Tiziana Terranova, "Free Labour," *Network Culture: Politics for the Information Age* (Pluto Press, 2004), 73-95; Kylie Jarrett, "The Relevance of 'Women's Work,' Social Reproduction and Immaterial Labor in Digital Media," *Television & New Media*, 15 May 2103; Kylie Jarrett, *Feminism, Labor and Digital Media: The Digital Housewife* (New York: Routledge, 2015).

[67] "Segment 3: The Ratings," *NBC Nightly News* (NBC), 8 November 1977 (Vanderbilt News Archive, #491660), accessed 27 March 2019.

[68] "The MacNeil/Lehrer NewsHour" *PBS* (NewsHour Productions), aired 30 October, 1986 (American Archive of Public Broadcasting, ID: cpb-aacip/507-xg9f47hr1r), accessed 14 June 2017.

[69] "Segment 3: The Ratings," *NBC Nightly News* (NBC), 8 November 1977 (Vanderbilt News Archive, #491660), accessed 27 March 2019; Ibid.

[70] "Maria," interviewed by author, 21 June 2016.

[71] Ibid.

[72] Ibid.

[73] "April," interviewed by author, 10 August 2016.

[74] Ibid.

[75] Ibid.

[76] "Missy," interviewed by author, 7 August 2016.

[77] Neff and Nafus, *Self-Tracking*, 8.

[78] "Quantified Self: Self Knowledge Through Numbers," quantifiedself.com, accessed 15 May 2019.

[79] Neff and Nafus, *Self-Tracking*, 37.

[80] "Tom," interviewed by author, 6 February 2018.

[81] "Karen," interviewed by author, 21 February 2018.

[82] Neff and Nafus, *Self-Tracking*, 40.

[83] "Shani," interviewed by author, 27 May 2018.

[84] Neff and Nafus, *Self-Tracking*; Lupton, *The Quantified Self*; Lisa Parks, "Plotting the Personal: Global Positioning Satellites and Interactive Media," *Ecumene* 8, no. 2 (2001).

[85] Parks, "Plotting the Personal," 218.

[86] "Local Measurement Methodology: LPM, Set-Meter, Diary Only," Publication of the Nielsen Company, 2014, http://en-us.nielsen.com/sitelets/cls/documents/nielsen/Local-Measurement-Methodology-Ex.pdf, accessed 15 March 2019.

[87] "Local Television Survey Dates 2017-2018 Season," Publication of the Nielsen Company, 2017, https://www.tvb.org/Portals/0/media/file/Nielsen_Local_Survey_Dates_2017_18.pdf, accessed 15 March 2019.

Chapter 3

Peoplemeter Technologies and the Biometric Turn in Audience Measurement

The late-1970s and 1980s was a period disruption for the so-called network-era of broadcasting with the emergence of a plethora of cable channels, increased competition between cable and broadcast for advertising dollars, and a turn toward targeted advertising. Between 1975 and 1985, the number of cable subscribers in the US increased from 9.2 million to 54.9 million, and cable penetration increased from 13% to 46%. Whereas in 1980, most cable systems were 12-channel, by 1985 more than half of all cable systems offered more than 20 channels. The proliferation of cable decreased the network share from 90% in 1975 to 73% in 1985.[1] These changes created demand for increasingly specific audience demographic information. Additionally, the proliferation of remote controls (in 1983 1/3 of new color television sets came equipped with a wireless remote control) created industry concern over viewers' ability to "zap" past commercials.[2] This perceived increase in viewer choice created industry-wide anxiety around viewer agency.[3] Ratings companies promoted the peoplemeter as a technology responsive to the changing television environment, "an environment when viewers have more choices than ever."[4] Between 1980 and 1995, a number of audience measurement companies, including Audits of Great Britain (AGB), Nielsen, Percy Co., and Arbitron raced to develop the best peoplemeter technologies—a period of competition which the press coined "the peoplemeter wars."[5] While many are familiar with Nielsen's remote control peoplemeter, during this era peoplemeter technologies ranged from remote controls, to ultrasonic motion detectors, infrared body heat sensors, face scanners, and wearable devices. They evoked surveillance-themed rhetoric in the popular press, inspiring criticisms of Big Brother behavior and privacy concerns.

These peoplemeter technologies that failed to come to fruition betray television culture's embeddedness in problematic surveillance and are important precursors to contemporary biometric regimes.

In this chapter, I analyze this trajectory of peoplemeter technologies during this era. The inconsistent participant cooperation eventually resulted in a turn away from active peoplemeters, which rely heavily on viewer participation, and toward the pursuit of passive peoplemeter methods. Ultimately, I argue that peoplemeters marked a turn in audience measurement toward recognition of the body as the ultimate verifiability of audiencehood. In "The Work of Watching One Another," Mark Andrejevic argues that the body is the ultimate site of truth. He writes, "If, in other words, what people say is potentially inaccurate, uninterpretable, or illusory, the body is offered as a guarantee of some surplus beyond the manipulations of discourse."[6] This comparison is quite apt, since coterminously, Nielsen's primary mode of measurement for local markets was its diaries, where sample participants were responsible for writing down their demographic information and television viewing. Andrejevic continues, "If words lie, perhaps voices don't; if discourse and even data can be manipulated, the one undeconstructed remainder, the final appeal to some ground for the 'real truth' is offered in the form of the direct, and ostensibly unmanipulable evidence of the body."[7] The body's role as the ultimate site of verifiability makes it central to any discussion or experience of surveillance.

Michel Foucault argues that the body serves as "instrument or intermediary" of capitalist production that "becomes a useful source only if it is both a productive body and a subjected body."[8] During this period, ratings companies responded to the epidemic of

"undisciplined" viewers by exerting greater control over the body during the data collection process. Be it the struggle to get viewers to reliably push a remote-control button, controversy over using body heat or face scans to measure television engagement, or the challenge of getting participants to wear portable meters, the body was at the center of the struggle over cooperation that shaped the trajectory of peoplemeter technologies. Moreover, in its commodification of the body, audience measurement must constantly work around the body's agency as well as its biological limitations. In fact, these two things are often conflated in industry discourse—for example, the ratings industry refers to audience non-cooperation as audience "fatigue." In the *Los Angeles Times*, John Lippman writes, "Although the term conjures up physical exhausted, fatigue in the case of peoplemeters, is nothing more than forgetting to push the button on the remote-control device."[9] In other words, "fatigue" refers to exhaustion wrought by the demands of the technology/body interface.

Audience measurement is always working through a tension created by the conjoined status of the technological and corporeal. In modern consumer surveillance, the body not only has the function of technology, in a Foucaultian sense, it often blends with the materiality of technology. Donna Haraway's notion of a cybernetic biopolitics where "no objects, spaces, or bodies are sacred in themselves; any component can be interfaced with any other if the proper standard, the proper code, can be constructed for processing signals in a common language" is central to understanding modern techniques of consumer surveillance. These techniques constantly negotiate, at the site of the body/technology interface, the body's (inconsistent) cooperation.[10] The ratings industry's response to this challenge has been a constant onslaught of technological experimentation to find the "proper

standard" or "proper code" to create a common body/machine language. In other words, since participants' inconsistent cooperation is often negotiated at the body/technology interface, the ratings industry's response has been an onslaught of technological experiments in search of a seamless body/machine integration. Foucault's description of the body as a "political technology" is apt to describe the centrality of the body to the peoplemeter wars.[11] In an era of technological competition and rapid adaptation— when peoplemeter technologies competed to be more accurate, more fail proof, more inventive—the body became itself a technology: one that, if properly disciplined and utilized in the process of commodification, could make viewers more reliable consumers.

Active Peoplemeters—Remote Control Devices

While existing scholarly literature often credits Audits of Great Britain (AGB) with bringing the first peoplemeter to US market in 1985, Percy Co., a Seattle-based ratings company managed by Rodger D. Percy, was actually the first to use a remote control device to measure television in the US in 1981. Percy's device was called the Voxbox ("the people's voice"), and it featured a remote control the size of a small novel that attached to the subject's television set with a 30 feet cord. The Voxbox was an active meter, requiring users to record their responses to programs by pushing one of the 8 buttons on the remote control: excellent, informative, credible, funny, boring, unbelievable, dumb, and zap.[12] The "zap" button would silent both the sound and picture, allowing users to completely skip commercials they strongly disliked. In an interview, Rodger Percy explained that the "zap" button's ability to bypass commercials didn't concern advertisers because Voxbox usage wasn't pervasive enough to constitute a systematic practice of commercial bypassing. Rather,

advertisers appreciated the zap button's valuable and unique information about the future potential of time-shifting behavior.[13] Still, Percy's zap button is an interesting and overlooked technology in the history of time shifting.

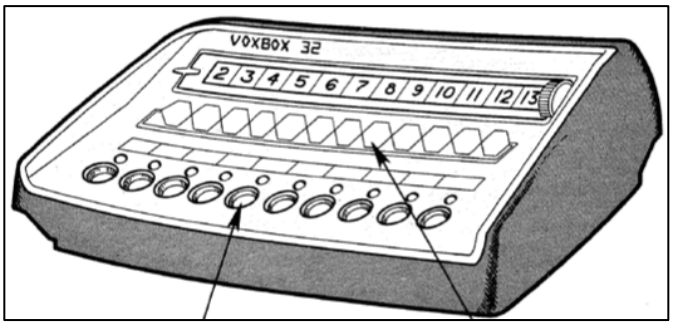


Figure 1: Percy's Voxbox featured a 10-inch long remote control device. The top row of buttons (right arrow) were used to change the channel and the bottom row (left arrow) recorded viewers' qualitative reactions to programs [14]

A couple of years later, in 1985, AGB announced their remote control peoplemeter. It worked by prompting viewers to press a remote control button every fifteen minutes to indicate that they were still watching the program. Early renditions of the peoplemeter were household meters; they required users to enter the number of people in the room rather than recording information about individual viewers.

Figure 2: Screen-view of the household peoplemeter, which required viewers to enter the number of viewers in the room when prompted[15]

The efficiency with which AGB's peoplemeter could gather household viewership data captured the interest of CBS and Fox; both networks signed on with the company. MTV also signed on with AGB in 1987.[16]

Later in 1985, Nielsen followed with its own peoplemeter technology. Nielsen's rendition of the peoplemeter (as well as later AGB models) featured buttons assigned to each member of the family, which they would push when prompted. The buttons correlated to stored demographic information about that family member. The device also featured extra buttons for guests. These later meters tracked viewership on the individual level, capturing precise demographic information that former set-top technologies like Nielsen's audimeter and ARB's arbitron device could not.[17]

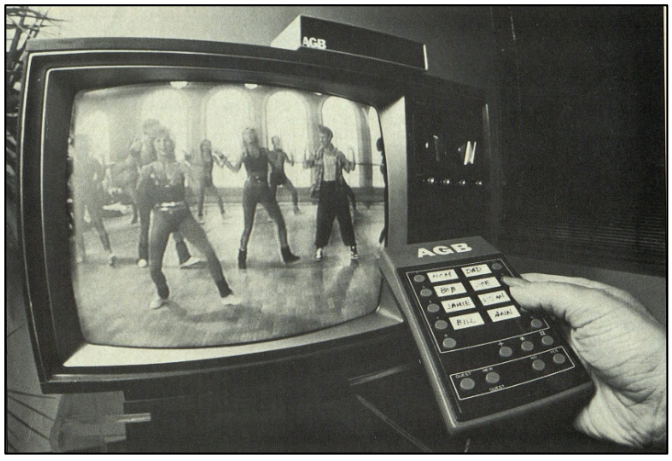


Figure 3: AGB's Peoplemeter technology included a set-top box and remote control device. Later renditions of the peoplemeter featured buttons on the remote control device that were assigned to each member of the households[18]

For two years, Nielsen ran peoplemeters alongside diaries in 600 homes in order to compare data, and by 1987, with a panel of 2000 households, the peoplemeter became Nielsen's primary method of collecting national ratings.[19] In 1988 the peoplemeter panel was increased to 4000 households.[20] Since the peoplemeter collected demographic data that could be interpreted immediately—as opposed to viewer diaries, which took days to tally—Nielsen

was able, for the first time, to include demographic information with the overnight ratings. AGB's peoplemeter originally offered 38 demographic breakouts, while Nielsen's offered 39.[21] The demographic groups included age, gender, race, income, education level, and also things like whether one rents or owns their home, vehicle ownership, family structure, and type of employment (blue collar/white collar).[22]

In addition to AGB and Nielsen, Arbitron also developed its own version of peoplemeter called ScanAmerica, which debuted in the Denver market in 1987.[23] The ScanAmerica machine included an electronic wand which viewers used to scan the barcode of their groceries. After scanning merchandise, users reinserted the wand into to the machine, where data about what they watch on TV was correlated with what they buy. Participants also reported big-ticket items that weren't scannable, such as automobiles, via a handwritten diary.[24]

Figure 4: Arbitron's ScanAmerica included a wand device that participants used to scan the barcode on their groceries. The machine would then correlate purchase data with information about TV viewership to create BuyerGraphics[25]

In an *Entertainment Tonight* news feature, Arbitron's V.P. of Marketing, Pierre Megroz, explains, "The householder can earn from $385 to $400 a year for participating in this, so

there's an incentive for them. And they are doing it willingly and voluntarily; that's not big brother."[26]

Megroz's need to preemptively defend the ScanAmerica against "big brother" accusations lends to the invasive nature of merging multiple streams of consumer data: data about groceries, or what subjects consume with their bodies, with television viewing practices. Arbitron referred to this single source information about viewership and consumer purchases as "BuyerGraphics."[27] In *Breaking Up America*, Joseph Turow discusses the implications of this type of streamlined, increasingly specific buyergraphic information that emerged in response to market fragmentation in the 1980s. He describes it as, "advertisers [working] with media firms to create the electronic equivalents of gated communities": sorting consumers into increasingly specific categories often based on social difference.[28] Identity groups end up on the winning or losing side of having their consumer power recognized and being represented in popular culture. This, in turn, ensures that cultural privilege remains with those people who also have consumer/social privilege. Arbitron's ScanAmerica is a prime example of just how entrenched this consumer sorting could be. With ScanAmerica, Arbitron could integrate data about what its participating families watched on television, their residence, where they shopped, what they ate, and what big-ticket items they purchased (expensive electronics, cars, air travel) to form detailed and socially indicative consumer profiles. Ultimately, the ScanAmerica received mixed reviews. While CBS signed a multiyear deal with Arbitron in 1991, the other networks were more skeptical of the method. Alan Wurtzel, senior vice president of research for ABC, expressed concern over the participant fatigue that might accompany adding an additional complex component to the measurement process. He stated, "The problem we've been having with the [Nielsen]

peoplemeter has been one of cooperation with the task. There's also a problem of fatigue, because once people start, they really get tired of punching the buttons. To add on an additional complex component—

to scan everything that comes into the home—is just going to exacerbate both problems."[29] Arbitron ultimately scrapped the Scan America in 1992 due to lack of financial backing.[30]

The era of peoplemeter wars was plagued with industry concerns about user fatigue and cooperation, and these were exaggerated by the resulting ratings drops. Upon the release of Nielsen's first national peoplemeter ratings, *Broadcasting* published an analysis of the ratings, looking at the 8pm to 11pm timeslots from Monday to Wednesday. It revealed that ratings fell one to two percentage points in almost every time slot across all three networks.[31] Over time, both AGB's and Nielsen's peoplemeters reported lower ratings in prime time, especially with certain popular shows like *Dallas* (CBS 1978-1991) and *The Cosby Show* (NBC 1984-1992), which were rated 10% to 15% lower with the peoplemeter.[32] The ratings decline inspired doubt about viewers' ability to reliably push the buttons. *Broadcasting* reported, "It is thought that better educated households may be overrepresented because they are more comfortable using the more advanced meter technology than the lesser educated households."[33] But others claimed that this overrepresentation was due to incorrect self-reporting of demographic information. Nielsen's John Dimling joked, "We have more people who say they have a college degree than the government says there are in the population."[34] Facing criticism about its low compliance rates (in the peoplemeter's first decade, only half of those invited to join the panel accepted) Nielsen changed its pitch, "emphasizing participation as voluntary 'membership,' rather than an incentive based situation."[35] Another programming area that took a hit in the ratings was teen and children's programming. In

1992 a survey conducted by the Committee on National Television Audience Measurement (CONTAM) indicated that peoplemeters were underestimating children by 2-3% on weekday afternoons and 4-8% on Saturday morning and teen audience by 6-15% on weekday afternoons and 16-27% on Saturday mornings.[36] As a result of the survey, Nielsen hired child specialists to work with participating homes one-on-one to teach children how to use meters and motivate them to do so. The company also developed questionnaires and games and tried color-coding buttons to make the ratings collection process more appealing to children.[37]

The prosthetic form that peoplemeters took—as hand held remote controls—corresponded with the growing coalescence of surveillance and interactivity during this period. In addition to the proliferation of personal media devices and appendages, the TV industry was also capitalizing on the two-way transmission capabilities of cable to create interactive TV, enabling viewers to request more information or buy the products seen in commercials with just a few clicks of their remote control. In her analysis of remote control devices, Sheila Murphy says that such "input devices" turn the television space into a "deeply interactive and embodied media zone."[38] She also says that remote controls "are the objects through which user agency passes."[39] Existing scholarship on remote control devices, such as those by Murphy as well as William Uricchio, neglects the unique way that remote control ratings devices contribute to the televisual experience.[40] When remote controls are not entertainment devices, but rather labor devices, this deep interactivity and embodiment becomes an exhausting (or "fatiguing") transferal of agency. Peoplemeter remote controls, and other technological appendages such as ScanAmerica's grocery wand, effectively operated as technological prostheses, relying on the labor of the body to extend the data collection capabilities of the ratings device. In the case of ScanAmerica, for example, the

labor of the body enabled the device to collect consumption data from across the domestic space, in the kitchen or the pantry, apart from the wired television set. Promotional images for peoplemeter technologies (such as figures 2 and 3 in this chapter) often emphasize the human/technology interface, visually emphasizing a human hand controlling the ratings appendage, implicating the human hand as part of the device. When remote controls are not entertainment devices, but rather labor devices, this deep interactivity and embodiment becomes an exhausting (or "fatiguing") transferal of agency.

Indeed, this labor element was often felt (even if not explicitly recognized) by participants. The CONTAM study found that less than half of households approached to be peoplemeter panelists agreed to participate. And on the topic of viewer "fatigue," CONTAM's exit interviews with panel members found that a third of families said that at least one household member tired of using the meter.[41] Through the 1980s and early 1990s, the ratings industry evolved in response to these issues of cooperation, shaped all the while by the opportunities and limitations of technology and its relationship with the body, also as a technology of data production. In *Bodies and Machines* Mark Seltzer references Henry Ford's fantasy of a "perfectly rationalized factory manned by the armless, the legless, and the blind: 'automated hands work better when blind.'"[42] During the peoplemeter wars, the ratings industry pursued this same fantasy—a device that could capitalize the prosthetic, the body/machine interface, without the agency of the human.

Passive People Meters—Ultrasonic and Infrared Scanning Devices

Starting in the late 1950s, the advertising and marketing industries displayed growing interest in the integration of bodies and machines, but their methodological experiments

reveal that this alliance was far from seamless. In 1957 the advertising industry experimented with using a psychogalvanometer that measured the secretion of skin perspiration in order to decipher emotional responses to commercials. Art Koponen of the Electronic Pretesting Corporation explains, "The advantage of using techniques such as these for measuring emotional responses is that these responses are involuntary and cannot be controlled by the individual in an attempt to disguise his emotional state."[43] Throughout the 1970s the advertising industry was also steeped in experiments with brain wave measurement and eye tracking. During his tenure at the J. Walter Thompson ad agency, Leo Bogart wrote about the engineering challenges posed by the body, which included the danger that infrared light posed to the human eye and the need to make TV test screening rooms look "like movie theaters, not laboratories" in order to prevent setting-induced alterations in brain chemistry.[44]

The disruption in the audience measurement industry throughout the late 1970s and 1980s created an opportunity for biometric companies to evince their utility in this arena. Although Kelly Gates neglects to address the television ratings industry's experiments with biometrics, her book *Our Biometric Future* sets the groundwork for understanding how these technologies facilitated the need to balance individualized data with objectivity. Gates argues that the rise of biometric technology during this era was driven by the conflicting demands of burgeoning neoliberalism: "demands of both the state and the business system to individualize and classify, to include and exclude, to protect and to punish, to monitor and define parameters, and to otherwise govern populations in the face of their radical destabilization under the wrenching neoliberal reforms instituted in the United States."[45] She says that biometrics like facial recognition technology promised to "facilitate the forms of mass individuation, social differentiation, and intensified security on which neoliberalism

depended."[46] During the growing effort to commercialize biometrics in the 1980s, biometric engineers lauded their technologies as the answer to the disjunctions between individualization and hyper-corporatization. Thus, the goal of biometrics is to "integrate humans and machines so that the intellectual skills of the former could be amplified by the latter."[47] Indeed by supplementing push-button remote control peoplemeters with new so-called passive biometric methods, ratings companies could integrate the most valuable aspects of the peoplemeter, subjective and individualized data, with the most valuable aspects of audimeters, the objectivity of the machine.

In 1987, in the midst of the skepticism over the reliability of cooperation with active peoplemeters, Percy introduced a second iteration of the Voxbox called the Voxbox 1200. That same year, NBC, CBS, and Fox all signed six month contracts with the company. The Voxbox 1200 supplemented the push button identification system with an infrared heat sensor that would scan the living room back and forth at different heights, essentially painting the room, to detect how many people were in the room with the television. When the infrared sensor detected a different number of people in the room than were punched in via the remote control device, the Voxbox would blank the television screen (turning the image completely black) until viewers noticed and entered the correct number of viewers.[48]

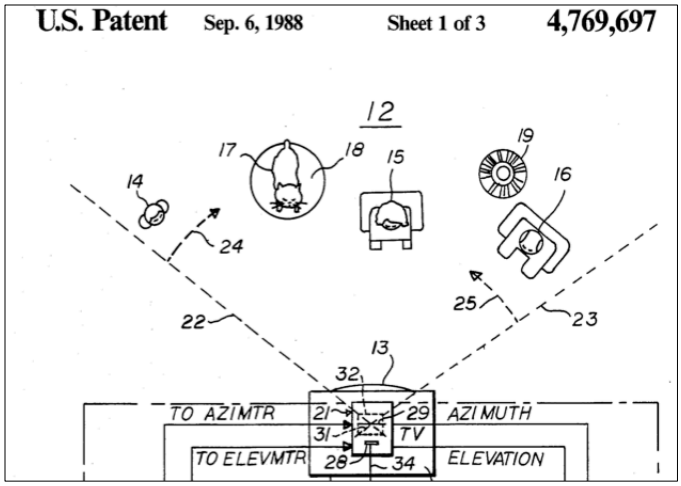


Figure 7: The Voxbox technology patent features a hypothetical living room setting (top), which the patent uses to demonstrate how the system works[49]

The Voxbox technology patent illustrates how the infrared heat sensor collected and interpreted information about viewers. The top part of figure 7 features a hypothetical living room setting where, from left to right, the living room contains: a child (labeled 14), a cat laying on a table (17), a mother figure (15), a lamp (19), and a father figure (16).

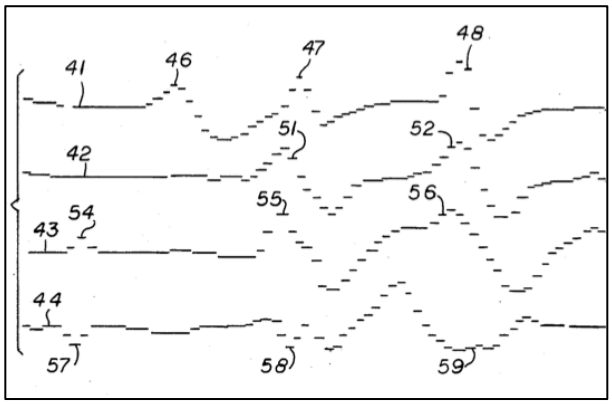


Figure 8: The Voxbox used an infrared heat sensor to detect and record body heat measured at four different scan heights[50]

Figure 8 graphs the heat data that the infrared scanner is able to detect by scanning at four different heights. At the highest scant it does not detect the child (labeled 41). It does detect the cat (46), and it also detects the mother (47) and the father (48). At the second scan height

it still does not detect the child (42). It no longer detects the cat (it doesn't detect the cat at any heights except the highest one). It detects the mother (51) and the father (52). The third height finally detects the child (54), but still no cat, and it detects the mother (55) and the father (56). The lowest scan height picks up the child's feet (57) and both the mother's and father's feet (58 and 59).

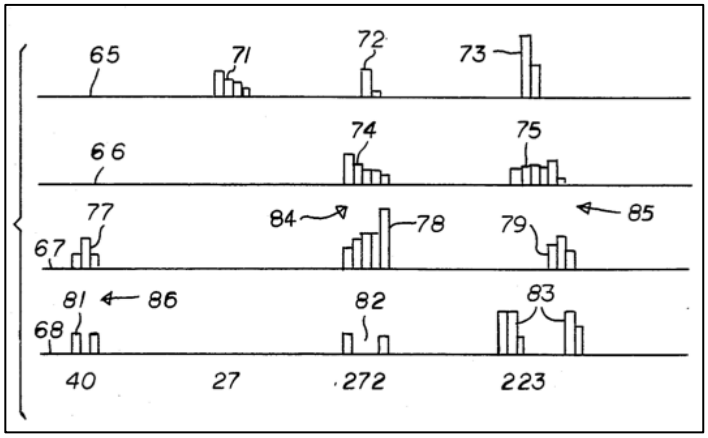


Figure 9: Body heat data is interpreted into masses, and then a number is assigned to each mass, indicating how likely it is to be a human subject[51]

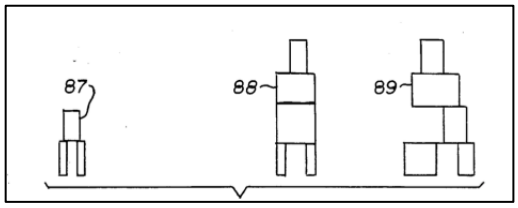


Figure 10: The shape of each subject is interpreted based on the detected heat mass[52]

As shown in figure 9, the heat data that is collected is then interpreted, and based on its determined shape and size, each heat mass is given a number indicating how likely it is to be a human subject: the higher the number, the more likely it is to be a human subject. In this case, from left to right: the child is given a 40, the cat a 27, the mother a 272, and the father a 223. In figure 10 we see the determined shape of the detected heat masses.

Figure 11: The Percy Voxbox 1200 had an infrared scanner that scanned the living room for body heat[53]

The Voxbox measured one of the surest indicators of a living body—body heat, only to use that data to simplify viewers into literal data bodies, and then reconstitute their "human-ness" based on a numerical value. In this biometrics process then, the "bio"—that that is alive or human about the body—is precisely what is purposely absent from the metric. The system presents a number of issues. The child ranked closer on the "humanness" scale to the cat than its human parents. Critics expressed concern that large animals could be detected as humans. Indeed, Percy admitted, "When we developed the system our lead engineer had a cocker spaniel that kept getting counted. We couldn't get rid of the dog for a long while."[54] Further, it seems that viewers who are physically disabled, lying down, or in any way differently shaped would be at risk of being misinterpreted. Since the Voxbox's quantification of human subjectivity seems based in part on the amount of mass one's body takes up, the system engenders a number of issues around body politics.

To prove that the passive peoplemeter was accurately counting the viewers that were in the room, Percy ran a "video validation" program in a select number of New York households, where they installed small video cameras on living room television sets. The camera would automatically turn on when the television was powered. Rodger Percy

states, “It was amazing that, after a few days, panel members would actually forget that the camera was there.”[55]

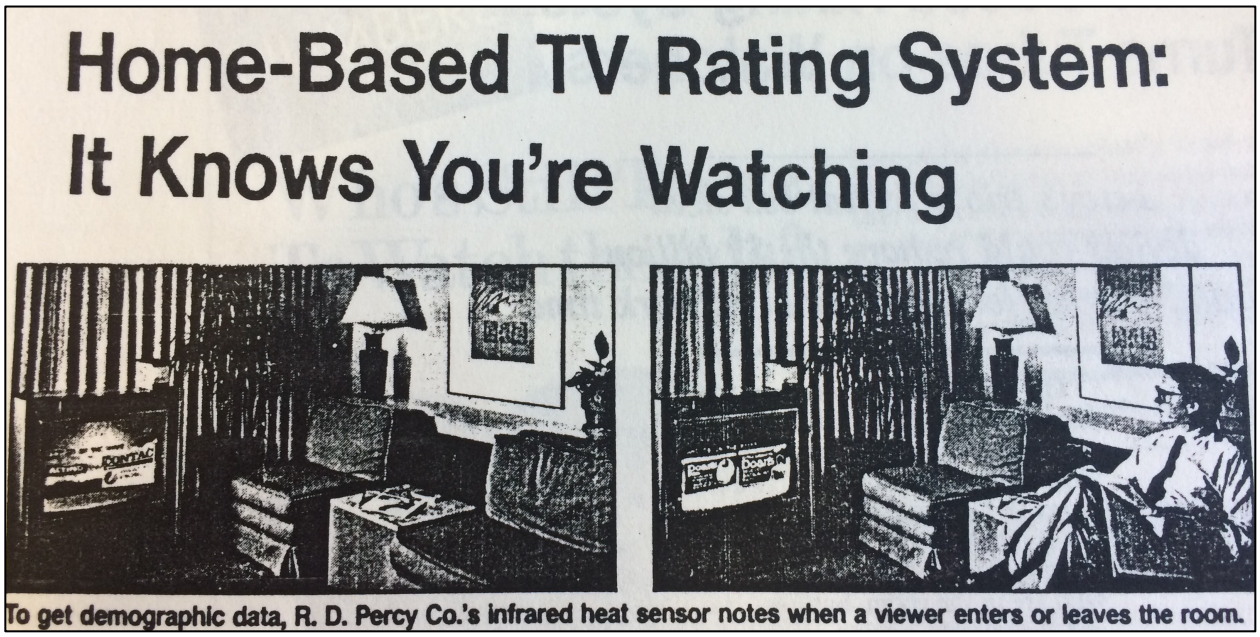


Figure 12: The Voxbox provided a time-stamped record of how many people were in the room with the TV[56]

Percy cancelled operation in late 1988, after failing to establish commercial viability. However, the Voxbox captured interest, and from 1988 to 1994 the audience measurement industry was in pursuit of a passive peoplemeter method.

Nielsen tried out an array of passive systems in effort to avoid some of the pitfalls of the Voxbox. In 1987, the company experimented with using an ultrasonic wave scanner, which mapped the living room space to detect motion. The machine worked by emitting an ultrasonic wave that would reflect off of objects. By measuring the alterations in the frequency of the return signal, the device could detect the unique motion patterns of those objects. The resulting map would be “processed to identify [movement] clusters having a minimum intensity” in order to identify human subjects, since, in the words of one executive, “A child doesn’t move the same way a dog does.”[57]

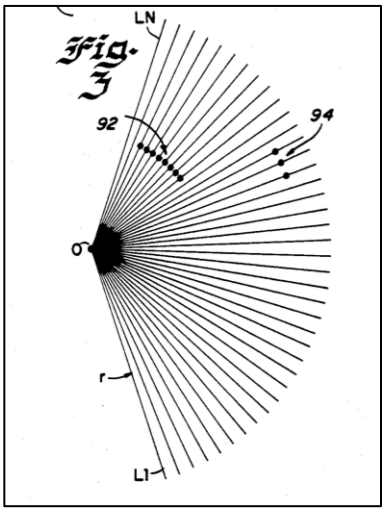


Figure 13: The patent for ultrasonic scanner illustrates a cluster map resulting from a scan, where dots 92 and 94 are detected objects[58]

Building on these technologies, in 1989 Nielsen engineers patented a system that used facial recognition technology.[59] The device worked by scanning the front and side of each family member's face and storing data about each individual's facial features, called a "pattern signature," in a computer. Every time the TV was turned on, an infrared scanner would continuously scan the room. Once the scanner detected a face, it employed a sonar ultrasound transducer to detect the viewer's distance from the meter. The passive meter contained a built-in camera, which used this sonar data to adjust its zoom in order to get good screen captures of viewers' faces. Using these screen captures, the device could even detect which family members were looking toward or away from the television. Then, using smart sensing computer image recognition technology, the face images were input into an algorithm, which assigned each pixel in the image a 0 or a 1 and each facial feature a length of between 3 and 10, in order to create an image pattern signature. After applying a couple of additional code factors, the resulting image signature was correlated to the stored facial profiles in order to detect which family member was in the shot as well as their demographic characteristics. The

device could even detect visitors in the room, although the image data about visitors was not precise enough to provide demographic information.[60]

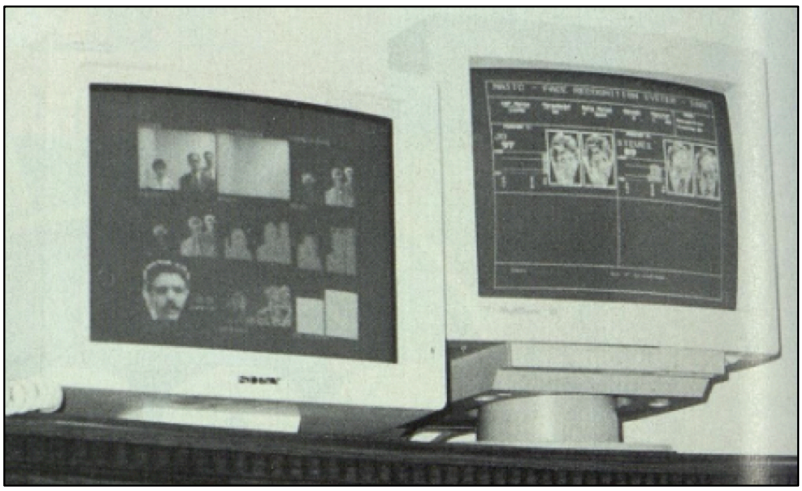


Figure 14: These two screens show the computer imaging process that took place inside Nielsen's passive peoplemeter; the system scanned and stored data allowing it to identify individual viewers in a room[61]

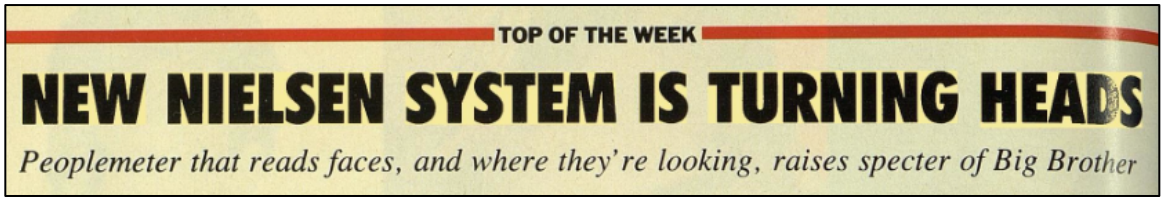
Just like Percy's meter, Nielsen's facial recognition technology abstracts human identity into numbers and codes before making conclusion about subjects' humanness. In what she describes as a cybernetic tendency to abstract the body from the subjective self, Katherine Hayles writes, "Only because the body is not identified with the self is it possible to claim for the liberal subject its notorious universality, a claim that depends on erasing markers of bodily difference, including sex, race, and ethnicity."[62] The erasure of demographic identity, and its re-assignment through informatics "streamlines" audiences into more easily managed and categorizable units.[63] If consumer data constitutes an abstract form of identity, Gates argues that, "in laying claim to a direct link to bodies, biometric technologies promise to stabilize the messy ambiguity of identity."[64] However, this supposed "stabilization," meant to increase tractability, manifests only from a destabilization and detachment of identity from the human subject. In the case of Percy's Voxbox 1200, human

subjects were abstracted into heat data only to have their human subjectivity assigned a quantitative value based on an abstract interpretation of their body shape. On the other hand, Nielsen's passive peoplemeter determined panelists' demographic information by comparing the scans of participants' faces with a limited database of demographically categorized facial features. Not only are demographic breakdowns determined by the limits of the scanning process then, but also by the limits of categorical comparison as a tool of interpretation as well as the limits of data storage. Shoshana Amielle Magnet argues that biometric technologies are prone to "demographic failure"; they have a tendency to fail to identify some subjects and over select others bases on race, gender, and able-bodiedness.[65] In general, biometrics not only abstract the body from its social context, they make the body subject to the politics of interpretation—prior, during, and preceding the moment of data collection.

If the label "passive" indicates an attempt at removing the "problem" of cooperation, I argue that this occurs via exerting control over the body, whether it be via the policing sonar scanner that tracks the body's movement or the infrared eye that constantly scans for body heat or recognizable faces. Indeed, Percy's and Nielsen's passive meters' constant scanning of the living room space mirrors Foucault's description of a town quarantine during plague. He describes it as an "enclosed, segmented space, observed at every point, in which the individuals are inserted into a fixed place, in which the slightest movements are supervised, in which all events are recorded…in which each individual I constantly located, examined, and distributed…"[66] These passive ratings systems relied on the stability of the living room space to—like the town square—fix, encipher, and map bodies. Thus, again drawing on comparisons to women's work, audience labor is made useful while also remaining contained via body policing and confinement to the domestic space. The passive

peoplemeter meters' treatment of the television viewing body as though it is a plagued body aligns with the ratings industry's description of non-cooperative viewers as "fatigued"; bodies that don't operate as reliable technologies of capital production are afflicted.[67] This affliction is managed through surveillance, and its cure is a conversion of the biological into the datalogical.

Continuing these metaphors of affliction, Douglas Davis asks in his 1988 *New York Times* article, "Why must we be X-rayed, in effect, to prove our presence while 15 and 30-second messages zip by?"[68] Other journalists echoed these critiques of the increasingly invasive audience detection methods. And companies like Percy and Nielsen put substantial effort toward mitigating public concerns over privacy invasion. In his article in *Broadcast*, Steve McClellan points out, "What Nielsen goes to great lengths to play down is the privacy issue, or, as some call it, the 'big brother' issue."[69]


TOP OF THE WEEK

NEW NIELSEN SYSTEM IS TURNING HEADS

Peoplemeter that reads faces, and where they're looking, raises specter of Big Brother

Figure 15: Critics likened passive peoplemeter technologies to "Big Brother"[70]

Nielsen addressed such privacy concerns during a demonstration of its passive meter technologies to fellows participating in the Freedom Forum Media Studies Center in May 1992. Steve McClellan writes, "Not unexpectedly, many were curious to know exactly what behavior the meter could detect beyond television viewing. According to Dimling, the answer is none. 'We're not installing cameras in the meters,' he said." McClellan adds, "Nevertheless, many viewers may resist a device in their bedrooms that monitors any

behavior, be it TV watching or something else."[71] Elizabeth Jensen echoes these sentiments in her *Wall Street Journal* piece: "Critics also question whether people will allow it to be installed in bedrooms and bathrooms (one million homes have bathroom TV sets), where the system's quasi picture-taking element could be seen as an invasion of privacy."[72] While privacy concerns among participants and bad press forecasted the uphill battle these devices would face in acquiring a large enough and statistically representative panel of participants, ultimately market forces prevented any wide-scale implementation of these passive meters. Philip Napoli states that audience measurement reflects "a tendency to travel the path of least resistance" and thus, evolution takes place only "when a particular set of circumstances are in place that reconfigure the path of least resistance."[73] Karen Buzzard has written, in more practical terms, about the incumbent disadvantages that new audience measurement companies and ratings technologies face.[74] The financial investment of testing new methods makes it difficult for newcomers like Percy to stay afloat long enough to see profit. And for Nielsen and the TV networks, the financial investment to install these technologies in panelists' homes at mass scale was too prohibitive. Accordingly, following AGB's and Percy's exits, and the resulting lack of competition, the ratings industry's pursuit of passive biometric TV ratings systems for the living room dwindled by the end of the 1990s.

Portable Peoplemeters – Devices Attached to the Body

The fears that emerged in the press about peoplemeters in the 1980s and 90s went beyond television's ability to surveil the living room. Journalists likened body-oriented audience measurement technologies to extreme forms of body control such as body attachment and implants. Jensen writes, "The TV Industry has been on a quest for years for a

so-called passive system that would require little or no effort on the part of the person whose viewing habits are being measured. The goal is so elusive that TV executives occasionally joke about wishing they could implant computer chips under viewers' skin to ensure an absolutely accurate and complete measurement of who watches what and when."[75] In a similarly vein, a *Variety* reporter wrote, "The next step is, so far, only a joke among the boys in the white jackets in research, but then they once laughed at peoplemeters. The laugh in the labs concerns the ultimate peoplemeter—a tiny microchip implanted hypodermically under the skin. Crazy? You can forget to push the buttons or to wear jewelry, but try doing without your skin."[76] On the topic of these dystopic micro-machines, Haraway writes, "Modern machines are quintessentially microelectronic devices: they are everywhere and they are invisible... Miniaturization has turned out to be about power; small is not so much beautiful as pre-eminently dangerous..." She continues, "Our best machines are made of sunshine; they are all light and clean because they are nothing but signals, electromagnetic waves, a section of a spectrum, and these machines are eminently portable, mobile."[77] The adjective "clean" is operative here. In the corporate imaginary described by *Variety*, these fictional ratings devices—hypodermically implanted computerized microchips—are the idealized way to cleanse the plagued body from the pathogen of viewer noncooperation. While Percy's and Nielsen's passive meters replicate Foucault's quarantined "enclosed, segmented space, observed at every point…in which the slightest movements are supervised," the dystopian audience measurement microchip operates anatomically. [78] Haraway writes "The diseases evoked by these clean machines are 'no more' than the minuscule coding changes of an antigen in the immune system..."[79] The ratings microchip works like a pill; through

incorporation into the biological system like an antigen, it cures the pathogen of noncooperation, making wearers into idealized consumer subjects.

While the relative containability of the domestic space was central to the surveillance function of passive meters, throughout the 1980s TV viewing was becoming increasingly public, with a proliferation of TV screens in airports and bars and portable sets at 8% penetration by the end of the decade. The industry again looked toward technologizing the body to manage the audience's tractability. In accord with these prophetic invocations of body attachment, throughout the 1980s, Nielsen worked to develop a peoplemeter that could attach to the body. In order to develop a seamless enough prosthetic to ensure participants' proper use of the device Nielsen experimentation with "form factors." Gina Neff and Dawn Nefus describe form factors as "the material envelopes for the technology inside"; in this case, the functional form and style of the device as a familiar accessory. They write, "Technological innovations make smaller devices conceivable, but it is the social and material envelopes for them that help us imagine wearing them on our bodies."[80] Accordingly, Nielsen experimented with giving viewers rings to wear, which picked up frequencies from the TV set. However, Jensen mentions that the participation rate was low: "half the participants lost them." Nielsen tried watches as well, "but viewers refused to wear them."[81] In 1987, writing about the abundance of "outside the box" experimentation with peoplemeter technologies, *Variety* teased, "Word has spread that the next wave [of peoplemeter methods] will be to generously give a semi-precious birthstone ring or bracelet to members of measured families with the proviso they wear it all day."[82]

While Nielsen was never able to come up with a viable portable peoplemeter technology, this is an area that Arbitron excelled at. Arbitron worked with the Martin

Marietta Corporation, a military contracting company, and Intellisys Automation, an engineering firm, to develop a Pocket People Meter (PPM) device that came to market in 1992.[83] It consisted of three pieces: a base station, a household hub, and the PPM, which participants carry with them or wear on their person.

Figure 18: The three elements of the PPM technology: a base station, a household hub, and the PPM, which was designed for participants to carry with them or wear on their person[84]

The PPM worked by detecting the unique identifying code that broadcasters embed in the soundtrack of radio and television programs, called a Universal Television Program Code (UTPC).[85] The sound frequencies can't be heard by viewers, but can be detected by the pocket peoplemeter's receiver. Designing the audio code required a fragile manipulation of the bod/technology interface. The code had to be able to survive in any techno-acoustic environment, including format conversions and compression; it had to conform to all industry standards and had to be capable of encoding monophonic, stereophonic, and multichannel signals; and it had to be completely inaudible to the human ear in all listening and viewing environments. This feat was accomplished with psychoacoustic masking, which "takes advantage of the human ear's inability to discern a slightly weaker frequency that is immediately adjacent to a strong frequency."[86] Arbitron's survey participants would carry or

wear the pocket peoplemeter, and whenever they were within audio range of a radio or television program, the PPM used the embedded code to identify the program.[87] The PPM unit also contained a motion detector and a clock that generated a time stamped record of panelists' movement. This allowed Arbitron to track whether participants were complying with carrying the device around. At the end of each day, participants would plug the PPM into the base station where the viewing data was downloaded. In some models of the device, participants received positive feedback in the form of points earned for carrying the device for the duration of the day. Arbitron software designer Bob Michaels explains, "On the docking stations is an LED readout that congratulates them and shows them the number of points they earned that day…The point system is not based on how much [they] listen to the radio or watch television, but rather on keeping the green light lit on the meter, and the way they do that is to carry it with them wherever they go when they are awake."[88] Along with carrying the PPM on their person, this reward system also incentivized users to remember to plug the PPM into the docking station at night so that data could be downloaded from the device.

Whereas the first few decades of television audience measurement occurred almost exclusively in the home, the PPM could systematically track television viewing beyond the domestic space for the first time, including viewing that occurred in bars or airports. Anna McCarthy uses the term "ambient television" to account for the myriad of ways that we encounter television outside the domestic space. She argues these public encounters with television can teach us a lot about "the power politics of spectatorship and commerce in contemporary public space."[89] Part of this politics includes surveillance, as McCarthy demonstrates in her discussion of Nielsen's system for measuring audiences of Turner's Food

Court Entertainment Network. The system included methods "virtually identical to those of the disciplinary antitheft systems already operating in the location," such as researchers stopping shoppers as they left the mall to examine the shoppers' purchases.[90] While McCarthy touches on public "place-based" media audience measurement, she does not discuss the unique practice of tracking mobile television viewing. Just as Foucault describes panoptic surveillance as, "permanent in its effects, even if it is discontinuous in its action," by carrying the PPM measurement device around on their person, Arbitron panel participants implicated their entire daily activities within a regime of audience surveillance even when they were not acting as television viewers.[91] Through their technological prosthetic, panelists enact an identity of permanent audiencehood. Mark Andrejevic uses the term "digital enclosure" to describe "a process whereby activities and transactions formerly carried out beyond the monitoring capacity of the Internet are enfolded into its virtual space."[92] I argue that a similar occurrence of surveillance enclosure is evident there, one that participants enter when they agree to become an Arbitron family. Television's ambience requires that television audience measurement be mobile, thus implicating and enclosing even activities that are unrelated to television viewing or consumption under corporate surveillance. But beyond tracking and monitoring the body in order to measure television viewership, the PPM commodifies the labor of the body, relying on the body's mobility to extend the capabilities of measurement technologies. In its early years, the ratings industry and the press often referred to the PPM interchangeably as both the "portable people meter" and the "personal people meter"; this slippery semantics gestures to the conjointness of audience measurement's geographical omnipresence with trespass of the personal.

The ambiguous forms of labor that the PPM relied on resulted in disagreements in the industry about whether the device was a passive or active peoplemeter. Arbitron originally marketed the PPM as a passive peoplemeter, and the press followed by emphasizing its ability to eliminate "the risk that a lazy viewer would slack off and ignore punching in."[93] While Nicholas Schiavone, Vice President of Media and Marketing for NBC, stated, "The fact that one has to wear the new Arbitron meter makes it a highly active device, not a passive one."[94] Schiavone had a point, since even the PPM's time stamping function couldn't ensure compliance. For example, one former Arbitron family admitted to frequently circumventing the time stamp monitor by attaching the device to their dog's collar.[95] Haraway lists "active/passive" as one of the dualisms that facilitate domination in Western traditions. She says, "high-tech culture challenges these dualisms in intriguing ways. It is not clear who makes and who is made in the relation between human and machine."[96] Is it the PPM machine doing the labor of measuring the body's exposure, or is it the body doing the labor for the machine? In any case, with portable peoplemeters, the question of cooperation was still central. McConochie writes, "One of the obvious, critical keys to Arbitron's new pocket people meter program is respondent cooperation. Some in the industry have speculated that wearing a pocket meter could be easier than filling out a diary. Others have asked, 'Will survey participants accept the high-tech method? Will they keep the meter with all the time?'"[97] At the same time that critics questioned the cooperation of individuals (bodies) with carrying the device around, there were also concerns over the device's ability to cooperate with body mobility. Early editions of the device were criticized for being clunky or too heavily weighted to hook on a belt; participants also expressed concern that the device

looked so much like a pager that it raised eyebrows in places where pagers were not permitted.[98]

Figure 19: Given the low cooperation rates with Nielsen's experimental portable peoplemeter devices, there was much question around whether participants would consistently carry around the clunky PPM device[99]

Ultimately, test-runs demonstrated a similar participant-fall-off rate as other established methods. However, Arbitron suffered from the financial failure of the ScanAmerica, and moreover, due to increased expenses expected with the rumored implementation of peoplemeters at the local level, many local stations ceased subscribing to two networks. Arbitron's subscriber base fell drastically between 1985 and 1992, and in 1993 Arbitron announced that it would leave television ratings to focus exclusively on radio ratings.[100] This left Nielsen in a monopoly position. Arbitron did go on to roll out a PPM panel, starting in Philadelphia in 1994, moving into other local markets throughout the 1990s, and going national in 2000. The PPM helped Arbitron secure their own monopoly on the radio ratings industry.

Conclusion: The Influence of the Peoplemeter Wars in the Digital Age

These ratings industry experiments with biometric and body-attachment technologies in the 1980s and 90s had both technological and socio-cultural influence on contemporary consumer surveillance practices. Although Arbitron left television ratings behind in 1993 in order to focus exclusively on radio ratings, the UTPC audio detection technology used in

Arbitron's PPM would also become the method used by Nielsen to track television viewing in the new millennium. As Chapter 4 details, the audio code detection technique is the method used in Nielsen's Active/Passive (A/P) meter, which became the replacement for peoplemeters in their national panel in 2005.[101] And moreover, ever since, the technique has been the foundation of Nielsen's digital, cross platform audience measurement strategy. In fact, Arbitron's expertise in mobile tracking methods lead to Nielsen's acquisition of Arbitron in 2013, in the effort to enhance Nielsen's cross-platform measurement capabilities.[102] In the Conclusion of "Television Ratings: from Audimeter to Big Data" I discuss one of the major outcomes of this merger: Nielsen's new "next generation portable peoplemeter," a wearable watch device that combines the UTPC audio detection technology used in the traditional PPM with fit-bit like body-metric capabilities. Nielsen has been demoing the "next-gen" PPM at industry trade events since 2017. It is slated to be implemented across their national panel by the end of 2022, thus becoming their main method for tracking media engagement in the digital landscape.

Biometrics remain a central arena of research for Nielsen in other ways. In 2015 Nielsen bought Innerscope Research, renaming it Nielsen Consumer Neuroscience.[103] Since then, the company has made significant endeavors into "neoromarketing," experimenting with facial coding, galvanic skin response, and eye tracking to measure audiences neurological and biological responses to ads. In an interview that I conducted with Lindsay Zaltman, CEO of the biometric firm Olson Zaltman (a company that has partnered with Innerscope on numerous endeavors), she stated, "The [consumer] research world is currently focused on data, data, and more data. What is missing is the emotional or human understanding of consumers. The insights that I see clients working with lack deep truths.

This is what neuro and biometric information helps us recuperate."[104] In 2008 Lindsay Zaltman and Gerald Zaltman published a book titled *Marketing Metaphoria*, which uses emotional/epistemological metaphors to detail how marketers are using biometrics to overcome this "depth deficit" by tying into consumers' unconscious emotional and cognitive processes.[105] However, as much as the Zaltmans metaphors are practical in the way they correspond with corporate "ways of knowing" consumers, they are discursively strategic, a rhetorical maneuver to imbrue the kind of data the Zaltmans trade in with nature-wrought veracity. However, these new forms of neuro/biometric information nonetheless have many of the same epistemological limitations as any kind of data. They are subject to the limitations of technology (and in particular, to how technology interfaces with the body), the politics of interpretation, and the cooperative labor of consumers/viewers. Indeed, it is precisely this call to the biological to disguise the interpretive properties of data (to characterize it as deep, untouched truth) that make it more political.

Part of what I want to convey in detailing this overlooked history of ratings industry experiments with biometrics is that the engineering design and experimentation phases for emerging technologies are often where the politics and limits of body commodification are tested. While many of the biometric technologies detailed in this chapter never came to fruition, as is often the case in Nielsen's technological history, these tech experiments (and patents) formed the mechanical roots and functional logics that would come to shape Nielsen's operations the digital landscape. This recuperative history is just one example of why its valuable for scholars to resist the lure of presentism.

Even beyond biometrics, in the discord of the digital sphere "the body" is increasingly used as a technology of consumer surveillance: a practical mechanism for

mapping data onto subjects and a metaphorical mechanism for epistemologically tying it to "deep truths." Thus body/tech integration (and its negotiations) are at the center of many emerging practices, including the proliferation of smart spaces, which rely on the body's movement to navigate a surveillance enclosure; the quantified self-movement, which inevitably interrogates messy distinctions between the "data self" and the ever-commodified "data subject"; and the growth of artificial intelligence, which explores computerized replication of neuro-like processes. This interfacing is rarely seamless; replicating the body through numbers and code requires constant technological negotiation of intractable subjectivity and inevitably has biopolitical consequences.

Notes

[1] David Poltrack, "The US—The Impact of Cable and More Stations," *Television Today*, 3 January 1986; Randall Rothenberg, "Networks vs Cable: Battle Heating Up," *New York Times*, 21 March 1989, D23; Megan Mullen, *The Rise of Cable Programming in the Unites States: Revolution or Evolution?* (Austin, TX: University of Texas Press, 2003), 128-137.

[2] Jube Shiver Jr., "Madison Avenue Frets as Viewers Skip the Commercials," *Los Angeles Times*, 2 September 1984, D1; Steve Johnson, "ZAP! Man Who Put Choice into Hands of Viewers," *Chicago Tribune*, 27 August 1986, 1.

[3] This new focus on audience agency persistent conterminously in scholarship, upon the popularity of Uses and Gratifications theory and as audience receptions theory. Elihu Katz, Jay G. Blumbler, Michael Gurevitch, "Uses and Gratifications Research," *Public Opinion Quarterly*, Volume 37, Issue 4, 1 (1973), 509–523; Jay G. Blumbler and Elihu Katz, "The Uses of Mass Communications: Current Perspectives on Gratifications Research," *Sage Annual Reviews of Communication Research Volume III* (Beverly Hills, CA: Sage Publications, 1974); Stuart Hall, "Encoding/Decoding," *The Cultural Studies Reader*, 2nd ed., Ed. Simon During (New York: Routledge, 1993), 507-517; Charlotte Brunsdon and David Morley, *Everyday Television: Nationwide* (British Film Institute, 1978); Ien Ang, *Watching Dallas: Soap Opera and the Melodramatic Imagination* (New York: Methuen & Co., 1982).

[4] "Report on Television Ratings," *MacNeil/Lehrer News Hour*, PBS, 1986.

[5] "Arbitron to go with peoplemeter," *Broadcasting*, 27 June 1988, 62. Karen Buzzard's, "The Peoplemeter Wars," offers an economic-theory-informed analysis of how Nielsen maintained its stronghold on the audience ratings industry during this period. Karen Buzzard, "The Peoplemeter Wars: A Case Study of Technological Innovation and Diffusion in the Ratings Industry, *Journal of Media Economics* 15, no. 4 (2002), 273-91.

[6] Mark Andrejevic, "The Work of Watching One Another: Lateral Surveillance, Risk, and Governance," *Surveillance & Society* 'People Watching People' (ed. Wood) 2, no. 4, 3.

[7] Ibid., 14.

[8] Michel Foucault, *Discipline & Punish*, trans. Alan Sheridan, 2nd edition (New York: Vintage Books, 1995), 11.

[9] John Lippman, "Vanishing Viewers Cause a Stir Over TV Ratings," *Los Angeles Times*, 27June 1990, 1.

[10] Donna J. Haraway, "A Cyborg Manifesto: Science, Technology, and the Socialist-Feminism in the late Twentieth Century," *Simian, Cyborgs, and Women: The Reinvention of Nature* (Routledge: New York, 1991), 163.

[11] Foucault, *Discipline & Punish*, 11, 26.

[12] Personal interview with Rodger D. Percy, 23 March 2016.

[13] Ibid.

[14] "Proceedings of the 1980s Technical Conference: Qualitative Television Ratings," *Corporation for Public Broadcasting*, 1980, 7.

[15] "The People Meter," *Entertainment Tonight* newscast, CBS, 1985, www.youtube.com/watch?v=Cl2Ovt-YqNU.

[16] "Television in the Peoplemeter Age," *Broadcasting* vol. 113, no. 10 (September 1987), 35-40.

[17] ARB changed their name to Arbitron in 1973.

[18] "Television in the Peoplemeter Age," 35-40.

[19] Buzzard, "The Peoplemeter Wars," 35.

[20] "Cable to Get Peoplemeter Demographics," *Broadcasting*, 5 September 1988, 41-41.

[21] "Television in the Peoplemeter Age," 38.

[22] Nielsen audience report, published September 1987.

[23] "ARB Taps 3 Cities for Peoplemeters," *Variety*, 22 February 1989, 6.

[24] Kenneth R. Clark, "CBS Taps 2nd Ratings Firm in Jab at Nielsen," *Chicago Tribune*, 5 November 1991, A1.

[25] "Arbitron to go with peoplemeter," 62; "The People Meter," *Entertainment Tonight* newscast, CBS, 1985, www.youtube.com/watch?v=Cl2Ovt-YqNU.

[26] "The People Meter," *Entertainment Tonight* newscast, CBS, 1987, www.youtube.com/watch?v=Cl2Ovt-YqNU.

[27] "Arbitron to go with peoplemeter," 62

[28] Joseph Turow, *Breaking up America: Advertisers and the New Media World* (University of Chicago Press, 1998), 2. In his later work Turow elaborates on how media and advertising companies use consumer data to separate consumer groups into "targets" and "wastes." See, Joseph Turow, *The Daily You: How the New Advertising Industry Is Defining Your Identity and Your Worth* (New Haven, Connecticut: Yale University Press, 2012), 88.

[29] Kenneth R, Clark, "CBS Taps 2nd Ratings Firm in Jab At Nielsen," *Chicago Tribune*, 5 November 1991, A1.

[30] Stuart Miller, "Arbitron Scraps Scan America," *Variety*, 7 September 1992, 28.

[31] "Television in the Peoplemeter Age," 36.

[32] John Motavallie, "The People Meter Quandry," *Cablevision*, 19 January 1987, 42.

[33] "Television in the Peoplemeter Age," 36.

[34] Kenneth R. Clark, "Big Brother Plugs in for Autumn TV Season," *Chicago Tribune*, 3 September 1987.

[35] Steve Mclellan, "New Recruitment method enlarges Nielsen family," *Broadcasting & Cable*, 8 May 1995, 54; 56.

[36] "Television in the Peoplemeter Age," 35-40.

[37] "Nielsen Enhances its Peoplemeter Service," *Broadcasting*, 19 November 1990, 25.

[38] Sheila Murphy, *How Television Invented New Media* (New Brunswick, NJ: Routledge, 2011), 104.

[39] Ibid., 109.

[40] William Uricchio, "Television's Next Generation: Technology, Interface Culture, Flow," *Television After TV: Essays on a Medium in Transition*, Ed. Lynn Spigel and Jan Olsson (Durhan, NC: Duke University Press, 2004), 232-261.

[41] "Nielsen Peoplemeters Get Two Year Network Review," *Broadcasting*, 18 December 1989, 68, 70.

[42] Mark Seltzer, *Bodies and Machines* (New York, NY: Routledge, 1992), 11.

[43] Art Koponen (Electronic Pretesting Corporation). Letter to Dan Seymour. "Re: Pretesting of T.V. Commercials by Using Psychogalvanic Skin Response." 1957. (J. Walter Thomas Collection at Hartman Center for Sales, Advertising & Marketing History, accessed June 2017)

[44] H.E. Krugman, "Correspondence with Leo Bogart," 22 Junee1977. (Krugman) (Leo Bogart Papers at Hartman Center for Sales, Advertising & Marketing History, accessed June 2017); Leo Bogard, "Correspondence with Neuroscientist Sidney Weinsten—Re: Brain Wave Analysis," 1 October 1979. (Leo Bogart Papers at Hartman Center for Sales, Advertising & Marketing History, accessed June 2017)

[45] Kelly Gates, *Our Biometric Future: Facial Recognition Technology and the Culture of Surveillance* (New York: New York University Press, 2011), 28.

[46] Ibid., 33.

[47] Ibid., 20.

[48] Rich Barbieri, "Perfecting the Body Count," *Channels*, June 1987, 15; Personal interview with Rodger D. Percy, 23 March 2016.

[49] R.D. Percy & Company, "Passive Television Audience Measuring Systems," U.S. Patent 4769697, filed 17 December 1986, and issued 6 September 1988.

[50] Ibid.

[51] Ibid.

[52] Ibid.

[53] "Report on Television Ratings," *MacNeil/Lehrer News Hour*, PBS, 1986.

[54] Personal interview with Rodger D. Percy, 23 March 2016.

[55] Personal e-mail correspondence with Roger D. Percy, April 29, 2016.

[56] Amy Bermar, "Home-Based TV Rating System: It Knows You're Watching," *Channels*, 24 May 1988, C15.

[57] "Nielsen Considers 1989 Debut of Passive Peoplemeter System," *Variety*, 10 June 1987, 32; Peter W. Kaplan, "A.C. Nielsen to Try New Survey Device," *New York Times*, 16 October 1985, 23.

[58] David A. Kiewit and Daozheng Lu, "Ultrasonic Audience Measurement System and Method," U.S. Patent 4,644,509, filed 23 January 1986, and issued 17 February 1987.

[59] The patent for the device explains, "Conventional pattern [facial] recognition systems are impractical and uneconomical for identifying individual audience members of a viewing audience due to the vast information storage and computing requirements." Indeed, throughout the 1980s, Nielsen's engineering laboratories were experimenting with facial recognition technology, and their achievements in increasing the efficiency of both image recognition and data transfer demonstrate that the ratings industry's influence on the evolution of biometric technologies. Lu, "Image Recognition Audience Measurement System and Method," U.S. Patent 4,858,000.

[60] Lu, "Image Recognition Audience Measurement System and Method," U.S. Patent 4,858,000.

[61] Steve McClellan, "New Nielsen System Is Turning Heads," *Broadcasting*, 18 May 1992, 8.

[62] Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (University of Chicago Press, 1999), 4.

[63] Ien Ang, *Desperately Seeking the Audience* (London: Routledge, 1991), 52.

[64] Gates, *Our Biometric Future*, 14.

[65] Shoshana Amielle Magnet, *When Biometrics Fail: Gender, Race, and the Technology of Identity* (Durham, NC: Duke University Press, 2011), 5, 31.

[66] Foucault, *Discipline & Punish*, 197.

[67] Interestingly, Nielsen's technology partner, the Sarnoff research Center at Princeton was conterminously experimenting with this smart sensing technology in hospital laboratories.

[68] Douglas Davis, "Zapping the Myth of TV's Power," *New York Times*, 20 May 1988.

[69] McClellan, "New Nielsen System Is Turning Heads," 8.

[70] Ibid.

[71] Ibid.

[72] Elizabeth Jensen, "Nielsen Rival to Unveil New 'Peoplemeter,'" *Wall Street Journal*, 4 December 1992, B8.

[73] Philip M. Napoli, *Audience Evolution: New Technologies and the Transformation of Media Audiences* (New York, NY: Columbia University Press, 2011), 53.

[74] Buzzard, "The Peoplemeter Wars," 273-91.

[75] Jensen, "Nielsen Rival to Unveil New 'Peoplemeter,'" B8.

[76] "Microchip Off The Ol' Peoplemeter," *Variety*, May 27, 1987, 72.

[77] Haraway, "A Cyborg Manifesto," 153.

[78] Foucault, *Discipline & Punish*, 197.

[79] Haraway, "A Cyborg Manifesto," 153-154.

[80] Gina Neff and Dawn Nefus, *Self-Tracking* (Cambridge, MA: MIT Press, 2016), 110.

[81] Jensen, "Nielsen Rival to Unveil New 'Peoplemeter,'" B8.

[82] "Microchip Off The Ol' Peoplemeter," 72.

[83] Elizabeth Kolbert, "Company Promises a No-Effort TV-Rating Device," *New York Times*, 9 December 1992, D.4.

[84] "Arbitron PPM Information for Broadcast Engineers," *National Association of Broadcasters: Radio TechCheck,* 24 March 2008; Roberta M. McConochie, "Arbitron's Pocket Peoplemeter: The Question of Cooperation," *Radio & Records*, 16 July 1993, 26.

[85] Brad Edmondson, "TV Execs to Nielsen: Get SMART," *American Demographics*, October 1997, 14.

[86] "The Development Of The Arbitron People Meter," *R&R*, 15 September 2000, 114.

[87] McConochie, "Arbitron's Pocket Peoplemeter," 26.

[88] "The Development Of The Arbitron People Meter," 114.

[89] Anna McCarthy, *Ambient Television*: Visual Culture and Public Space (Durham, NC: Duke University Press, 2001), 1.

[90] Ibid., 106-07.

[91] Foucault, *Discipline & Punish*, 201

[92] Mark Andrejevic, *Reality TV: The Work of Being Watched* (Lanham, Maryland: Rowman & Littlefield Publishers, 2004), 35.

[93] Elizabeth Jensen, "Nielsen Rival Thinks it Has Found a Better Way to Measure Ratings," *Wall Street Journal*, 4 December 1992, B8.

[94] Nicholas Schiavone, speech delivered at the Television Bureau of Advertising Convention, 5 October 1992.

[95] Personal interview, anonymous former "Arbitron Family" participant, 30 March 2016.

[96] Haraway, "A Cyborg Manifesto," 177.

[97] McConochie, "Arbitron's Pocket Peoplemeter," 26.

[98] Ibid.

[99] Ibid.

[100] Elizabeth Jensen, "Arbitron TV Ratings Service to End, Leaving Rival Nielsen as Sole Provider," *Wall Street Journal*, 19 October 1993, B2.

[101] William L. Thomas and Daozheng Lu, "Audience Measurment System Utilizing Ancillary Codes and Passive Signatures," U.S. Patent 5,481,294, filed 27 October 1993, and issued 2 January 1996.

[102] Ben Sisario, "In Effort to Gain a Fuller Picture of Media Consumers, Nielsen Plans to Buy Arbitron," *The New York Time*, 19 December, 2012, B.2.

[103] "Nielsen Creates the World's Largest Consumer Neuroscience Organization with Acquisition of Innerscope Research," *Nielsen Press Release*, 29 May 2015, sites.nielsen.com/newscenter/nielsen-creates-the-worlds-largest-consumer-neuroscience-organization-with-acquisition-of-innerscope-research/; Roger Dooley, "Nielsen Doubles Down on Neuro," *Forbes*, 3 June 2015.

[104] Lindsay Zaltman (CEO Olson Zaltman), Personal interview with author, 20 October 2018. In fact, in 2008 Lindsay Zaltman and Gerald Zaltman published a book titled *Marketing Metaphoria*, which details how marketers are using biometrics to overcome this "depth deficit."

[105] Gerald Zaltman and Lindsay Zaltman, *Marketing Metaphoria: What Deep Metaphors Reveal about the Minds of Consumers* (Boston, MA: Harvard Business Press, 2008).

Chapter 4: Black Box Apparatuses: Cooperative Television Metrics in the Digital Age

By the mid-1990s the ratings industry had more or less adapted to the new multichannel television landscape, relying on peoplemeters (in Nielsen's national panel) to track the flux of viewership that characterized the newly fragmented television environment. Moreover, audience fragmentation became normalized in the mid-1990s, with new audience niches settled into "gated communities" that somewhat reliably displayed interest in certain programming trends. This facilitated the advertising industry's increasing trend toward micro-targeting.[1] Scholars such as Joseph Turow, Ron Becker, and Beretta E. Smith-Shomade have written about the effect that the advertising industry's micro-targeting had on television programming in the 1990's multichannel environment.[2] These trends toward increasing industry fragmentation and the ever-more-niche conceptualizations of audiences would also come to characterize the digital media landscape.

After Arbitron bowed out of television ratings in 1993, Nielsen held a monopoly for the rest of the decade, resulting in relative stability in the ratings market. In fact, industry executives criticized Nielsen for being slothful, neglecting to innovate or even deliver services on time and at fair prices to the Media Ratings Council (MRC). But at the turn of the millennium, it was clear that any sense of stability was coming to an end; the convergence of television and the internet was on the horizon, and nobody really knew what this new landscape of television would look like. In a 1999 *Washington Post* article, Leslie Walker wrote, "So far, all bets on the 'convergence' of television and computing have been that it will happen one of two ways: either by adding Internet connections to your TV through a set-top box, or by embedding a standard television receiver into your personal computer."[3] And in a special publication from *Variety* called "Entertainment and the Digital Economy,"

journalist Josef Adalian also described the shared uncertainty: "Television executives understand that sooner or later, the small screen and the Web will be linked. The problem is that nobody knows how or when the big bang known as convergence will happen. As a result, the Big Four networks have yet to develop any clear, consistent strategy regarding the Internet."[4] At the turn of the millennium, most of the television networks followed the same strategy of instituting plans for integrated media experiences and digital modes of distribution that were flexible enough to adapt to whatever way the budding digital market evolved.[5]

Nielsen took a similar approach in designing their active/passive (A/P) meter, which was introduced in 1999 and became the main method for acquiring national ratings (replacing the peoplemeter) in 2005. The A/P meter combines the push button remote control peoplemeter with a set top digital box that passively measures television tuning. While earlier set top meters relied on Automated Measurement of Lineup (AMOL) to match the meter's record of tuning with an established schedule of programs, with the A/P meter, Nielsen wanted to create a device that would be adaptable within the emerging on-demand television landscape, wherein what's playing on a viewer's television might not necessarily be tied to the linear television schedule. The A/P meter thus works by detecting a unique high frequency UTPC code that is embedded in the soundtrack of television programs in order to identify what a viewer is watching (an evolved version of the technology that was used by Arbitron's portable peoplemeter). During this same period, Digital Video Recorders (DVRs) like TVReplay and TiVo were introduced to the market, and by the mid-00s these digital set top boxes would not only transform the temporality of television viewing, but also begin an evolution in the logics of audience data collection. Nielsen and TiVo, together, would also

reimagine a new ratings currency for the connected-viewing landscape. Both of these devices, in tandem, were precursors to and emblematic of a what I call a new black box apparatus logic that would characterize audience data collection in the digital age.

In this chapter, I analyze the ways that Nielsen has adapted its technologies and methods in response to the proliferation of television programming options and viewing platforms in the digital landscape. But moreover, I argue that the digital age has motivated a transformation in audience data regimes that have changed the very nature of Nielsen as well as our relationship with television. Throughout the new millennium, television ratings have evolved to become what I call a "black box apparatus"—simultaneously inherently opaque and necessarily collaborative. As a black box apparatus, television ratings have four characteristics that diverge, for the most part, from previous conventions of television audience measurement. First, data collection technologies are built into the very media devices that they measure. Not only does this make the body/tech interfacing that is necessary for consumer surveillance more seamless, it often enhances users' incognizance about their participation. Second, data collection programs are often multi-processual, meaning they are automated to collect multiple, often very different kinds of data at once, which are then integrated to greater effect (and, in turn, greater bias). While this feature alone is not new, Nielsen's methods have often been multi-modal (e.g., electronic seat cushions paired with set-top photographic cameras, viewer diaries paired with recordimeters), in digital data regimes, the *automation* of simultaneous processes creates greater incognizance, more potential for problematic integrations of data, and enhanced biases, all at greater scales. Third, black box metrics rely on algorithms and machine learning processes to collect, interpret, sort, and utilize data. And finally, fourth, as black box apparatuses, television

ratings operate as part of an assemblage, and they are designed and utilized as such. Because of the array of media options and platforms (and the ways that they can be utilized together) in the connected-viewing landscape, it's nearly impossible for a single metric to be applicable to every viewing situation. For this reason, the industry relies on a grab bag of diverse metrics that are designed to be associated. While the diversity of metrics in the digital market offers potential for traditionally underrepresented audience groups to gain commercial recognition, it also means that once aggregated, the biases and social sorting of one metric get amplified. This also means that during a single instance of television viewing, audiences often have their viewing data collected by multiple agencies (Nielsen panelists who view CBS All Access will have their viewing tracked by Nielsen, CBS, Google, Comscore, etc.) Television ratings work at the industrial level as an assemblage, and at the experiential level as a black-boxed all-encompassing enclosure.

One of Nielsen's strategies for navigating these dispersions of metrics has been to acquire as many nodes of the "data assemblage" as possible in a string of mergers, including NetRatings in 1999, to augment their internet measurement capabilities; Arbitron in 2013, in order to capitalize Arbitron's expertise in mobile tracking methods to enhance their cross-platform measurement capabilities; SocialGuide in 2013, to bring to fruition their social media measurement endeavors; and Innerscope Research in 2015, to enhance their expertise in biometrics.[6] For Nielsen's digital strategy, the problem of cooperation has applied even more to the collaboration (or lack thereof) among corporate entities and between technological platforms.[7] On the one hand, Nielsen's incumbency advantages them in that legacy media companies are ready collaborators. But, on the other hand, Nielsen has had to navigate uncooperative players like Netflix, Apple, and Google by developing a range of

measurement technologies that can circumvent the technological barriers of their platforms and devices. Nielsen's unique trajectory—as an incumbent, trying to maintain their status as the industry's go-to audience currency while also adapting to these new black box logics—provides a fruitful case study for understanding contemporary evolutions of media/data regimes.

The Active/Passive (A/P) Meter

After the ratings industry's quest to replace the remote control peoplemeter with a passive (biometric) peoplemeter system failed by the early-1990s, the widespread industry aversion to the peoplemeter persisted. Alas, in 2000, Nielsen introduced a new ratings device to the market, called the active/passive (A/P) meter. The A/P meter was, in name more so than function, Nielsen's practical compromise to the industry's call for a less-active system. The A/P meter combines the push button remote control peoplemeter with a set top electronic box that passively measures tuning. The meter works by reading an active UTPC audio code that is embedded in the soundtrack of television programs, allowing it to detect TV content regardless of its delivery path, tuning mechanism, or time-placement in the television schedule. Along with being a less-faulty audience detection device, the A/P system was intended to prepare Nielsen for the onslaught of program forms that would proliferate in the new millennium. As John Dimling explains:

> Right now, we determine [what program is on the set] in a two-step process: The set meter determines the local station being watched, and our AMOL (Automated Measurement of Lineup) system tells you what network or program is being carried on that station. Down the road, with things like video on demand, you won't be able to tell what' on that local channel because any one of the 500 programs could be on it. By putting a code in the program, we will be able to determine what's on the set with the A/P meter.[8]

In 2000, Nielsen tested the A/P meter in 150 homes in the Northeast. In 2003, Nielsen doubled their national panel from 5,000 households to 10,000 households. And in 2005, A/P meters replaced peoplemeters in all 10,000 of Nielsen's national panel households.[9] The A/P meter prompts users to log in via their remote-control devices at 42-minute intervals, which designed in collaboration with clients and the MRC, was a purposeful break from the viewing conventions of linear TV. In response to MRC prompting, in 2010 Nielsen started conducting quarterly checks on every A/P meter sample home to make sure it was picking up the optimum level of codes backed by digital fingerprints.

Interestingly, the patent for a very preliminary version of the audio code detection process that would eventually be used in the A/P meter was originally filed by Nielsen in 1985, before the digital landscape that it has proven so well-suited for was even on the horizon. The patent description states, "Systems that detect identification signals encoded on the broadcast signal require the cooperation of the broadcasters who must encode the programs prior to broadcast for such systems to be effective. Consequently, such systems are usable only on a limited number of broadcasts, such as network broadcasts."[10] While the patent, and the technology itself, pre-empts the corporate collaboration that would come to characterize apparatus metrics, it also discounts the very utility of the A/P meter code detection method—its adaptability, with the help of corporate and technological cooperation—to work across a variety of programming content, distributors, and devices. Ironically then, the new meters sitting on top of panelists' television sets, functioning via opaque technological processes (literally audio codes out of the scope of human perception), designed to make the audience measurement process less reliant on viewer collaboration,

would actually necessitate/normalize corporate collaboration and facilitate technological cooperation in the digital television landscape.

DVRs/TiVo

Consumer digital video recorders ReplayTV and TiVo were launched in 1999.[11] By 2007 DVRs were at 13.5% penetration and accounted for 15% of overall television viewing. Those numbers more than doubled by 2010, and in 2011 DVRs were at 39.7% penetration and accounted for 42.2% of overall viewing. DVRs enabled viewers to pause programming during live broadcast, skip commercials, and time-shift programming—to record it and view it later. And indeed, research showed that DVR users skipped commercials and time-shifted in abundance. DVR owners typically fast-forwarded through 92% of commercials, and they recorded an average of 30% of their day-time programming and 46% of their prime-time programming.[12] These very capabilities that made DVRs appealing to users are also what made it so disruptive for broadcasters and the ad market.

In 2004, TiVo and ReplayTV dominated the DVR market; together they constituted 2/3 of the DVR's owned. In its early years, TiVo marketed itself as a maverick device that could revolutionize television viewing. TiVo's slogan was "TV Your Way," and they aired ad campaigns promising users that they could "usurp the role of the networks and become their own TV programmers."[13] While this brand image earned them loyal consumer enthusiasts, it made enemies of the legacy television companies and ad agencies. NBC refused to air the aforementioned TiVo campaign, for example. By the middle of the 00's,

much of TiVo's consumer market already possessed a device and as cable companies like Direct TV made headway in the DVR market, TiVo's profits declined. In 2005 TiVo's main competitor ReplayTV, which was facing costly lawsuits over its device's commercial-skip feature and for allowing users to share shows over the Internet, filed for bankruptcy. These hurdles encouraged TiVo to take an alternative route, working with the networks and ad agency to procure their investments. In turn, TiVo's device afforded users the ability to fast-forward commercials at 5x their normal pace, but not skip them altogether (until TiVo Bolt came to market in 2015). In March 2005, TiVo also worked with advertisers to create "billboards," or small logos, that popped up as users fast-forwarded over commercials. The billboards featured contest entries or links to other ads. And by late 2005, TiVo rolled out a "couch commerce" system that enabled viewers to purchase products and participate in surveys using their remote controls.[14] Thus, just a short five years after its introduction, TiVo's revolutionary goals succumbed to the market pressures of the commercial media system. Regardless, these new abilities of users to control the temporality of their television would shape television viewing in the digital landscape. Even with its investments in TiVo, legacy media couldn't halt these evolutions as much as try their best to steer them toward new revenue opportunities.

TiVo was also on the forefront of another change that would come to shape the digital media landscape: an evolution in data collection. More specifically, TiVo was emblematic of a turn toward greater efficiencies of data collection; the entrenchment of data tracking mechanisms within media devices themselves; and increasingly algorithm-driven and "black boxed"-designed methods of making sense of and using data. In 2004 TiVo made headlines when it reported that the moment when Janet Jackson's breast was exposed during her Super

Bowl half time performance was the most replayed moment in the short history of DVRs.[15] While this factoid triggered some amusement, it also garnered an awareness among the public that the black boxes sitting on top of their television set were tracking their every program choice, pause, skip, and replay, and storing the information for TiVo to draw on as it pleases. TiVo used this viewing data to provide precursory-Netflix style algorithmic-determined program recommendations based on users' recorded preferences. Warren St. John of the *New York Times* wrote, "In the case of TiVo, the system recommends programs based on its users' individual viewing habits. Watch *The Simpsons* and *Seinfeld*, for example, and the system might automatically record the movie *This Is Spinal Tap* on your machine."[16] In 2007 TiVo started releasing "Pure Program Ratings" along with "Commercial Timeshifted Ratings." TiVo's ratings were derived using their Stop/Watch program which anonymously aggregated data from random boxes to provide a metric each for program viewership and commercial viewership, which when analyze comparatively, also detailed the viewership lost through time-shifting. In a July 2009 Press Release, Vice President & General Manager of TiVo Audience Research & Measurement, Todd Juenger, describes what Pure Program Ratings looked like in effect:

> The May 7th episode of Grey's Anatomy had a Pure Program Timeshifted audience of 17.0…That means there was potential to deliver a commercial audience of 17.0 ratings points, if every viewer watching stuck around during the commercial breaks. However, looking at the Commercial Timeshifted Rating, we see most viewers didn't and commercials running during the program only received a 2.7 rating. Simply put, 14.3 ratings points worth of audience or 84% of available viewers during timeshifted viewing were lost to fast-forwarding during commercials.[17]

TiVo not only had the advantage of having access to data about users' time-shifting practices, they also a sample size of approximately 300,000 users, compared to Nielsen's national sample of 10,000 at the time.[18]

Digital Age Ratings Currencies

In a trajectory that mirrors that of the networks, in 2004 Nielsen and TiVo announced an agreement whereby TiVo would sell certain viewing data to Nielsen. In their *Wall Street Journal* article, Nick Wingfield and Jennifer Saranow explain, "In its new arrangement with Nielsen…TiVo will set up a panel of 5,000 to 6,000 users who agree to being monitored. TiVo and Nielsen will ask the users for a variety of personal information, such as household income, gender and other demographic data, though not users' names."[19] The next year, in 2005, Nielsen released its first TV reports that included data for 3 days' worth of time-shifted viewing, called the "Live+3 ratings." By 2009 the Live + 3 program ratings were regularly reported in the press. At this point, Nielsen justified the 3-day cut off by arguing that 99% of viewers watch a prime-time program within three days of the original broadcast. But in 2014, Nielsen started reporting metrics for time-shifted viewing that occurs up to 7 days later, in their "Live+7 ratings." For the overnights, Nielsen used Live + same day (SD). This also means that since the overnight ratings are so important for promoting broadcast programs, if a show has bad Live+SD program ratings, even if those ratings improve with DVR viewing, it ultimately it won't be enough to save the show. However, improvement in the Live+3 or Live+7 ratings indicates potential for the show's success on streaming platforms.[20] The Live + ratings only partially count DVR viewers who skip or fast-forward through commercials. For example, a viewer who watches *Grey's Anatomy*, but skips over the opening credits, all of the commercials, and the ending credits, ultimately only watching ~40 out of 60 minutes, will only be counted as .67 of a viewer.[21] Moreover, in the beginning, the Live + ratings were based entirely on data from the portion of Nielsen panelists who owned a DVR, which was

only a small proportion of their 10,000 panel participants. Some critics also questioned whether Nielsen families who are aware that their commercial viewing maters might be less likely to skip advertisements, making them unrepresentative of DVR users at large.[22]

In 2007, Nielsen started releasing another standardized metric, called "commercial ratings," which was based on the viewership of an "average commercial minute" of a live-broadcast program. Live-broadcast commercial viewership was then combined with the viewership numbers for three days of DVR playback to create what Nielsen called the commercial +3 (or C3) rating. Nielsen later introduced a commercial + 7 (C7) rating, combining live-broadcast viewership with 7 days of DVR playback. Nielsen's new ratings system required broadcast networks, TV syndication companies, and cable companies to supply Nielsen with their commercial log data (a similar model to how Percy Co. tracked and coded networks' commercial loads for their commercial ratings in the 1980s). In order to comply with an audit and accreditation process conducted by the MRC, Nielsen introduced a system in 2009 that enabled its clients to automatically log when and where their commercials ran, called Monitor-Plus. According to Nielsen, there was relatively no audience loss between Live + program ratings and average commercial-minute ratings. But compared to traditional ratings (without accounting for DVR playback), ratings for top shows increased up to a full point. Nielsen reported that in the first week for the 2009-2010 television season, "After three days of DVR playback, Fox's *House* rose more than a full rating point to 6.3 from 5.2. ABC's *Grey's Anatomy* rose from a 5.1 live rating to a 6.1 rating on C3."[23] Although C3 data is rarely made publicly available, since 2009, advertisers use C3/C7s as their main currency for analyzing and buying ad slots. The industry's global

adoption of C3/C7 ratings has also enabled advertisers to micro-target their ad loads based on minute-by-minute audience demographics trends.[24]

Ratings Evolution

In *The Television Will Be Revolutionized*, Amanda Lotz quotes Nielsen CEO Susan Whiting from 2005, forecasting that "the next three to five years would bring more substantial change to the television industry than had taken place in the previous fifty years."[25] Indeed, between 2008 and 2009, the industry saw its largest shift toward non-linear viewing thus far, with the amount of television viewing that was done on computers increasing 50% and the amount that was done on mobile devices increasing 52%. Yet, despite this forecasting, aside from capitalizing on TiVo's breakthroughs in audience data collection, Nielsen was slow to adapt its own practices to changes in television programming and consumption. Despite the enhancements of the A/P meter and the partnership with TiVo, by 2008 the networks collectively saw an average drop of 13 percent of their viewership (as much as 22% for CBS)**.** This drop in ratings led to a decline in ad revenue, and as a result, the broadcast networks increased the number of commercials in primetime by 3.5%**.** The oversaturation of advertisements only further pushed consumers toward commercial-skipping and non-linear media options**.** Nielsen's archaic audience measurement methods created even more obfuscation during this period of industrial disruption, leaving network executives and advertisers with the question of whether the decline in audience numbers was due people watching less television overall, or just watching it *differently*.

The industry as a whole was to blame for the stunted ratings innovation. First, when it came to adaptation, the ratings industry and advertising industry waited for each other to act

first. Advertisers didn't want to buy into internet-streamed television until they had more information about how big the audience was for streaming content, the demographics of the streaming audience, and how they responded to ad content. Meanwhile, Nielsen didn't want to invest in measurement methods for digital content until they knew that their clients would pay for the metrics. Second, due to the tumultuousness of the early digital landscape—with many new video streaming platforms and over-the-top services failing within two years—Nielsen wasn't sure what sorts of content or platforms to focus its methodological investments toward. Finally. the networks are always critical of new methods that might lower their audience share. As Ien Ang discusses in *Desperately Seeking the Audience*, the ratings operate as a discursive construct: valuable more for their role as a mutually agreed upon currency, than for their empirical accuracy. [26] Throughout television history, ratings innovations have been met with approbation only by those industry players whose business they benefit. Thus, Nielsen faced a challenge in getting the networks and ad agencies collectively on board with any particular direction of methodological change. Moreover, even though the economic model of advertising in linear television seemed to be cracking, the industry seemed united in its denial and resistance**,** especially because until 2017 the live broadcast audience was still the largest television audience available.[27]

Nielsen did made changes to its panel in order to recuperate some of the valuable demographics that were going underrepresented in their sample—particularly younger and more affluent audiences who were quickest to move away from traditional modes of linear broadcast television. In 2007, in an initiative called "Extended Home Viewing," Nielsen doubled their panel size from 10,000 to 20,000 households. Nielsen also added college dormitory viewers to its panel. College students living in dormitories not only view more

television than average, they often watch with visitors and watch more non-traditional forms of television. Nielsen also added viewing that takes place in vacation homes. But these small changes that Nielsen made to make its panel more representative largely went in vain because, apart from DVR data, Nielsen didn't have a mechanism for measuring internet-streamed television.

In 2008, NBC Universal, Time Warner, News Corp, Viacom, CBS, Discovery, and Walt Disney collaborated to form the Coalition for Innovative Media Measurement (CIMM) and put out a call for proposals for a metric that could merge broadcast television and internet-distributed audience numbers. The consensus among industry analysists was that this was most likely a move to put pressure on Nielsen to bring a viable metric to fruition, and it worked. Later that year Nielsen moved forward with an initiative, first announced in 2006, called Anytime Anywhere Media Measurement (A2/M2), establishing a sample of 3,000 participants (separate from their national ratings panel) from which they would collect data about live broadcast viewing, internet video viewing, and mobile viewing.[28] The initiative required panel participants to attach a device to their computer that would, using the same UTPC audio code detection method as the A/P meter, measure viewing done on computers. This data could then be merged with data from their TV meter. Participants were also required to carry around a specially modified cell phone, which Nielsen created in partnership with Zenith.[29] The initiative was characterized by one reporter as "an initial effort by Nielsen to 'follow the video' as consumer viewing habits shift."[30] In May 2008, Nielsen released the first of a series of "Three-Screen Measurement" reports resulting from the initiative. Among other findings, the report stated that 2/3 of computer owners watched video on their computers, but only at an average of 2 hours per month and that the average

user watches 3 hours and 15 minutes of video on their cellphone per month.[31] However, it wasn't until a few years later when Nielsen was able to implement this method for internet video content into their national ratings panel and successfully merge it with the Live + ratings.[32]

In 2011 Nielsen was finally able to implement wide-scale measurement of online video viewing, again by using the same UTPC audio code detection method used in the A/P meter (via a device attached to panelists' computers), across their national ratings panel, what they called their new Cross-Platform Home Panel. They could also merge this data with the Live + ratings (which included broadcast viewing detected by the A/P meter and DVR viewing, as applicable) to, alas, offer a single rating for multiple screens. Nielsen named this new initiative the Extended Screen Ratings, but the new metric was published in the form of the Live + program ratings (and also as commercial ratings for intra-industry use).[33] A promotional video for the new Cross-Platform Home Panel exclaims:

> The panel also enables Nielsen Extended Screen Ratings which identifies and credits programs viewed online through the same content encoding technology used for television whether it's on a desktop or a laptop, MAC or PC, live or on-demand. By combining this data, we can quickly deliver a single rating for multiple screens, offering all the same Demo data, GRPs, reach and frequency figures you've come to expect, based on the same rigorous methodology as the Nielsen TV Ratings. Nielsen's Cross Platform Homes panel is only the beginning. Imagine knowing who's viewing what, wherever, whenever, and on whatever, and applying this to a variety of cross-platform business models. Nielsen is making it happen.[34]

Although the Extended Screen Ratings were the best approximate measurement for viewing of the same content across devices, the Cross-platform Home Panel was a logistical nightmare. Due to the inconvenience and increased invasiveness of having multiple devices installed to their electronic devices, Nielsen experience substantial participation fall-off. Moreover, the initiative still didn't account for all viewing. First, only online content that had

the same commercial load as the live broadcast could be counted in the C3/C7 metric, which left out aggregators such as Hulu who use dynamic ad insertion.[35] Second, the measurement device that was attached to participants computers could only measure internet television viewing that occurred in the home; it couldn't measure viewing in the workplace (which was estimated to be close to 50% of streamed content) or on mobile streaming applications for tablets and mobile phones.[36]

In 2013 Nielsen introduced another metric, separate from their C3 and Live + national ratings, called Digital Content Ratings (or, alternatively, Digital Program Ratings), which included viewing data for online video regardless of its advertising load. To create Digital Content Ratings, Nielsen partnered with Digimarc Corp, to design and install a watermark which would run throughout programs and commercials that could be used to detect content. Using the watermark, Nielsen can also bookmark specific elements of the content, such as product placements or the appearance of a character, enabling them to closely track how a viewer interacts with content. Nielsen has been using a similar watermark technology in their Online Campaign Ratings service since 2011. However, because the Digital Content Ratings use a different method (which is what enables them to measure across dynamically inserted commercials) than Nielsen uses for their national ratings panel, it's not possible to combine the data into a single metric[37] Cheryl Idell, the Executive VP of Client Solutions at Nielsen, explained to *Broadcasting & Cable*, "If [networks] are doing dynamic ad insertion, they are monetizing those audiences, they're counting them in our digital program ratings, it just doesn't roll into the TV ratings that are traditionally reported."[38]

In 2013 Nielsen also started measuring zero-TV households: which consisted of "cord-cutters," who had dispensed with either their cable subscriptions or their television

altogether and "cord-nevers," who despite never subscribing to cable, now had access to television through their computers and mobile devices. Nielsen reported that in 2012 alone, 360,000 American households cut their cords. Overall, between 2007 and 2013, the number of Zero-TV households grew from 2.01 million homes to 5.01 million homes. A large part of this "cord-cutters" demographic was constituted by video game console owners, including those outside of traditional gaming demographics, such as women 34-49. Cord-nevers, on the other hand, were largely lower-income demographics; many used their cellphones as their main mode of connecting to the internet. Since, even with their "Cross-platform Home Panel," Nielsen was unable to measure viewing that occurred on mobile devices, viewing by cord-nevers still went uncounted.[39]

Despite these advancements in ratings methodology, many networks executives and advertisers still considered Nielsen's new cross-platform measurement initiatives too late and still too insufficient. Nielsen's inability to merge viewing data for content with different commercial loads and to measure content viewed on mobile devices as well as their privilege of same-day viewership and overnights, disadvantaged the more digitally-savvy media companies. These criticisms were compounded in 2014, when the industry became aware of a months-long ratings report error. In September, CBS noticed that ratings for a broadcast of ABC's *Dancing with the Stars* were increasing between Nielsen's preemptive "fast national" tabulation and the final overnight ratings, even though the show was preempted in two markets so that local stations could show home-team NFL football games. In response to these reports of irregularities, Nielsen conducted an internal investigation, during which they became aware of an error in their data sorting. When Nielsen calculates its early "fast national" ratings, some sources of viewering are not properly labeled and the data is put aside

as “all other tuning” until it can be identified and tabulated properly. Nielsen found that some of that early unidentified data was improperly attributed to ABC. The error meant that ratings data was being wrongly reported between March 2nd and October 9th 2014, although Nielsen executives claimed 98% to 99% of ratings would not be affected by more than .05 of a ratings point.[40] In response to the error, CBS’s Chief Research Officer David Poltrack responded, “Glitches in data collection are not uncommon, but TV networks want to be more certain that Nielsen is monitoring its efforts…We’d like to know what operational thing you’re going to put in place so that you discover it, as opposed to us.”[41]

Throughout 2015, the networks’ discontent with Nielsen culminated in a number of companies declining to re-subscribe to some of Nielsen’s services. In January, CNBC announced that they would stops using Nielsen for daytime ratings. CNBC’s daytime Nielsen ratings, which always have been relatively small, had fallen sharply over the past decade. 2014 was CNBC’s least-watched year since 1995. Since 2004, their average audience numbers dropped from 214,000 to 177,000, a 17% drop.[42] CNBC President Mark Hoffman explained that they were leaving money on the table with advertisers and they needed to make a change: “Nielsen has never measured us accurately. If we can’t count the people the right way we can't get paid the right way.”[43] In the announcement, CNBC explained that they would use research firm Cogent Reports for their daytime measurement. Nielsen continued to measure CNBC’s evening programs. In Fall 2015, Fox became the first broadcast network to officially unsubscribe from the Live + same day ratings (their sibling channel FX unsubscribed from the Live + same day ratings earlier that summer). In an internal memo, the network’s CEOs, Dana Walden and Gary Newman, announced that they would cease acknowledging and reporting the Live + same days for everything but live event

programming.[44] In the early 2010s, Fox was widely considered to be one of more "digitally savvy" among the networks, and with generally younger and urban demographics, they were arguably among the most disadvantaged by a ratings system that lagged behind the realities of the digital landscape. Fox's leadership articulated these concerns in their internal memo:

> The Live + Same Day rating does not reflect the way people are watching our series. It leaves out the vast majority of fans who choose to watch on DVRs, and virtually ignores those who stream our shows or watch on demand. And those viewers matter: Within a 7-day period, more than one-third of the broadcast 18-49 audience watches after the same-day window. Over 30 days, seven of our FOX series either double or more than double their same-day audience across platforms.[45]

The ending of Fox's memo, "together, let's move the ratings conversation into the future" hinted at the largely symbolic nature of this very public move: to get Nielsen's attention and motivate advancements.[46]

In 2016 Nielsen announced their new Total Audience Measurement Initiative, which, in the form of what they've called Total Ad Ratings and Total Content Ratings (TCRs), would add to their C3 and Live+ national ratings, respectively, all viewing up to 35 days after broadcast, across all platforms, on all devices (including mobile devices). On the value of continuing to offer a separate commercial rating, Kelly Abcarian, Senior Vice President of Product Architecture explained, "Separating advertising from program content make sense. The relationship between an ad and a program is becoming less and less—because of dynamic ad insertion and other [advertising efforts]."[47] As part of this new initiative, in the first quarter of 2016, Nielsen again doubled the size of their national panel to 40,000 households. In an interview that I conducted with Jessica Hogue, Senior Vice President of Digital Client Sales and Services at Nielsen, she stated "While still not an exact science, today's ratings are the most specific and representative produced in Nielsen's more than seventy-year history."[48] By design, TCRs are meant to combine viewership data for live

television, DVR viewing, and video streaming across just about any device, covering a comprehensive granularity of viewing, allowing data to be broke down into categories such as: unique audiences, reach, gross average minute audience, minutes viewed, and frequency.[49]

Perhaps the most noteworthy part of Nielsen's announcement was that viewing on mobile devices would be included in the TCRs. One of Nielsen's biggest challenges to measuring the digital television landscape has been measuring viewing on mobile devices due to the fact that each brand of phone and tablet requires a different technological solution and many manufacturers have been uncooperative. Apple's mobile devices, in particular, have been notorious for being incompatible with the Nielsen's UTPC audio code detection technology. Nielsen's new mobile measurement technique depended on significant cross-industry cooperation, requiring, networks, studios, and multichannel video programming distributors (MVPDs) to embed a software development kit (SDK) in their browser or app-based video players. Capitalizing on the partnership they formed with Facebook in 2009, Nielsen takes advantage of the social network's device ID database and store of user data. When Nielsen's software picks up identifying information about a mobile device, it sends it to Facebook, which is able to match the device's ID with its registration database. Through this process, Nielsen gets additional demographic information about its users. The cross-tabulation with Facebook also offers a mechanism to de-duplicating viewing, to avoid counting viewers who watch half an episode on their i-phone and the other half on their tablet twice.[50] While Nielsen's data-sharing strategy with Facebook has garnered criticism from privacy advocates and an investigation by the MRC, this cross-tabulation is actually one of the main reasons Nielsen partnered with Facebook. Indeed, while Nielsen's audience

measurement strategy as a whole is completely reliant on data sharing across numerous companies and platforms, the Nielsen/Facebook partnership is perhaps the best example of how digital television ratings operate as a black box apparatus: they work by, simultaneously, embedding data surveillance technologies within media/devices themselves, relying on data sharing, enhancing bias through automation, and increasing subjects' incognizance about their participation in surveillance. All in all, installing and maintaining the mobile SDKs and working out unique device compatibility issues continues to be an ongoing challenge for Nielsen.

Just as Nielsen was preparing for an early 2017 launch of the metric, in December 2016 Linda Yaccarino, the Chairman of Advertising Sales and Client Partnerships at NBCUniversal wrote a letter to Nielsen expressing concern over the impending rollout of TCRs.[51] NBCU, who has an ownership stake in Hulu and other media companies, argued that measurement of shows on Hulu was significantly incomplete and a resulting metric would be detrimental. NBCU also argued that Nielsen's mobile measurement technique was also not ready, since some companies hadn't had a chance to test the software. And moreover, for those who had tested it, only a third were able to produce useful numbers. Moreover, NBC and Viacom joined NBCU in its concern over how Nielsen was combining disparate digital data collection methods and handling de-duplication.[52] After a couple of weeks of delay, Nielsen rolled out TCRs to its subscribers on March 1, 2017. Ultimately, the process of implementing the TCRs, and their remaining limitations, made the vast technological advancements and intra-industry cooperation needed to establish an agreeable audience currency that can overcome the discord of the digital landscape even more evident to Nielsen and to the industry as a whole.

Netflix

After measuring viewing on mobile devices, the second greatest challenge that Nielsen has faced in developing a ratings currency for the digital landscape has been measuring content viewed on Netflix. The streaming company's own audience data is its most substantial financial asset, and while the legacy media companies see it as a necessity to include Netflix viewing in the ratings currency, Netflix does not have much incentive to cooperate with Nielsen. Netflix actually strips out the watermarks and audio codes that Nielsen uses to identify programming. For the past decade, Nielsen has been experimenting with strategies for measuring Netflix content, and in 2017 Nielsen announced that would start releasing data on Netflix viewership to subscribers. While Nielsen works collaboratively with the networks (and also streaming sites Hulu and YouTube), who submit their content in advance to Nielsen who installs audio footprints and watermarks in it so that it can be detected by Nielsen's meters, Nielsen's new method allows them create audio signatures for Netflix programs without Netflix's involvement. Essentially, Nielsen uses a proprietary technology to create audio recordings of Netflix shows during playback. Nielsen then creates audio identifiers for each program, so when Netflix audio is detected by Nielsen's meter, a machine learning process matches the audio identifier to the Netflix program. Nielsen currently possesses a library of over 6,000 Netflix identifiers.[53]

While Netflix has claimed that the data that Nielsen is reporting "is not accurate, not even close, and does not reflect the viewing of these shows on Netflix," Nielsen has continued to publish Netflix data, garnering significant press attention in the process.[54] For example, in November 2018 Nielsen debunked Netflix's claims that audience numbers for

the pilot of *Stranger Things* season 2 was on par with season pilots for other ratings hits like *Game of Thrones* and *The Walking Dead*.[55] And in January 2019 Nielsen provided support for Netflix's claims about *Bird Box*'s record-breaking premier.[56] Some critics have argued that Nielsen's growing effort to publicly share Netflix's data could dissolve Netflix's mystique, leveling the playing field and ending "Netflix's near-monopoly on streaming entertainment data."[57] Regardless of any future effect that Nielsen's reporting of Netflix data might have a on the streaming site's business model, in the short term, Nielsen's very public discussion of Netflix data is a strategic move for the company to demonstrate that its digital data collection prowess is on par with the streaming data giant's. Moreover, the Nielsen/Netflix competition represents, more centrally, a showdown between two different data logics in the digital age: Nielsen's steeped in collaboration, reliant on data sharing, and highly public verses Netflix's highly secretive and individualized. In 2018 Nielsen announced a new service, Nielsen Subscription Video on Demand Content Ratings, which will measure viewing on Netflix, Amazon Prime, and Hulu. Nielsen has a working relationship with both Amazon Prime and Hulu, but neither subscribe to its services. Some industry critics have speculated that if Amazon Prime and Hulu end up subscribing to Nielsen's service, that could eventually push Netflix to become a Nielsen client as well.[58]

Conclusion: The Future of Ratings Currency

While Nielsen technically has the ability to measure (in theory, with more or less consistent success) most of the digital television landscape, its challenge is articulating that data into a currency that can suffice for the needs of all digital distributors and advertisers. As Jon Gertner wrote quite presciently in his 2005 *New York Times* article, "One of the great

contradictions of modern American life is that almost everyone watches television while almost no one agrees anymore about what it really means to watch television."[59] Measuring the audiences of digital content is only half the battle, making audience data useful for the industry is the other half. Most digital platforms collect their own data, in far more depth than what Nielsen can, thus Nielsen's value is in its breadth—its function as a third-party currency referee across distributors. Thus, Nielsen's future success hinges on currency.

Even with the TCRs, Nielsen still has a lot of functional issues in turning the data into a reliable currency. One challenge, is figuring out how to count all content the same way, so that a ratings point on TV is equal to a ratings point on a tablet or smartphone. The example that Nielsen executive VP Megan Clarken gives is: when a NFL game streamed on Yahoo is determined to have 15.8 million viewers tune in at one point or another, compared to the ~18.2 million viewers who normally watch an NFL game on TV, the industry needs to do a better job of understanding whether the audience engagement for the streamed content is really less substantial, or just of a different (less traditionally measurable) nature.[60] If as Ang says, the role of ratings as currency is largely discursive, then in the words of Clarken, "YouTube has said to us they want to be able to use the same language as CBS and NBC."[61] Wayne Friedman of *Media Post* writes, "One of the biggest issues Nielsen has had to confront in reporting the data is accounting for the different 'languages'—or ways of looking at—audience exposure among its different customer types."[62] For example, some distributors speak in terms of "average minute viewing" timeframes while other speak in terms of "views" which have little relation to time.

Right now, advertisers are wary of comparing available audiences across linear and streamed content, but this sort of metric will be increasingly necessary moving forward. Another issue

that Nielsen faces in creating a currency is duplicated screening. When viewers start watching an episode on one device and finish on another, under the current system, this inevitably gets counted as two views. Right now, the only systematic way that Nielsen has to de-duplicate is through capitalizing on Facebook's ability to connect multiple devices to single users, but privacy issues aside, this only works for panelists who have a Facebook account. Broadcasters argue that duplicated screening is vastly inflating some ratings.[63]

The very act of deciding what should be included in the C3 and C7 ratings, which are still the primary currency used for making ad purchasing decisions, was a multi-year collaborative process between Nielsen and its clients. And the parameters of how that currency was defined has determined what kinds of viewing can be included in the metric ever since. However, the commercial ratings were designed to integrate two forms of viewing—linear, live broadcast and DVR playback—not the abundance of viewing platforms and situations in the digital landscape today. Accordingly, there is growing discontent across the industry with Nielsen's C3 and C7 ratings. Nielsen argues that while they make effort to design comparable metrics, they are not the arbiter of what metric is appropriate--that is up to the media companies and advertisers to decide.[64]

Ratings currency has always been the lifeblood of our commercial media system. A third-party referee makes it possible for advertisers to compare ABC's timeslots against Fox's, or to decide whether they should invest in ad slots in CSB All Access or in Hulu. Nielsen's Clarken says, "Our role is to be the referee, to step in the middle, to show the story of how these guys compare to each other."[65] If the industry can't agree on a currency, it risks giving rise to a cacophony of ratings systems--as *Variety's* Brian Steinberg phrases it, "a modern-day Tower of Babel, where everyone has something to offer, but few can understand

what it is that anyone is trying to sell."[66] However, others argue that we are indeed in a "post-ratings" future. Certainly, the fact that CBS entered 2019 without a contract with Nielsen—the first time a network has done so in 70 years—demonstrates Nielsen's hold on the television ratings industry has dispersed.[67] Many distributors—in the absence of a currency suited for their model—have turned to cobbling together an array of grab-bag techniques and services to show how much viewership they can really accumulate. A growing array of data tools installed in set-top boxes and web trackers have allowed networks and streaming sites to collect their own data, which they can then package as they see fit. On the one hand, a cacophony of television metrics might productively expand definitions of television engagement or create opportunities for underrepresented audience groups to have their viewing/consumer power recognized in new way. On the other hand, it's possible that increasingly fragmented (and opaque) data could enhance he silo-ing and social sorting that characterized digital data culture.

Notes

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[1] Joseph Turow, *Niche Envy: Marketing Discrimination in the Digital Age* (Cambridge, MA: MIT Press, 2006).

[2] Turow, *Niche Envy*; Ron Becker, "Prime Time Television in the Gay '90s: Network Television, Quality Audiences, and Gay Politics," *Velvet Light Trap* 42 (Fall 1998), 36-47; Beretta E. Smith-Shomade, "Target Market Black: BET and the Branding of African American," *Cable Visions: Television Beyond Broadcasting*, eds. Sarah Banet-Weiser, Cynthia Chris, and Anthony Freitas (New York University Press, 2007), 177-193.

[3]Leslie Walker, "Merging TV and the Web," *Washington Post*, 7 October 1999.

[4] Josef Adalian, "TV Pros Tube Tied: Networks Want to Keep Families Gathered Around the TV, but What About That Web Thing?" *Entertainment and the Digital Economy* vol 1, no 1 (2000), 10.

[5] Kira Greene, "TV Online," *Broadcasting & Cable*, 25 September 2000, 72-82.

[6] Richard Tedesco, "Nielsen + NetRatings," *Broadcasting & Cable* 129, no. 40 (1999), 84; Jon Lafayette, "Measured Reaction To Nielsen-Arbitron Deal," *Broadcasting & Cable* 143, no. 37 (2013), 18; George Winslow, "Buying Into the Buzz," *Broadcasting & Cable* 143, no. 31 (2013), 26; Anthony Crupi, "Nielsen Buys Neuromarketing Research Company Innerscope," *Ad Age*, 27 May 2015.

[7] "Comcast and Nielsen to Start Testing Commercial Ratings for Tablets Common Currency Across Platforms Is the Ultimate Goal," *Advertising Age*, May 21, 2012.

[8] Steve McClellan, "Nobody Loves the Umpire: The Life and Hard Times of Nielsen Media Research," *Broadcasting & Cable*, 8 April 1996.

[9] Steve McClellan, "Testing, Testing," *Broadcasting & Cable* 130, no. 30 (2000): 44-48.

[10] A.C. Nielsen Company, "Broadcast Program Identification Method and Apparatus," U.S. Patent 4677466, filed 29 July 1985, and issued 30 June 1987.

[11] Gina Piccalo, "TiVo Will No Longer Skip Past Advertisers; The Tool That Lets Viewers Control The TV Will Soon Sport 'Billboards' And Track Viewing Habits," *Los Angeles Times*, 17 November 2004, A1.

[12] Ibid.

[13] Ibid; Kathryn Kranhold, TiVo Ad Campaign's Sly Humor Isn't a Hit With CBS Executives," *Wall Street Journal*, 05 July 2000, B8.

[14] Piccalo, "TiVo Will No Longer Skip Past Advertisers," A1.

[15] Nick Wingfield and Jennifer Saranow, "TiVo Tunes In To Its Users' Viewing Habits," *Wall Street Journal*, 9 February 2004, B1.

[16] Warren St. John, "Friend Or Foe? The Cult Of TiVo Cometh," *New York Times*, 20 April 2003, ST1.

[17] "TiVo Examines 'Pure Program' Ratings Using Its Stop||Watch(TM) Ratings Service in May," TiVo Press Release, 30 July 2009, http://ir.tivo.com/file/Index?KeyFile=8136617, accessed December 2, 2018.

[18] Brian Lowrey, "Data Blitz Fits Eye of Beholder," *Variety*, 7-13 March 2011, 10, 13.

[19] Wingfield and Saranow, "TiVo Tunes In To Its Users' Viewing Habits," B1

[20] Sara Erichson, Nielsen Executive Vice President of Audience Insights, Personal interview with the author, 24 June 2017.

[21] "FAQ: Do DVR Viewers Matter?" TV By the Numbers, 21 December 2009, tvbythenumbers.zap2it.com/help/faq-do-dvr-viewers-matter/, accessed June 24, 1017.

[22] Ibid.

[23] "C3 TV Ratings Show Impact of DVR on Ad Viewing," Nielsen Press Release, 14 October 2009.

[24] "Comcast and Nielsen to Start Testing Commercial Ratings for Tablets Common Currency Across Platforms Is the Ultimate Goal."

[25] Amanda Lotz, "Recounting the Audience: Measurement in the Age of Broadband," *The Television will be Revolutionized* (New York University Press, 2014.

[26] Ien Ang, *Desperately Seeking the Audience* (London: Routledge, 1991), 1-36.

[27] Tom Huddleston Jr., "Netflix has more U.S. Subscribers than Cable TV," *Fortune*, 15 June 2017.

[28] Karen Buzzard, *Tracking the Audience: The Ratings Industry from Analog to Digital* (New York: Routledge, 2012), 126-127.

[29] Erik Sass, "Zenith Signs with Nielsen for 'Three Screen' Measurement," *Media Daily News*, 14 March 2008.

[30] Brian Stelter, "Whichever Screen, People Are Watching," *New York Times*, 8 July 2008.

[31] Ibid; "Nielsen's Three Screen Report, May 2008," *Nielsen Company Report*, May 2008, robertoigarza.files.wordpress.com/2008/11/rep-three-screens-video-usage-usa-nielsen-2008.pdf, accessed 2 April 2019.

[32] Sara Erichson, Nielsen Executive Vice President of Audience Insights, Personal interview with the author, 24 June 2017.

[33] Buzzard, *Tracking the Audience*, 126-127.

[34] "Nielsen Presents: Cross-Platform Home Panels and Extended Screen Ratings," Nielsen Company promotional video, published 24 November 2011, www.youtube.com/watch?v=ZMloRLUMNTw&feature=youtu.be, accessed 30 June 2018.

[35] Sara Erichson, Nielsen Executive Vice President of Audience Insights, Personal interview with the author, 24 June 2017.

[36] Pat McDonough, Nielsen Senior Vice President of Insights and Analysis, Personal interview with the author, 7 May 2017.

[37] Todd Spangler, "The Rumble Over Ratings," *Variety* 321 no, 12 (2013), 50-54; Amol Sharma, "Nielsen Tries to Get Digital," *Wall Street Journal* 30 April 2013, B4; Jon Lafayette, "Nielsen Extends Watermarks to Second-Screen Viewing," *Broadcasting & Cable*, 27 October 2015.

[38] Jon Lafayette, "Mobile Ratings Won't Be a Hit in New TV Season," *Broadcasting & Cable* 144 no. 35 (2014), 33.

[39] Michael Strangelove, *Post-TV: Piracy, Cord-Cutting, and the Future of Television* (University of Toronto Press, 2012), 94-123.

[40] Bill Carter and Emily Steel, "TV Ratings by Nielsen Had Errors for Months," *New York Times*, 10 October 2014; Brian Steinberg, "Nielsen: Technical Error Causes Months of False TV Ratings," *Variety*, 10 October 2014.

[41] Steinberg, "Nielsen: Technical Error Causes Months of False TV Ratings."

[42] Joe Flint, "CNBC to Stop Using Nielsen for Ratings," *Wall Street Journal*, 06 January 2015.

[43] Ibid; Josh Feldman, "CNBC to Stop Using Nielsen Numbers to Track Daytime Ratings," Media ITE, 6 January 2015, www.mediaite.com/tv/cnbc-to-stop-using-nielsen-numbers-to-track-daytime-ratings/, accessed March 10, 2019.

[44] Nellie Andreeva, "Fox To Stop Using Live+Same Day Ratings," *Deadline*, 20 November 2015.

[45] Ibid.

[46] Ibid.

[47] Wayne Friedman, "One Part TV, One Part Digital: How Nielsen Jiggers Total Audience," Media Post, 8 May 2016, www.mediapost.com/publications/article/275324/one-part-tv-one-part-digital-how-nielsen-jiggers.html, accessed April 9, 2019.

[48] Jessica Hogue, Nielsen Senior Vice President of Digital Client Sales and Services, Personal interview with the author, 27 April 2018.

[49] Jon Lafayette, "7 Things You Need to Know About Nielsen's New Tool," *Broadcasting & Cable*, 30 November 2015.

[50] Ibid.

[51] Jeanine Poggi, "NBCU Says Nielsen's Total Content Ratings Aren't Ready for Primetime," *Ad Age*, 15 December 2016.

[52] Ibid.

[53] Jessica Hogue, Nielsen Senior Vice President of Digital Client Sales and Services, Personal interview with the author, 27 April 2018.

[54] Brian Steinberg, "Nielsen Says It Will Measure Audiences for TV Episodes That Stream Via Netflix," *Variety*, 18 October 2017.

[55] David Z. Morris, "Nielsen Says Stranger Things Is a Big Hit. But Netflix Says Their Numbers Are Upside Down," *Fortune.com*, 5 November 2017, fortune.com/2017/11/05/nielsen-netflix-stranger-things-viewership/, accessed April 9, 2019.

[56] Frank Pallotta, "'Bird Box' is a Hit for Netflix, According to Nielsen," *CNN*, 8 January 2019.

[57] Claire Atkinson, "Netflix is Sitting on a Data Goldmine—and it's Starting to Give us a Peek," *NBC News*, 14 March 2019.

[58] Ibid.

[59] Jon Gertner, "Our ratings, ourselves," *New York Times*, 10 April 2005.

[60] Lafayette, "7 Things You Need to Know About Nielsen's New Tool."

[61] Ang, *Desperately Seeking the Audience*, 1-36; Lafayette, "7 Things You Need to Know About Nielsen's New Tool."

[62] Wayne Friedman, "One Part TV, One Part Digital: How Nielsen Jiggers Total Audience," Media Post, 8 May 2016, www.mediapost.com/publications/article/275324/one-part-tv-one-part-digital-how-nielsen-jiggers.html, accessed April 9, 2019.

[63] Sara Erichson, Nielsen Executive Vice President of Audience Insights, Personal interview with the author, 24 June 2017.

[64] Jessica Hogue, Nielsen Senior Vice President of Digital Client Sales and Services, Personal interview with the author, 27 April 2018.

[65] Steinberg, "Nielsen: Technical Error Causes Months of False TV Ratings."

[66] Ibid.

[67] Jon Lafayette, "CBS Starting New Year Without Ratings from Nielsen," *Broadcasting & Cable*, 1 January 2019.

Conclusion

Audience Intelligence/Intelligent Audiences—The Future of the Ratings Panel

In "Television Ratings: From Audimeter to Big Data" my purpose is not only to analyze the historical trajectory of ratings technologies and methods, from the emergence of broadcast television to today, but also to use this history as an emblematic case study of the technological and cultural shifts that have paved the way to contemporary consumer data regimes. While this task would be easier if ratings technologies and the consumer data collection practices they utilize had followed a single linear trajectory, this is not the case. Television audience measurement has been characterized by multiple competing technological preoccupations and data epistemologies. This is true too of contemporary audience measurement practices.

I've analyzed the history of TV ratings methods using two intertwined theoretical perspectives. The first is that technologies—even before they ever come to market—are political: they serve as a locus for the negotiations between consumer power and user agency that encompass consumer surveillance. The second is that the evolution of audience measurement has been shaped by its inherent need to rely on viewers more or less active cooperation in the task of being measured. Moreover, in data collection processes, technology often actively facilitates, responds to, or limits user/viewer cooperation. Accordingly, audience measurement—and consumer data collection more broadly—are constituted by a constant experimentation with technology/human interfaces in effort to find a proper code to create a common technology/body language. This common machine/body language, of course, takes the form of commodifiable data.

As I discussed in the Intro, and again in Chapter 3, when this interfacing fails, when users become overburdened by the demands of surveillance technologies, the industry often refers to this as user "fatigue." Thus "fatigue" is the negative outcome of cooperative surveillance. But in this Conclusion, I want to turn to the productive output of viewers' (more or less active) cooperation in consumer surveillance, or phrased another way, the productive result of successful technology/human interfacing. Here, I'll describe this productive output as "intelligence." As I use it, "intelligence" is usable data that has epistemological value because it supposedly signifies human experience.

In Chapter 1, I discussed the early debates between Claude E. Hooper and Arthur C. Nielsen about the strengths and limitations of survey methods and mechanical meters for audience measurement. Hooper's argument was that the mechanical meter could only measure turning—not whether viewers were actually watching and engaged with a program. He argued that the interpretations and subjectivity that went into human surveys actually created higher quality audience data. Meanwhile, Nielsen argued that surveys are too latent with human error and inconsistent interpretations. He insisted that automating the audience measurement process resulted in more objective and less variable audience data, which also made the data more scalable. Essentially what this debate entailed, was different models of technology/body interfacing, which produced two different kinds of intelligence: one valuing a more active tech/body interface, which created more subjective data, and the other, a more passive tech/body interface, resulting in more so-called objective data. These opposing data collection logics persisted simultaneously in audience measurement throughout the 20th-century. One the one hand, Nielsen's and Arbitron's national panels relied on metered devices, endeavoring toward a less active tech/human interface, and privileging so-called

objective data. And on the other hand, their local panels relied on viewer dairies: a more active interface that produced more subjective data. These different kinds of "intelligence"—so-called objective data and subjective data—have different epistemological values attached to them and have provided different values the television ratings industry.

In either case, the ratings have always been fundamentally grounded in a panel of real viewers, and this has shaped both their discursive and epistemological power. In a 1966 address to the Oklahoma City Advertising Club titled "If Not the People…Who?" A.C. Nielsen Jr. characterized the audience measurement process as akin to a democratic election with the ratings the constituting "the voice of the people" or a "mirror of public taste."[1] Nielsen has always argued that the viewer panel makes ratings quintessentially democratic, in effect absolving itself of any responsibility for the ratings' negative effect on program quality. Eileen Meehan, along with others like Robert McChesney, Ien Ang, and Todd Gitlin have debunked this idea that TV ratings are a mirrored reflection of public taste by pointing out that, on the one hand, audiences are choosing among a relative narrow selection of commercially motivated choices in the first place, and on the other hand, sampling practices tend to over-represent some viewing groups and underrepresent others.[2] But even if audience measurement is not truly democratic, the viewer panel has still been a central "technology" of the television ratings since their inception. Its basis in the viewer panel means that TV ratings data is given the epistemological accreditation of "audience intelligence." Moreover, audience measurement's dependence on the viewer panel enhances the cooperative function of the ratings collection process. Regardless of whether the ratings industry is relying on more passive or active interfaces, there are still constant negotiations over control occurring at the interface, where ratings firms attempt to procure the most commodifiable data possible

as seamlessly as possible while panelists have their own (more or less conscious) incentives or cooperation or not with the process.

While the ratings panel's central function to television ratings has gone unquestioned for much of the history of audience measurement, its epistemological value is at the center of contemporary industry debates around what digital audience ratings should look like. On the one hand, the consumer data industry as a whole is turning toward new forms of machine learning and artificial intelligence (AI) to create, sort, and interpret user/viewer data. Nielsen, itself, introduced its own artificial intelligence arm in 2017. Essentially machine learning and AI endeavor to "objectify" data while also supposedly "individualizing" it at mass scales. Artificial intelligence begs the question: if machines can supposedly replicate human decision-making processes, is the direct input of real users/viewers necessary for the production of "audience intelligence"? But on the other hand, somewhat ironically, Nielsen also argues that their audience ratings being derived from and grounded in a panel of real viewers gives them an advantage over their competitors. Especially given the disarray of data that currently characterizes the digital market, Nielsen says that their viewer panel gives them the ability to bind and re-embody data, resulting in a more subjective and accurate capture of real human media experience. Throughout this dissertation, I've demonstrated how technology/user interfaces implicate the political implications of surveillance and data interpretation, and in this same vein, there are cultural-political stakes in how we come to define audience intelligence in the digital landscape.

Audience Intelligence: Machine Learning and Audience Metrics

In 2017 Nielsen announced their new Nielsen Artificial Intelligence (AI) initiative. AI refers to the ability of computers to perform tasks normally requiring human intelligence, including audio recognition; visual perception; identity verification; and decision-making, often in the absence of specific programming (i.e. through machine learning).[3] Nielsen AI is an adaptive learning technology that aggregates multiple data streams including e-commerce purchases, web traffic, and audience data; optimizes it; and then sorts it into 60,000 audience segments, all in real time. These new machine learning capabilities enable Nielsen Marketing Cloud clients to respond to changing user/viewer preferences, demographics, and geography on a minute by minute timeline with expertly tailored advertising.[4] Nielsen is AI is still in a testing phase, but the initiative already supports around 1,000 live adaptive learning models for clients.[5]

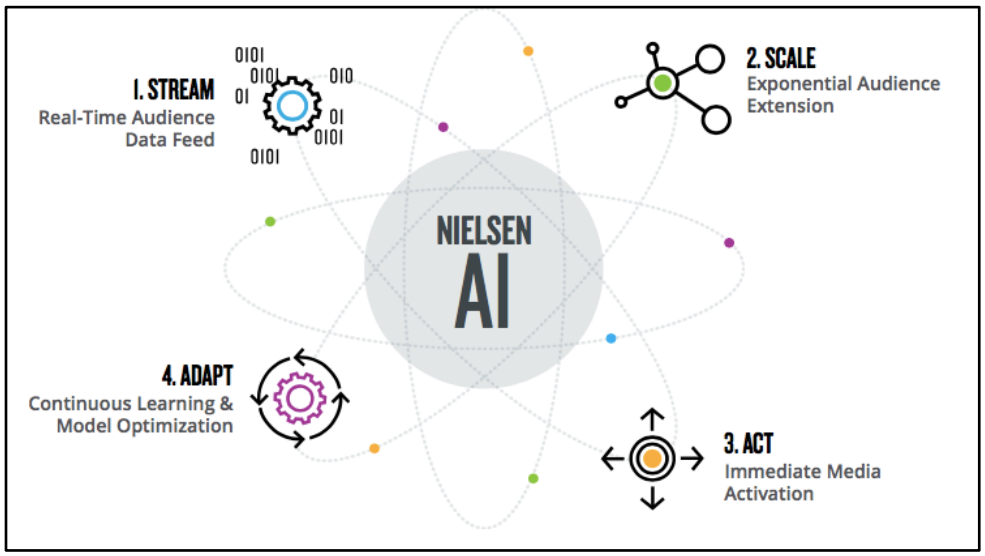

Figure 1: Nielsen Artificial Intelligence aggregates data from multiple consumer streams, scales it, and then uses machine learning models to respond to with minute-by-minute changes user/viewer preferences and demographics with tailored ads and content recommendations[6]

While there is limited information available about the new endeavor, I am interested in the way that Nielsen has promoted the Initiative. AI is often positioned as a big data management strategy, and indeed, in promotional reports, Nielsen writes, "Information overload is nothing new, but it is something that isn't going away. In fact, it's growing in size and complexity. Big Data management capabilities have become table stakes in today's marketing world."[7] To give clients a sense of these new scales, Nielsen illustrates, "[Nielsen AI] currently processes over 6.5 trillion consumer actions a month, which amounts to over 5 petabytes of audience data processed every month. For context, 2 petabytes is equivalent to every book housed in all the U.S. academic research libraries combined."[8]

But moreover, Nielsen argues that AI can recuperate the "human" connection through machine interfacing that data overabundance has obfuscated. Nielsen tells potential clients, "One of your primary objectives is building mutually valuable relationships with real people," which in an environment of increasingly intractable (or uncooperative) consumer decision making, "requires capturing attention and keeping it."[9] At Nielsen's AI exhibit at the 2019 Consumer Marketing Conference in New York City, Brett House, the Vice President of Nielsen Marketing, explained how Nielsen AI can help enable media firms to achieve more "direct and efficient" engagement with audiences. For example, video streaming sites can use Nielsen AI to find exponentially more demographic patterns within the audience data they already collect in order to offer particular, adaptive, and quicker content recommendations for browsers.

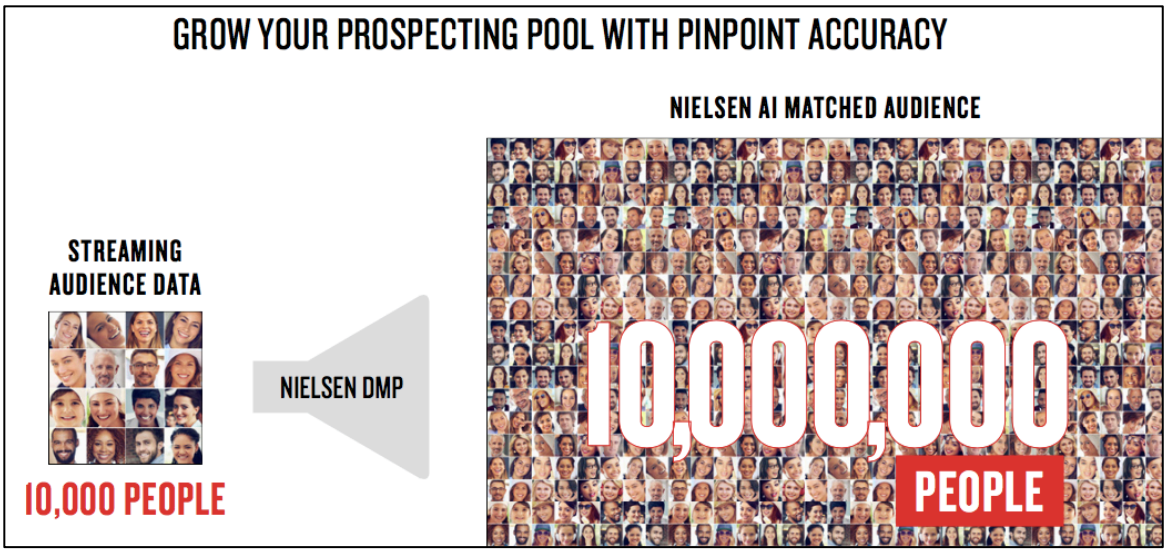

Figure 2: Using part of the Nielsen's Artificial Intelligence program called the Data Management Platform (DMA), streaming sites can scale their audience data to 1,000 times more demographic and behavioral insights[10]

In another example, House explained, when a particular video or piece of web content experiences a sudden uptick in traffic or change in the nature of user engagement (even in the middle of the night, for example) Nielsen's AI can respond with more relevant or a larger quantity of ads. Throughout the exhibit, House repeatedly drew on the concept of "return of investment" (ROI)—common promotional trope for machine learning marketing—referencing Nielsen AI's ability to capitalize on more efficient consumer targets, while minimizing the amount of resources wasted.[11]

Joseph Turow has pointed out the ways that digital data economies increase social sorting by labelling some consumers as "targets" and others "wastes," which in turn, often segments consumers into racial, gendered, and economic silos. Data firms and marketers then distribute different content to these audience segments, and when that content includes stuff like more favorable adverts or more economically beneficial promotions, it works to further privilege some demographic segments and disenfranchise others.[12] Moreover, Turow writes

about how data aggregation intermediaries, including companies like Axiom, bundle data that is collected from separate social domains (media distribution, voter registration, consumer lending agencies) together and recirculate it across an array of consumer arenas. Nielsen Artificial Intelligence aggregates and re-distributes data in the same way, increasing both the scale in which social sorting processes occur and their invisibility.

While artificial intelligence is often intended to limit the inefficient variance of human subjectivity and decrease labor, critics argue that ethical AI depends, contradictorily, on highly involved human oversite. In a publication titled "Artificial Intelligence and Data Protection," the Center for Information Policy Leadership articulates this perspective:

> Human decision-making is sometimes unexplainable or irrational. We should aspire for AI to operate more efficiently and accurately than humans, and to make less biased, more rational and reliable decisions. Individuals may not always understand how specific AI works, but they can assure that it is developed according to legal and ethical principles. Humans are essential to evaluating its results and providing redress in the case of incorrect or unfair decisions.[13]

However, when consumer data firms endeavor toward commodifiable scalability, at efficiencies that are almost impossible to monitor, it seems unlikely that human oversight will be able to guard against the negative social implications of machine learning outputs. Certainly, the issues of equipment failure, data overabundance, underrepresentation, and demographic failure that have plagued audience measurement for the past 70+ years do not set a strong precedent for ethical implementation of AI in digital audience metrics.

Intelligent Audiences: The Future of the Ratings Panel

While the digital data landscape is characterized by a turn toward automation and machine learning, Nielsen's digital strategy has simultaneously been characterized by its dependence on its rating panel. In fact, Nielsen insists that this access to real viewers—which

binds a potential disarray of disembodied data to real subjective experience—is what sets it apart from its data farming competitors. The ratings panel has played a central role in the debate over methodology between Nielsen and its competitors, namely comScore.

In the endeavor to create a cross-platform audience metric, comScore is currently Nielsen's main competitor. ComScore was founded in 1999 by Gian Fulgoni and Magid Abraham who were formerly CEO and president, respectively, of Information Resources Inc. (IRI), an integrated big data and predictive analytics firm. In 2002 comScore partnered with Media Metrix, which utilized a PC meter to measure internet traffic, somewhat similar to the method used by Net Ratings (acquired by Nielsen in 2007). In September 2015, ComScore acquired Rentrak, a company that specialized in box office data and in aggregating television audience data from set-top boxes and Digital Video Recorders (DVRs). Rentrak was Nielsen's biggest rival in the digital audience metrics throughout the decade prior. With the merger, comScore became an industry leader in digital audience metrics.

All of comScore's methods and technologies were uniquely engineered from the start to measure digital content. ComScore places beacons and trackable tags throughout the online content they plan to monitor. When internet users/viewers visit the tagged websites, comScore's beacons store a tracking cookie in the user's computer memory. Meanwhile, comScore also has a panel of around two million people, who they recruit through a combination of randomized digital dialing and volunteer surveys. Panelists agree to run comScore's background monitoring software package on their devices, which tracks everything they do online. ComScore then compares the data it collects on total web traffic to the tracking data from its panel to decipher more specific demographic information. In other

words, comScore's panel, rather than being the source of its data (like it is for Nielsen), serves a somewhat secondary checks and balances function. While ComScore is often positioned as Nielsen's more digitally competent brother, it also faces its share of criticism over its methods. Privacy advocacy groups criticize the company for storing tracking cookies in the computers of users who have not agreed to be a part of their panel, many of which are likely incognizant of their involvement. ComScore's panel is also criticized for not be nationally representative, and the obscurity around its demographic sampling means it's difficult to know how fairly the service is measuring underrepresented viewing populations. And lastly, comScore's metrics emphasize viewing that occurs through the internet or connected devices; the only audience data they collect for broadcasting comes from set-top-boxes, which makes it unrepresentative of the broadcast audience as a whole.[14]

The vastly different logics underpinning Nielsen's and ComScore's methodologies is perhaps why so most media companies have found value in subscribing to both firms during this period of digital transition. ComScore was born of the digital age; everything from their panel recruitment practices to their tracking technologies are uniquely created for an online environment. Meanwhile, Nielsen's ratings currency is remnant of the broadcast era: it uses live broadcasting as its base and then adds digital viewing, and it relies more centrally on a panel of real viewers.

Nielsen argues that their "tried and true" broadcast-founded logics—focusing on the live broadcast as the origin point for viewership and relying on a more-participatory panel of real viewers—allows them to more productively ground the disarray of digital data. In other words,

the ratings panel allows Nielsen to connect the dots—in the gaps that code and algorithms leave—on viewer's engagement with media. Moreover, there's a unique epistemological value in the subjectivity of the viewer panel. Nielsen's Executive Vice President Megan Clarken explains, "The TV panel is still the underlying source of truth for every piece of data we get."[15] Compared to a conscious human panel, she says, set-top boxes and web-trackers, to a certain degree, are dumb devices that represent the machine's footprint, not necessarily the viewer's engagement. Clarken says that until a set-top box or smart TV can "identify itself and give you a data set that identifies its relationship to everybody in the home," it will not be on the same epistemological level as a ratings panel.[16]

The ratings panel has been at the center of comScore and Nielsen's rivalry. It's at a conjuncture of not only two different approaches to audience methodology, but also to different models of human/technological integration and different approaches to qualifying data epistemologies. On the topic of the ratings panel, ComScore CEO, Bryan Wiener states, "We believe in panels. The biggest difference between us and [Nielsen] is we believe that we're data-first and the panel is used to inform the data set versus the panel being at the crux and using the data at the outskirts."[17] And, on the other side, Jessica Hogue, Nielsen Senior Vice President of Digital Client Sales and Services explains, "As Nielsen moves increasingly toward cross-platform measurement, dealing with a greater abundance of data, the role of the panel might become increasingly important. You need the panel for the personification of large sets of household data."[18] At the Coalition for Innovative Media Management's 5th Annual Cross-platform Media Measurement & Data Summit, the day's discussion ended on the topic of the ratings panel, with ComScore Chief Product Officer, Manish Bhatia, and Nielsen's Product Leadership Senior Vice President, Kelly Abcarian, each taking a final jab.

ComScore's Bhatia argued, "As good as a panel is, there is a limit to how finely you can slice that panel… There's only so much juice you can take out of a lemon."[19] And Abcarian countered: "While ComScore's tunnel vision is scale, Nielsen's focus is also on quality."[20]

Currently, as the competition stands, the two companies are each working to address their metrics' limitations. Reporter Tim Peterson writes, "Both companies are racing to establish strengths in each other's domain. ComScore is pressed to provide the in-depth person-based measurement that Nielsen's panels provide, while Nielsen must aggregate more data to augment its panels and provide more minute measurement at the device level."[21] As the two companies work from different directions, toward cross-platform measurement, it is likely that they will collide in the middle, and it will be left to the industry to decide which audience metric—and model of human/technology interfacing—works best.

Meanwhile, Nielsen is currently in the process of experimenting with a more tangible way to capitalize on their panelists' subjectivity, agency, and mobility to enhance their cross-platform measurement capabilities. In 2017 Nielsen demoed its "next generation portable peoplemeter," at industry trade events, and physical models of the device were passed around for the first time at the National Association of Broadcasters Show in April 2019. The wearable watch-like device was developed in partnership with Fitbit and other smart watch companies. However, during testing, Nielsen found, while a watch-device seems to be the most functional form for the device, some panelists were strongly averse to wearing stuff on their wrists or didn't want to replace their own smart watch. Thus, for panelists who request it, Nielsen also plans to make the PPM available in the form of a pendant or a clothing clip.[22]

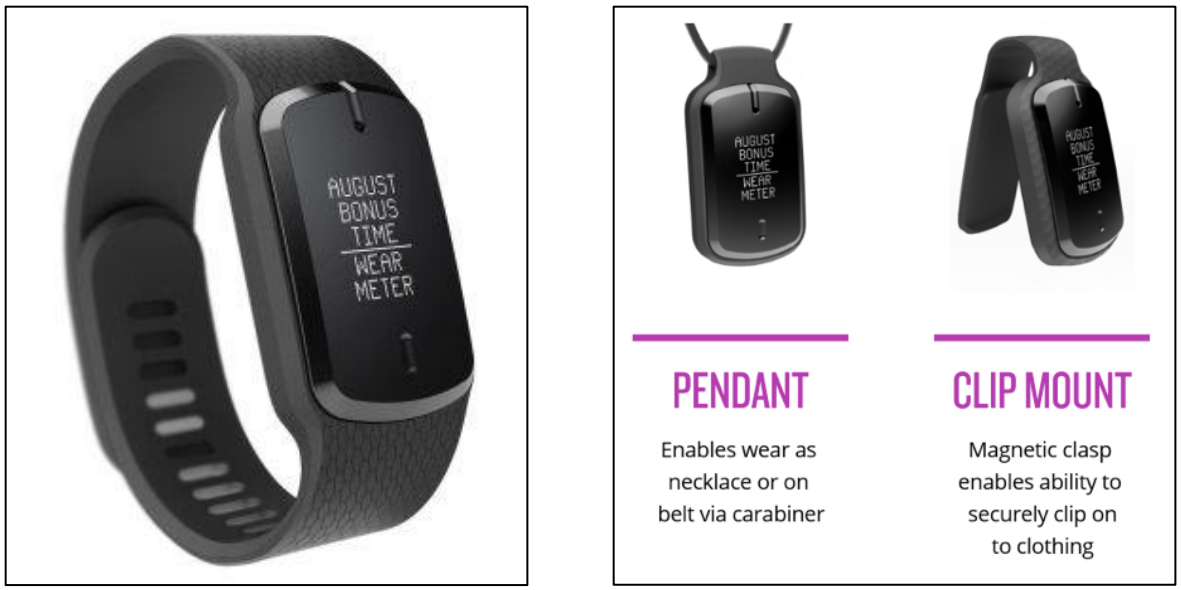

Figure 3: In addition to its default watch form, Nielsen will make its next generation PPM available in the form of a pendant and clip mount[23]

In addition to measuring Critical Band Encoding Technology (CBET) codes to measure television viewing, the next-gen PPM will double as an activity tracker. The PPM watch also contains Bluetooth, enabling it to connect to panelists' set top meters, allowing Nielsen to congregate the data and ascertain a single metric for in home and out of home television viewing. Moreover, the Bluetooth connection removes the need for a push button registry because it enables Nielsen to automatically know which individuals are in the room with the television.[24]

The next-gen PPM will also have a companion mobile app that panelists will download onto their smartphones. When panelist attach their next-gen PPM to their phone via a charger, the app will upload the media consumption data to Nielsen.[25] In an interview with *Inside Radio*, Nielsen senior VP of Local Product Leadership Bill Rose explains that the smart phone app also enables two-way communication between Nielsen and panelists: "It allows us to have messaging and go back and forth with them in ways that you don't have with today's device."[26] Moreover, the PPM smartphone app measures content watched on the

smartphone itself. Nielsen is currently running the device through a test-panel and working out kinks with the devices battery life, waterproof function-ability, and microphone capabilities. Nielsen plans to implement the device in their national panel by 2021.

With this system, under the neoliberal, techno-utopian guise of multi-functionality, Nielsen will access to panelists' health data, such as their heart rate, fitness level, and certain illnesses or disabilities they may have. Through the app, by tapping into panelists' phones GPS, they'll also have information about panelists geographical location and spatial movement. But moreover, the watch itself functions as a prosthetic that ultimately turns the body into a round-the-clock data collection mechanism, fully implicated as a constant technology of cooperative commodification.[27]

Conclusion: Re-approaching Television Ratings through a Data-Age Lens

While television ratings have had a unique ontological identity, and have been a somewhat publicly recognized facet of popular culture throughout broadcast history, today television audience measurement is almost indistinguishable within the array of data exchanges that characterize the digital landscape. That is to say, contemporary methods of television audience measurement look a lot like other kinds of consumer data collection—perhaps with the exception of its grounding in the ratings panel, which makes audience measurement uniquely participatory and anchors it to its broadcast legacy. However, re-approaching the history of television ratings through a contemporary data-age lens reveals commercial media's longstanding foundation within and influence on consumer data regimes. Indeed, as media scholars, if we want to grapple with the increasing datafication of

our media systems, and its historical precedence, television rating are perhaps one of our most apt opportunities to do so.

The so-called data age of today was not borne out of some digital rupture, but rather, has emerged gradually throughout the 20th-century as a result, in part, of the convergence and catapulting influence of the cybernetics industries and information economies (in addition to a plethora of broader political, social, and economic factors that influenced this mergence). Nielsen, itself, emblematizes this evolution. But in order to best understand Nielsen's place in the history of consumer surveillance, one has to look beyond their public face, at their long history of technological design and methodological experimentation. While market forces made Nielsen slow to adapt their practices with clients, behind the scenes, they were constantly conducting technological experiments to test different models of interfacing and discover the boundaries of user cooperation.

Moreover, along with understanding how media is implicated by contemporary data culture, scholars should consider the ways that commercial media did its part to create such a culture. Contemporary data culture (i.e. our everyday reliance on and interaction with data regimes), grew out of a gradual cultivation of our perception of, relationship to, and participation in data collection and surveillance. In part, through its embedment in commercial television, datafication and consumer surveillance worked its presence into our domestic lives and disguised itself within leisure. Television is not newly embedded in data. From audimeter to big data, the US commercial television system as a whole was founded on and has always been grounded in these cooperative regimes of data-driven consumer surveillance, which continue to shape contemporary media culture.

Notes

[1] Arthur C. Nielsen J., "If Not the People…Who?" (An Address to the Oklahoma City Advertising Club). A.C Nielsen Company. Chicago, 1966. In *Why TV Is Not Our Fault* Eileen Meehan analyzes this same speech, demonstrating how Nielsen Jr. drew on Cold War rhetoric to characterize the ratings as quintessentially American and good for economic prosperity; the subtle implication was that to critique the ratings methodology or their results was unpatriotic. Eileeen Meehan, *Why TV Is Not Our Fault: Television Programming, Viewers, and Who's Really in Control* (Oxford, UK: Rowman & Littlefield, 2005), 16.

[2] Meehan, *Why TV I Not Our Fault*; Robert W. McChesney, "The Market Uber Alles," *The Problem of the Media: U.S. Communication Politics in the 21st Century* (New York: Monthly Review Press, 2004), 175-209; Ien Ang, *Desperately Seeking the Audience* (London: Routledge, 1991); Todd Gitlin, "By the Numbers," *Inside Prime Time* (London: University of California Press, 1983), 41-48.

[3] "First Report*:* Artificial Intelligence and Data Protection in Tension," Center for Information Policy Leadership, 10 October 2018, www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_ai_first_report_-_artificial_intelligence_and_data_protection_in_te....pdf, accessed 28 April, 2010.

[4] "Nielsen Launches Artificial Intelligence Technology," Nielsen Press Report, 4 April 2017.

[5] Brett House, Vice President of Nielsen Marketing Cloud, interview with author, 12 December 2018.

[6] "Marketing at Future Speed: Adapting to People's Changing Needs When Every Second Counts," The Nielsen Company Report, 2017, www2.nielsen.com/nielsen-artificial-intelligence-whitepaper, accessed 20 February 2019.

[7] Ibid.

[8] Ibid.

[9] Nielsen Marketing Cloud Exhibit, Consumer Marketing Conference, New York, 3 April 2019.

[10] "Marketing at Future Speed: Adapting to People's Changing Needs When Every Second Counts," The Nielsen Company Report, 2017; Nielsen Marketing Cloud Exhibit, Consumer Marketing Conference, New York, 3 April 2019.

[11] Nielsen Marketing Cloud Exhibit, Consumer Marketing Conference, New York, 3 April 2019.

[12] Joseph Turow, *Breaking up America: Advertisers and the New Media World* (University of Chicago Press, 1998), 2. In his later work Turow elaborates on how media and advertising companies use consumer data to separate consumer groups into "targets" and "wastes." See, Joseph Turow, *The Daily You: How the New Advertising Industry Is Defining Your Identity and Your Worth* (New Haven, Connecticut: Yale University Press, 2012), 88.

[13] First Report*:* Artificial Intelligence and Data Protection in Tension," Center for Information Policy Leadership, 10 October 2018, www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_ai_first_report_-_artificial_intelligence_and_data_protection_in_te....pdf, accessed 28 April, 2010.

[14] Tony Maglio, "Nielsen, ComScore Spar at Awkward TV Ratings Summit Panel," TheWrap.com, 13 April 2016, www.thewrap.com/nielsen-comscore-cimm-summit-2016-tv-ratings/.

[15] Jon Lafayette, "7 Things You Need to Know About Nielsen's New Tool," *Broadcasting & Cable*, 16 March 2018.

[16] Ibid.

[17] Tim Peterson, "Comscore and Nielsen are Racing to become the One True Cross-platform Measurement Provider," *Digiday* 2 January 2019, digiday.com/marketing/comscore-nielsen-racing-become-one-true-cross-platform-measurement-provider/.

[18] Jessica Hogue, Nielsen Senior Vice President of Digital Client Sales and Services, Personal interview with the author, 27 April 2018.

[19] "Summary of 2.7.19 CIMM Cross-Platform Video Measurement & Data Summit," *Coalition for Innovative Media Measurement*, 9 April 2016; Tony Maglio, "Nielsen, ComScore Spar at Awkward TV Ratings Summit Panel," TheWrap.com, 13 April 2016, www.thewrap.com/nielsen-comscore-cimm-summit-2016-tv-ratings/.

[20] Ibid.

[21] Peterson, "Comscore and Nielsen are Racing to become the One True Cross-platform Measurement Provider."

[22] "Nielsen Exhibit," All Access Worldwide Radio Summit (Burbank, California) 23 April 2018; "The Big Reveal: Nielsen Demos New Wearables PPMs at NAB Show," *Inside Radio*, 9 April 2019.

[23] "The Big Reveal: Nielsen Demos New Wearables PPMs at NAB Show."

[24] "Nielsen Next Generation Portable Peoplemeter Exhibit," All Access Worldwide Radio Summit (Burbank, California) 20 April 2017; "Nielsen Looks to Change Game with Next-Gen PPM," *Inside Radio*, 22 May 2017.

[25] "Nielsen Exhibit," All Access Worldwide Radio Summit (Burbank, California) 23 April 2018;

[26] "Testing, Testing: Nielsen Puts Wearable PPM Devices Through Their Paces," *Inside Radio*, 7 January 2019.

[27] "Nielsen Next Generation Portable Peoplemeter Exhibit," All Access Worldwide Radio Summit (Burbank, California) 20 April 2017; "Nielsen Looks to Change Game 2ith Next-Gen PPM."