

Can the Computer, and the Public, do the Metadata Work?

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Library & Archives

Agenda

- Who we are
- The project
 - Cataloguing dilemma
 - Audio cataloging
 - Speech to text results
 - Crowd source work
 - Crowd source challenges

- CL tool data output useful?
- Additional available tools- work with CL experts
 - We have a great data set
 - You have expertise



American atchive

OF PUBLIC BROADCASTING

American Archive of Public Broadcasting

The Library of Congress
Packard Campus for Audio Visual Conservation



Who we are: WGBH Media Library and Archives





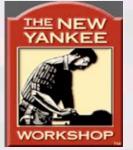
























All Classical A service of WGBH



PERSONAL A TRANSCRIPT GAME

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About - For Participating Organizations - Donate

Discover historic programs of publicly funded radio and television across America. Watch and listen.

Participating Organizations

Curated Einbris

Browse The AAPS

Telling Our Story

Searth...

Q

Advanced Search.



Candidate George Wallace



daho Public Television



Conversations: International Museum of Muslim Cultures Missission Public Broadcestins

60 years of recorded history, at your fingertips.

Watch and listen at americanarchive.org



50,000 HOURS

of historic public television and radio content are digitized and preserved



ACCESS

the entire collection at WGBH and the Library of Congress



WATCH & LISTEN

to more than 20,000 programs online at americanarchive.org



SEARCH

2.5 million additional catalog records in our database



DISCOVER

content from more than 100 organizations in 40 states and territories



EXPLORE

curated exhibits on topics such as civil rights, climate change, elections, and protesting



HELP

make the AAPB easier to search and access! Play our FIXIT game at fixit americanarchive org



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FUNDERS











THE PROJECT

American Archive

OF PUBLIC BROADCASTING



pop^{up} archive





the situation/dilemma

90,000 digitized television and radio programs

incomplete, inaccurate metadata records

limited staff resources

what is in the collection?

users need access to the collection

continued growth of the collection (content and sparse metadata)



a collaboration between the Library of Congress and WGBH

A TRANSCRIPT GAME Sapole Advanced Search

Transcript

For Participating Organizations -About -

Hide(-)

Record

The MacNeil/Lehrer Report; Square Tomatoes; Tomatoes

4 3 8



WOMAN IN SUPERMARKET: These are better than most that I've seen. Tomatoes in general have been so disappointing that I've gotten to the point where I just walk by them; I don't buy them any more because either they're very hard and when you eat them they have no taste at all. They're very waxy. Very often I've found them rotten inside and you can't seem to tell it from the outside. They are terribly expensive, and we love them because we're big salad eaters, you know. But they're not the kind of tornatoes we used to get years ago. ROBERT MacNEIL: Good evening. Most of this week we're all going to be preoccupied with the energy crisis, but tonight we'd like to remind you that this country faces other crises than energy. And one of them is the tomato. Jim? JIM LEHRER: It's a crisis of confidence, Robin. Recent opinion polls ranked the tomato among the least loved of all vegetables. Turned-off tomato eaters

If you have more information about this item than what is given here, we want to know! Contact us, indicating the AAPB ID (opb-sacip/507-z31ng4hp5t). The MacNell/Lehrer Report No description available Series Description This episode features a discussion on tomatoes. The guests are Karen Episode Square Tomatoes Hess, Jim Hightower, Wayne Hawkins. Byline: Robert MacNell, Jim Lehrer Episode Tomatoes Crested 1977-04-19 NewsHour Productions Contributing Asset type (Washington, District of Columbia) Organization **Topics** Energy AAPB 10 cpb-sacip/507-z31ng4hp5t Agriculture Food and Cooking Copyright NewsHour Productions, LLC. Licensed under a Creative Commons. Rights Attribution-NonCommercial-NoDerivatives 4.0 International Public License (https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode)



beech.

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For Participating Organizations - Donate About -

Chinago "Montre Duncan" WHIRO American Archive of Bublic Stranforation

Record

Monroe Duncan



Transcript Not Avelable

If you have more information about this item than what is given here, we want to knowl Contact us, indicating the AAPB ID (cpb aacip/387-70zpcgn9).

Segment	Monroe Duncan	Description	No description available	
Contributing Organization	WHRO (Norfolk, Virginia)	Asset type		
AAPB ID	cpb-sacip/387-70zpcgn9	Genree	Unedited	
	cycleacycol 2017 respoyer	Topics	Food and Cooking	
		Media type	Moving Image	
		Duration	00:20:007	



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Seath. Q

Advanced Search

A TRANSCRIPT GAME

For Participating Organizations -

Chicago: "New Jersey Nightly News; Tomato Farmer Burl. Co Tape 1 10-6-82

Record

New Jersey Nightly News; Tomato Farmer Burl. Co Tape 1 10-6-82 / Tomato Farm



Transcript Not Assisting

If you have more information about this item than what is given here, we want to know! Contact us, indicating the AAPB ID (opb-sacip/259-9w090c5t).

Series	New Jersey Nightly News	Description.	No Description	
Naw Footage	Tomato Farmer Burl, Co Tape 1 10- 6-82 / Tomato Farm	Broadcast	1982-10-06	
Contributing Organization	New Jersey Network (Trenton, New Jersey)	Genres	News	
		Topics	News	
AAPB ID	cpb-eacip/259-9w090c5t	Media type	Moving Image	
		Duration	00:20:00?	

Citation



Displot.

A TRANSCRIFT GAME

Advanced Search

For Participating Organizations - Donate About -

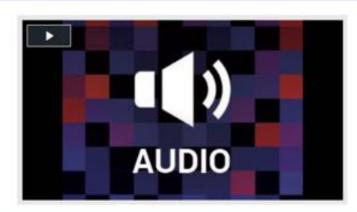
Chicago: "The Emily Rooney Show; WGBH Radio," WGBH, American Archive

of Public Broadcasting (WGBH and the Library of Congress), Boston, MA.

and Washington, DC, accessed September 20, 2018. http://americanarchive.org/catalog/cpb-aacip_15/96057dg9n. MLA: "The Emily Rooney Show; WGBH Radio." WGBH, American Archive of

Record

The Emily Rooney Show, WGBH Radio



Transcript Not Available

Series	The Emily Rooney Show	Description	Emily Rooney Show
Title	WGBH Radio	Asset type	Program
Contributing Organization	WGSH (Boston, Massachusetts)	Topics	Public Affairs
AAPB ID	cpb-sacip/15-96057dg9n	Publisher	WGBH Educational Foundation, Publisher
	and the part of th	Media type	Sound
		Duration	01-00:00

Citation

If you have more information about this item than what is given here, we want to know! Contact us, indicating the AAPB ID (cpb-aacip/15/95057dg9n).

Wide variety

- Of content from locations across the country
- Lots of different types of speakers
- Different speech patterns and accents
- 40 states

- politicians, academics, man on street, youth, elders, artists
- north, south, mid-west, west, east
- Creole, French, Caribbean
 Spanish, Alaskan native language
- Music and other non-spoken sound

- Computational Tools
- Speech-to-text
- Audio analysis
- Image Analysis
- Visualization of Data

How can we use them?

the potential: transforming content into data

AUDIO ANALYSIS

High Performance Sound Technologies for Access and Scholarship (HiPSTAS)

generating additional programmatic data about the audiovisual material beyond the actual words being spoken in the recordings

- speaker identities
- applause
- laughter
- musical interludes

4,000 hours





speaker labeling

- WGBH-provided training set (all audio) 373.3 hours [speakers we aren't using etc.]
- Extended corpus (all audio) 951.8 hours [collected on own, keywords, etc. might change some of it not;some included in above #]
- "Haystack" test set (all audio) 494.2 hours [gave us to label because we think they're in there; might be some duplicated so we don't use it for traing; use it to run the machine. kept on separate]
- Human-labeled speaker segments (all) 103.8 hours [everything]
- UBM_600 corpus 17.9 hours [all labeled speakers they gave us; plus PennSound UBM] Universal Background Model

HiPSTAS AAPB Output

AAPB speaker identity models
... so far

Hillary Clinton
Bill Clinton
James Baldwin
Malcolm X
Martin Luther King Jr.
Julia Child
Richard Nixon
Ronald Reagan
Lyndon Johnson
Gloria Steinem

Workshop
Process evaluation



Results

- We didn't get very much identified
- Really hard to do
- Took a lot of time to identify 1 speaker
- Translating the work from the research at UT
 Texas and tool training to our own catalog was undefined

SPEECH TO TEXT RESULTS

The Lexicon

- A list of words with their phonetic pronunciations
- The output of the speech recognizer will only include words that are part of the lexicon
- Words can have multiple pronunciations
- The lexicon links the acoustic model and the language model

archive AA R K AY V

hello HH AX L OW

hello HH EH L OW

pop P AA P

wgbh D AH B AX L Y UW JH IY B

world W ER L D

up AH P



The Speech to Text Pipeline

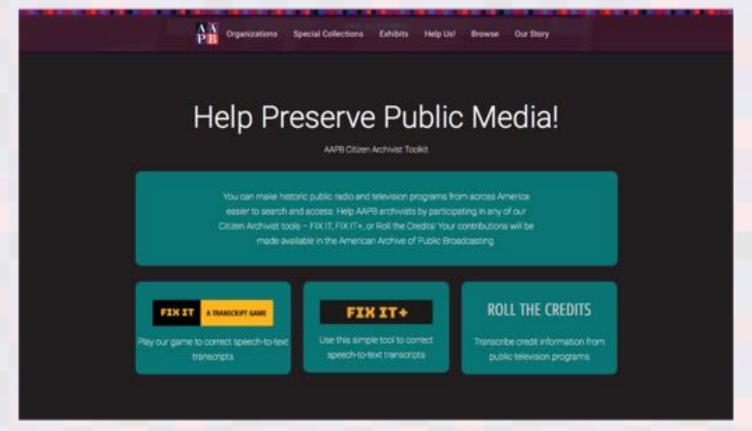
- Task: given audio signal as output, choose the sequence of words that is the best match
- Two components to the model
 - Acoustic model (AM): which phonemes most closely match the signal
 - Language model (LM): which sequences of words are most likely
- We use Kaldi, an open source toolkit for automatic speech recognition (ASR)
- During the process of decoding the audio signal, Kaldi and recognizers store a lattice with hypotheses of the output for each utterance. Hypotheses with lower probabilities get "pruned" out
- At the end of the decoding process, the top hypothesis gets written to the output file

popup archive

Transcript Creation Continues

- As part of the project, Pop Up Archive released updated language models for Kaldi.
- The code has been "Dockerized" by our University of Texas partners.
- We have incorporated transcript creation into our workflow as the collection grows.
- Github: https://github.com/WGBH/kaldi-pop-up-archive

Crowdsourcing tools





Zooniverse Project - "Roll the Credits"

UNDER REVIEW

ROLL THE CREDITS

ABOUT

CLASSIFY

TALK

COLLECT

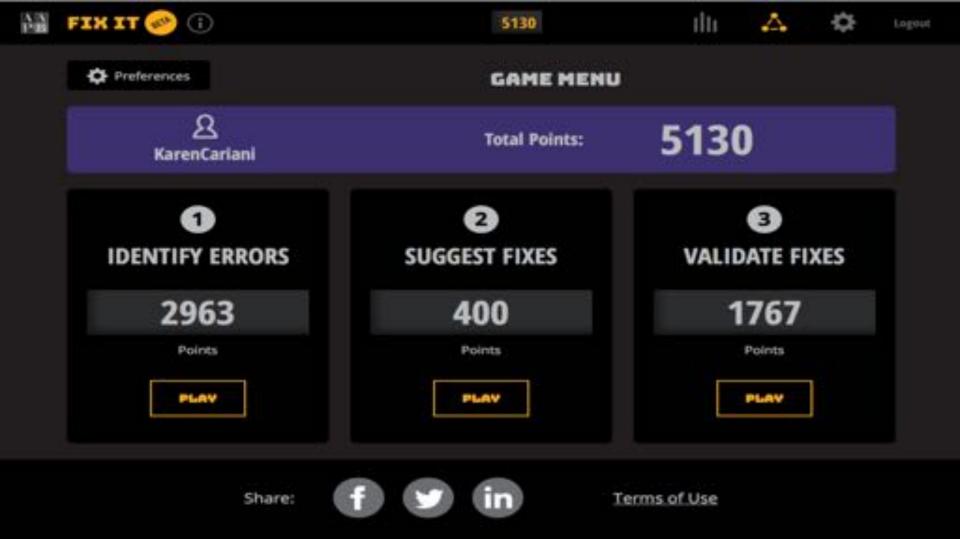
FEEDBACK &

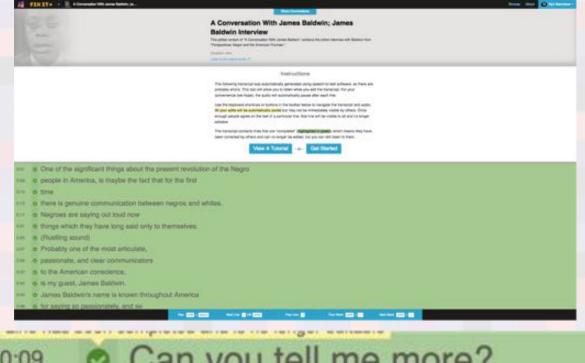


What type of text appears in this frame?

- Only One Complete Credit Block
- Multiple Complete Credit Blocks
- Copyright Statement
- Other Text
- Multiple Types of Text
- No Text/Only Partial Credit Block(s)

Need some help with this task?





FIX IT+

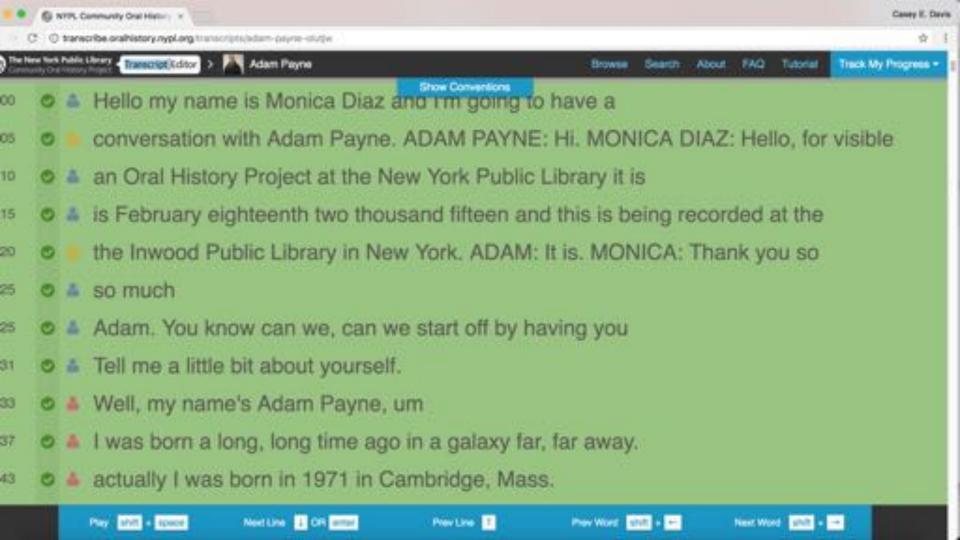
FIXITPLUS.american archive.org

Can you tell me more?



why do want to show

An example of editing a transcript







language:	NA CONTRACTOR OF THE CONTRACTO
ádt	178
wparts:	
₩e:	
id:	31692
* text:	"A production of the Mississippi Center for Educational Television. Take number three. A series conversation"
stert_tir	e: 6.129
end time	
speaker_	
*Ir	
1dt	31693
* text:	"program with Theora Hamblett, Length 28 minutes 30 seconds. Date 12/16/75. Director Seymour."
	e: 18.97
end time	
speaker_	
*2t	
id:	31604
* texti	"A conversation with Theora Mamblett. Talking to today with Mississippi "
	e: 37.78
end_time:	
speaker	
*3:	MI A
16:	31605
* text:	"artist Theora Mamblett is Lee McCarty, MetalSmith and Potter from"
	e: 53.35
end_time:	
speaker	
*4:	
1dt	31686
text	"Marigold Mississippi. \"the Art of Theora Hamblett\""
	e: 57.939
end_time:	
speaker_	
w 5:	W
141	31607
* text:	"native Mississippian, born in Paris, Mississippi. Internationally known"
	e: 63.45
end_time:	
speaker_i	DI A
₩ 6:	31608
1dt	
text;	
	e: 68.7
end_time:	
speaker_t	d: A
· *7:	



Seenth

PERSONAL A TRANSCRIPT SAME

Advanced Search

About - For Participating Organizations - Donate

Record

En Camino; 205; Special: Juan Serrano, Master Guitarist



Transcript: Available

If you have more information about this item than what is given here, we want to know Contact us, indicating the AAPB ID (cpb asolp/88-

Series	En Camino	Description	A special interview and on stage performance by Juan Serrano, Master Gustarits, who tells about his origins, life an introduction to music and the Art of Flammeno. He began his professional life at thirtisen years of age. The art of Flammeno is described as a mix of dance, guitar music, counter rhythm of hand clapping, and hel duence? which are the deep emotions expressed by the artists.
Episode Number	205		
Episode	Special: Juan Serrano, Master Guitarist		
Contributing Organization	KRC8 (Rohnert Park, California)	Created	1987-06-11
		Asset type	Episode
AAPS ID	cpb-aacip/88-655dv9r7	Topics	Music
			Performing Arts
			Education
			Spanish Language
		Creator	KRCB FM, Producing Organization
			The San Francisco Foundation, Co-Producer
			Gaona, Francisco, Co-Producer
			Lukens, Jane, Co-Producer
		Contributor	Serrano, Juan, Interviewee

Serrano, Juan, Performer

Kaldi Output for Music



Lord thank you. Lord. You're through. You're. Through. Mm mm. Mm. Mm mm mm mm. Mm. Mm. Laura Iraq of. Glory. From. From. From. Three three. Three. Three. Three. Three. Three.

Laura it thank. You. That was it. And those are the good other than those of the other. But other than that I'm.

But you. Know. In PSA jogging for the leg. That. Said alone but not for what they love that about them. In the U.S. I don't really like deep down this guy John. Has seen me naked young. Youre that one or put up or go to a lie even. When we're going to be in a way that it was. A scene or so because John you and I will note that up why go to a lie. When we're going to be in before and then they run a scene will see My God. You up or something. On Monday another tour and yet.

People are coming up a lot of. Joy to make us even more. Of this season might. Be made upon home with us so we're left with.

The money to go before the scene was bought.

Kaldi Output for Helicopter B-Roll



A.

Leg.

Length.

Length.

Eh I'm

good.

Thank you.

Kaldi Output for Spanish Language



You mean you think you know always going. In approximately I see that I'm being in a city that the community is Brucey putting I mean in and deal with it and they see it. Are they looking for. And COMINO is improved on so many ideas to explore that they must be in for fancier graphic thing like that Latina. Woman That is keep it down for a. Made up out of there. I mean the older you know the moment they do it and I mean no no shangri la I wound up pretty compressed. But then finally the. Most famous presenter being asked about Odama seeking impact done like a 20 year old uncle. I miss my foresight when local news reported a loss for him which was the original being with you we. Let's see it. No problem I say to you since it was your own this and not a Californian. When you guys buy up our land Mr. Merhi Nera for law enforcement you said to be sure that will cost them. Less personally and COMINO is bloviated not very effective. They must be telescreen are so fake now. But up Roamer they don't know about this the past few months I feel I am sure that, If we didn't know what it is as soon as one has been able to from my strong ally in cancer they mine. I say most I would have had lots of them in Dallas. I remember with Ahmadinejad. See that he's a see the. This was very programa I said Think end up in the Mystica. I think can assume that I would be in the family is in Gaza you know of. Just a movement that eluting mother in that race in Illinois. I mean these people are Latino and they they face. Like the Latinos in going through all of Emmelina repeat them because they see areas because it reduces Saulteaux elated.

Kaldi Output for French-Creole Language



All.Right. OK. OK. West Virginia Virginia. Plus. Brown. Girlfriend try a temporary quick. Corollary proper and I pointed to a song. Made on your apartment made I'm easy. I generally. Don't jump to a long. Record. Your point here already called an average storm either calling. Me a fearful planner for us are really powerful for one I don't live for or see me privately just 75 miles from or see. Them. President Reagan National Award. You have more screen. Generation. We have a long trip. For. A trip. Do you see music music from music. And there is a common sense for him when the. Nazi party. No no can one. Man may or. Yet you monkey have made of the tears and. Some are. Good only the Starkey blues the silly your so I look at this hour. Mr Parker knew me or started. Their. Own eyes. What I am. Not very good.

We know nothing about this item.



Kaldi Output for Yup'ik Language



Your all right already. Yeah OK. For the record.
Speaking to James guy Greek looked him up in the crowd doesn't mean we thought i hope I do I'm trying to talk but I think we shall I do you can and we shall not be in hall and you know

I do wish I could. I will call that good old myth or the old call wouldn't let me out with a dog. Be sure they left the water good. How does how do you lead that cuckoo clock in the south have you genius. And I don't miss out on your good

guy you're not familiar with what do I do when you need to whom you are now there. Dorise you I laughed and I dunno it still gets you can pick on a new record. Yeah gotta be deader than a good guy. Let's go on a con not go off on your own of kind and how can you know how God left her daughter. Julie I don't know we don't really care what you never knew that people can't go through the muck of the kind in which our not. I don't come out now if you're going to cause you need no with no trade in Kenya and it could be should be a good deal or not a number could not go home now or that not gotten bad bitches want to go Honey you do not want me one culture not clear what we've got to do what you want to try New Delhi new kind o woman in her thought didn't think enough on line to get rid of they have a machine like you.

Kaldi Output for Spoken English

- Approximately 81% word accuracy rate
 - not including punctuation errors
- Examples:
 - 95% accurate for 1960s radio program from Boston (no accents, one speaker)
 - 55% accurate for 1970s television program from Mississippi (strong Southern U.S. accent)

order declaring the prison overcrowded and the living

https://www.copyscape.com/compare.php

Carlton Carleton, research director for the Public Affairs Research Council research director for the Public Affairs Research Council. former professor of former professor of history at LSU and author of a book on the history of history at LSU, and author of a book on the history of « 38 words » Louisiana's penal system. Louisiana's penal system. And finally we have with us this evening Representative And finally, we have with us this evening Representative. Bobby Freeman of Bobby Freeman of Plaquemine, plaque and a Louisiana a Louisiana state representative who is one of Governor Edwards « 11 words » State Representative, who is one of Governor Edwards' chief chief floor leaders in the House and a member of the House leaders in the house and a member of the House. Appropriations Committee. Angola has been in the news Appropriations Committee. Angola has been in the news « 27 words » almost constantly since almost constantly since June 1975 when federal district judge June 1975 when federal district Judge Gordon West issued a court Gordon West issued a court. « 18 words »

order declaring the prison overcrowded and the living

Types of Errors Corrected by Users

- Station call letters
- Mis-transcription of words spoken in southern accents, e.g., "weary and" vs "we're in"
- Local town names, e.g., "plaque and" vs. "Plaquemine"
- Person names, e.g., "Laurence" vs. "Lawrence"
- Numbers spelled out vs. numeric
- Adding words completely missing from original transcript
- Incorrect "corrections" by crowdsource participants, e.g. "achieved" vs. "achievedd" in the "corrected" transcript

JSON transcripts are stored on AAPB's Amazon S3 account Transcripts are indexed for keyword searching on the AAPB website

Transcripts are made available alongside the media on the record page

Transcripts can play as captions within the player

Transcripts can be harvested via an API and used as a dataset for research such as a digital humanities project

once corrected...



a collaboration between the Library of Congress and WGBH

Transcript

A TRANSCRIPT GAME

Hida C

Advanced Search

Search.

For Participating Organizations -

Record

A Conversation With; Theora Hamblett



11118 A production of the Mississippi Center for Educational Television. Take number three. A series conversation program with Theora Hamblett. Length 28 minutes 30 seconds. Date 12/16/75. Director Seymour. A conversation with Theora Hamblett. Talking to today with Mississippi artist Theora Hamblett is Lee McCarty. MetalSmith and Potter from Marigold Mississippi. "the Art of Theora Hamblett" native Mississippian, born in Paris, Mississippi. Internationally known Painter. You might be interested to know though we know in this country who Theora Hamblett is. What the noted European art critic and historian, Otto Beharmarian had to say in his book Modern Primitives - Master of Naive Paintings

And there is Theora Hamblett with one of her glaring yellow visions quite. sufficient of itself to serve as flashbulbs for the photographers who would surely not miss this opening. The opening they were referring to was the world exhibition in Brussels. The pane they were referring to was

If you have more information about this item than what is given here, we want to know! Contact us, indicating the AAPB ID (opb-aacip/60-81wdc1lhh).

Series	A Conversation With	Description	 QBTF. Theore Hamblett (1895.) African-American primitive painter from Mississippi.
Episode	Theora Hamblett		A Conversation With is a talk show featuring discussions with public figures in Mealissicol.
Contributing Organization	Mississippi Public Broadcasting		managy.
	(Jackson, Mississippi)	Asset type	Episode
AAPS ID	cpb-eaclp/60-81wdc1hh	Gennes	Talk Show
		Topics	Fine Arts
		Media type	Moving Image
		No. of the Control of	****



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Sept.

A TRANSCRIPT GAME

Missis (-)

About -

west544

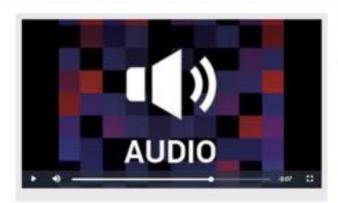
Advanced Teach

For Participating Organizations -

Record

WGBH Journal; Adrienne Rich

TITLE



He would not exclude from participation in the discussion any Palestinian element or any ultimate choice of governance. Well we may hear more of this or some variant of it. Now that it's over the week carried New England weather beyond the conversational stage. A phenomenal week starting with the heaviest snow since weather records began, then torrential rain to turn snow banks into flooding. And then yesterday, a May day of temperatures that would have brought the tulips up if they could have found their way through the soggy snow. And to top it off, freezing again, as our weather today swings back to a January norm. Now we shiver at the news of blizzards that have paralyzed the whole middle of the country. Floundering through such a week, has blinded our interest to most other news. And preoccupation with the weather may have made it easier for

The government to hold back information about the disintegration of a

If you have more information about this item than what is given here, we want to know! Contact us, indicating the AAPB ID (op6-aacip/15-05s7hb9).

Transcript

WDBH Journal	Description	Poet Adrienne Rich, Louis Lyons. Engineer. Carter
Adrienne Rich		WGBH Journal is a magazine featuring segments on local news and current events.
WGBH (Boston, Messachusetts)	Asset type	Segment
csb-sacio/15-05x7hb%	Genres	News
	Adrienne Rich	Adrienne Rich WOBH (Boston, Messachusetts) Asset type Gennes

CL experts

- Improving named entity vocabularies
- Forced alignment
- Time stamp for bars and tone
- Music identification
- Foreign language identification and transcription
- OCR of text on screen (lower thirds, credits)

CL Experts and Archivists

 A larger need for more accurate output and ease of use of computational tools for audiovisual archives to create descriptive metadata and annotations.

Help Us!

Access our Dataset

- Metadata API (OAI-PMH and PBCore)
 - https://github.com/WGBH/AAPB2#api
- Transcripts API contact us to get credentials
- Media as a Dataset (MaaD) contact us to get digital audio/video copies for computational research



http://fixit.americanarchive.org #FixItAAPB



americanarchive.org

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