



1
00:00:05,749 --> 00:00:02,710
all right our last presentation before

2
00:00:07,590 --> 00:00:05,759
the panel discussion is by jin hyung and

3
00:00:09,669 --> 00:00:07,600
she is a doctoral candidate in the

4
00:00:12,070 --> 00:00:09,679
department of history and

5
00:00:15,190 --> 00:00:12,080
art history at george mason university

6
00:00:16,870 --> 00:00:15,200
she's working on her phd which will also

7
00:00:19,590 --> 00:00:16,880
be looking at questions of public

8
00:00:21,830 --> 00:00:19,600
perception and the mass media during

9
00:00:24,630 --> 00:00:21,840
several more of nasa's science missions

10
00:00:26,470 --> 00:00:24,640
that are mentioned in this talk

11
00:00:29,189 --> 00:00:26,480
which is entitled

12
00:00:30,310 --> 00:00:29,199
voyager exploring through the public eye

13
00:00:42,389 --> 00:00:30,320

but i know she's going to talk about

14

00:00:46,389 --> 00:00:44,709

alright so how the public gets

15

00:00:47,990 --> 00:00:46,399

information has certainly evolved over

16

00:00:50,150 --> 00:00:48,000

the last 30 years

17

00:00:51,830 --> 00:00:50,160

in the 1970s the public relied on

18

00:00:53,830 --> 00:00:51,840

newspapers for information and

19

00:00:55,110 --> 00:00:53,840

television featured only three major

20

00:00:57,110 --> 00:00:55,120

networks

21

00:00:58,790 --> 00:00:57,120

focusing on newspapers the voyager

22

00:01:00,869 --> 00:00:58,800

mission illustrates the process of how

23

00:01:02,630 --> 00:01:00,879

the mass media disseminated scientific

24

00:01:04,710 --> 00:01:02,640

discoveries to the public

25

00:01:06,870 --> 00:01:04,720

the voyager mission sent twin spacecraft

26
00:01:09,350 --> 00:01:06,880
to take advantage of an outer planetary

27
00:01:11,910 --> 00:01:09,360
alignment of jupiter saturn uranus and

28
00:01:14,789 --> 00:01:11,920
neptune that occurs approximately once

29
00:01:18,230 --> 00:01:14,799
in every 175 years

30
00:01:21,270 --> 00:01:18,240
voyager 1 launched on august 1977

31
00:01:24,630 --> 00:01:21,280
arrived at jupiter in march 1979 and

32
00:01:26,789 --> 00:01:24,640
then saturn in november 1980.

33
00:01:29,590 --> 00:01:26,799
i'll also examine the media coverage for

34
00:01:32,950 --> 00:01:29,600
galileo's mission's return to jupiter in

35
00:01:34,870 --> 00:01:32,960
1995 and cassini's return to saturn in

36
00:01:36,230 --> 00:01:34,880
2004.

37
00:01:37,749 --> 00:01:36,240
i'm hoping to show you a few of the

38
00:01:39,510 --> 00:01:37,759

significant changes in science

39

00:01:41,830 --> 00:01:39,520

communication through the evolution in

40

00:01:43,429 --> 00:01:41,840

mass media as well as hinted what's

41

00:01:45,590 --> 00:01:43,439

happening in the public attitudes

42

00:01:47,749 --> 00:01:45,600

towards science

43

00:01:49,670 --> 00:01:47,759

press releases and press briefings acted

44

00:01:51,910 --> 00:01:49,680

as a conduit for journalists to gain

45

00:01:53,749 --> 00:01:51,920

information about a mission the major

46

00:01:55,990 --> 00:01:53,759

newspapers published stories written

47

00:01:58,389 --> 00:01:56,000

usually by consistent journalists on the

48

00:01:59,990 --> 00:01:58,399

staff that followed space news

49

00:02:01,350 --> 00:02:00,000

the articles carried different tones

50

00:02:02,789 --> 00:02:01,360

according to the writer's style and

51
00:02:09,350 --> 00:02:02,799
readership and often the more

52
00:02:14,070 --> 00:02:12,070
what do i mean by popularizing science

53
00:02:16,229 --> 00:02:14,080
los angeles times science writer george

54
00:02:18,309 --> 00:02:16,239
alexander provides an excellent example

55
00:02:20,830 --> 00:02:18,319
in his article for voyager 1's arrival

56
00:02:23,830 --> 00:02:20,840
at jupiter published on march 1

57
00:02:25,910 --> 00:02:23,840
1979. he starts the article

58
00:02:27,830 --> 00:02:25,920
like a sailboat cresting a reef and

59
00:02:30,470 --> 00:02:27,840
entering the lagoon of some pacific

60
00:02:32,070 --> 00:02:30,480
island the voyager 1 spacecraft passed

61
00:02:34,550 --> 00:02:32,080
through the bow shock of jupiter

62
00:02:37,589 --> 00:02:34,560
wednesday and slipped inside the big

63
00:02:39,589 --> 00:02:37,599

planet's magnetic environment

64

00:02:41,670 --> 00:02:39,599

the simile makes a real world connection

65

00:02:43,830 --> 00:02:41,680

to something most may have difficulty

66

00:02:45,270 --> 00:02:43,840

imagining and goes on to further explain

67

00:02:47,270 --> 00:02:45,280

the bow shock

68

00:02:49,110 --> 00:02:47,280

it also hints that the risks inherent to

69

00:02:51,670 --> 00:02:49,120

the spacecraft before it successfully

70

00:02:53,750 --> 00:02:51,680

reaches its destination

71

00:02:55,750 --> 00:02:53,760

popularization isn't perfect i'm sure

72

00:02:57,750 --> 00:02:55,760

that sailors or engineers might point

73

00:02:59,110 --> 00:02:57,760

out that the problems in making this

74

00:03:01,589 --> 00:02:59,120

analogy

75

00:03:04,149 --> 00:03:01,599

however these stories usually contain

76
00:03:06,309 --> 00:03:04,159
understandable writing analogies as well

77
00:03:08,470 --> 00:03:06,319
as enthusiasm which relates to a wider

78
00:03:09,830 --> 00:03:08,480
public audience than the audience that's

79
00:03:11,830 --> 00:03:09,840
already interested in learning about

80
00:03:13,350 --> 00:03:11,840
things like this

81
00:03:15,110 --> 00:03:13,360
during the planetary encounters the

82
00:03:16,630 --> 00:03:15,120
media coverage shifted from the planned

83
00:03:19,030 --> 00:03:16,640
science objectives to the actual

84
00:03:20,550 --> 00:03:19,040
scientific discoveries and images

85
00:03:22,630 --> 00:03:20,560
the press releases and briefings

86
00:03:24,949 --> 00:03:22,640
increased in technical and scientific

87
00:03:26,949 --> 00:03:24,959
detail science journalists however

88
00:03:29,589 --> 00:03:26,959

compensated for the detail by imbuing

89

00:03:31,430 --> 00:03:29,599

emotional values surprise and wonder to

90

00:03:33,350 --> 00:03:31,440

the news and personifying the science

91

00:03:34,710 --> 00:03:33,360

whenever possible through quotes and

92

00:03:36,550 --> 00:03:34,720

interviews

93

00:03:38,070 --> 00:03:36,560

newspapers also chose to emphasize

94

00:03:40,309 --> 00:03:38,080

articles through their placement within

95

00:03:42,070 --> 00:03:40,319

the publication such as the front page

96

00:03:43,830 --> 00:03:42,080

or special sections

97

00:03:45,830 --> 00:03:43,840

although the mass media could not obtain

98

00:03:48,470 --> 00:03:45,840

their own images using photographers

99

00:03:50,470 --> 00:03:48,480

like most other earthly news events

100

00:03:52,710 --> 00:03:50,480

editors determine space and placement

101
00:03:59,030 --> 00:03:52,720
for the dramatic images like this one of

102
00:04:03,509 --> 00:04:01,509
here are a couple examples of headline

103
00:04:04,789 --> 00:04:03,519
news the

104
00:04:07,190 --> 00:04:04,799
first ones to the left and the middle

105
00:04:09,990 --> 00:04:07,200
one are from the new york times both by

106
00:04:11,789 --> 00:04:10,000
john noble wilford the first published

107
00:04:13,589 --> 00:04:11,799
on sunday march 4th

108
00:04:15,110 --> 00:04:13,599
1979

109
00:04:18,550 --> 00:04:15,120
and

110
00:04:19,830 --> 00:04:18,560
the middle one on march 6 1979 which is

111
00:04:20,949 --> 00:04:19,840
a tuesday

112
00:04:24,710 --> 00:04:20,959
the one on the right is from the

113
00:04:26,550 --> 00:04:24,720

washington post also on march 6.

114

00:04:28,469 --> 00:04:26,560

forager images appear on the front page

115

00:04:30,469 --> 00:04:28,479

of these newspapers drawing readers to

116

00:04:31,590 --> 00:04:30,479

continue the story inside

117

00:04:33,270 --> 00:04:31,600

if you note

118

00:04:35,749 --> 00:04:33,280

the first image in the second image you

119

00:04:37,430 --> 00:04:35,759

really only get the image and you don't

120

00:04:39,590 --> 00:04:37,440

get much of the story you have caption

121

00:04:41,189 --> 00:04:39,600

and it tells you to keep reading inside

122

00:04:42,790 --> 00:04:41,199

it's only the one on the right where you

123

00:04:45,749 --> 00:04:42,800

start getting the first few paragraphs

124

00:04:47,510 --> 00:04:45,759

of the story and continued inside

125

00:04:49,749 --> 00:04:47,520

the other headlines on the page will

126

00:04:52,230 --> 00:04:49,759

include president carter's mediation of

127

00:04:54,830 --> 00:04:52,240

a peace treaty between egypt and israel

128

00:04:57,189 --> 00:04:54,840

and china's withdrawal from

129

00:04:58,870 --> 00:04:57,199

vietnam john noble wilford had a

130

00:05:01,510 --> 00:04:58,880

remarkable career at the new york times

131

00:05:03,189 --> 00:05:01,520

since 1965 and although retired as a

132

00:05:05,510 --> 00:05:03,199

senior science correspondent still

133

00:05:07,270 --> 00:05:05,520

writes about science news today

134

00:05:08,950 --> 00:05:07,280

wolford has a more informational style

135

00:05:11,029 --> 00:05:08,960

in this reporting he uses simple

136

00:05:13,990 --> 00:05:11,039

description combined with facts

137

00:05:15,670 --> 00:05:14,000

like the robot spacecraft sped within a

138

00:05:17,189 --> 00:05:15,680

hundred and seventy four thousand

139

00:05:19,510 --> 00:05:17,199

hundred thousand miles of the

140

00:05:21,270 --> 00:05:19,520

multi-colored clouds of jupiter and with

141

00:05:22,950 --> 00:05:21,280

its television cameras looked deep into

142

00:05:26,230 --> 00:05:22,960

the eye of the huge hurricane-like

143

00:05:28,150 --> 00:05:26,240

feature known as the great red spot

144

00:05:30,790 --> 00:05:28,160

wolford uses quotes as a vehicle for

145

00:05:33,590 --> 00:05:30,800

emotion such as citing we've had a total

146

00:05:35,830 --> 00:05:33,600

success exclaimed dr edward c stone the

147

00:05:37,029 --> 00:05:35,840

project's chief scientist at the press

148

00:05:39,270 --> 00:05:37,039

conference

149

00:05:41,990 --> 00:05:39,280

he also quotes dr bradford smith from

150

00:05:43,590 --> 00:05:42,000

the university of arizona saying

151

00:05:45,909 --> 00:05:43,600

when he displayed the latest color

152

00:05:47,990 --> 00:05:45,919

photograph of the disc of io with its

153

00:05:50,150 --> 00:05:48,000

deep reds and yellow and a mingling of

154

00:05:53,909 --> 00:05:50,160

dark spots he joked that's better

155

00:05:58,070 --> 00:05:55,749

thomas o'toole repeats the same quotes

156

00:05:59,990 --> 00:05:58,080

by dr stone dr smith which reminds me

157

00:06:02,070 --> 00:06:00,000

that sound bites aren't exclusively

158

00:06:04,070 --> 00:06:02,080

found in television

159

00:06:06,230 --> 00:06:04,080

o'toole emphasizes the mysteries

160

00:06:08,870 --> 00:06:06,240

beguiling scientists especially

161

00:06:11,430 --> 00:06:08,880

jupiter's moon io which he quotes dr

162

00:06:13,270 --> 00:06:11,440

lawrence a souterblom of the u.s

163

00:06:15,670 --> 00:06:13,280

geological survey

164

00:06:17,990 --> 00:06:15,680

saying as one of the strangest bodies in

165

00:06:20,469 --> 00:06:18,000

the solar system

166

00:06:21,990 --> 00:06:20,479

these articles emphasize the newness of

167

00:06:24,550 --> 00:06:22,000

the color images despite being

168

00:06:26,550 --> 00:06:24,560

republished in black and white medium

169

00:06:28,469 --> 00:06:26,560

the questions raised by prior research

170

00:06:29,749 --> 00:06:28,479

on ground-based telescopes that might

171

00:06:31,830 --> 00:06:29,759

get answers

172

00:06:33,189 --> 00:06:31,840

and the new questions still yet to be

173

00:06:35,189 --> 00:06:33,199

addressed

174

00:06:37,189 --> 00:06:35,199

the newspaper editorials generally seem

175

00:06:39,909 --> 00:06:37,199

to agree that this exploration holds

176

00:06:42,230 --> 00:06:39,919

some fundamental value for humanity

177

00:06:43,830 --> 00:06:42,240

as the los angeles times editorial so

178

00:06:46,230 --> 00:06:43,840

eloquently states

179

00:06:48,629 --> 00:06:46,240

like monkeys in a dark box

180

00:06:50,150 --> 00:06:48,639

we use voyager as a window into the

181

00:06:52,790 --> 00:06:50,160

blackness of space

182

00:06:55,110 --> 00:06:52,800

we want to see what's out there from the

183

00:06:57,510 --> 00:06:55,120

standpoint the exploration of space is

184

00:06:59,430 --> 00:06:57,520

no high-priced public public relations

185

00:07:01,990 --> 00:06:59,440

gimmick or cockeyed race with the

186

00:07:04,629 --> 00:07:02,000

russians rather it is a fundamental

187

00:07:06,550 --> 00:07:04,639

expression of human nature a few billion

188

00:07:09,029 --> 00:07:06,560

dollars a year seems a small price to

189

00:07:13,430 --> 00:07:10,870

from hollywood star wars and close

190

00:07:16,309 --> 00:07:13,440

encounters of the third kind arrived in

191

00:07:17,990 --> 00:07:16,319

movie theaters in 1977.

192

00:07:20,070 --> 00:07:18,000

carl sagan had reached enormous

193

00:07:22,309 --> 00:07:20,080

popularity and his television show

194

00:07:25,350 --> 00:07:22,319

cosmos a personal voyage would air from

195

00:07:28,150 --> 00:07:25,360

september to december 1980

196

00:07:30,390 --> 00:07:28,160

ajpl intraoffice memo cited

197

00:07:32,230 --> 00:07:30,400

voyager 1's encounter with saturn one

198

00:07:34,230 --> 00:07:32,240

month ago produced media response

199

00:07:35,909 --> 00:07:34,240

without parallel in the unmanned space

200

00:07:38,150 --> 00:07:35,919

exploration program

201
00:07:40,950 --> 00:07:38,160
the total potential tv viewing audience

202
00:07:43,589 --> 00:07:40,960
was estimated at 100 million persons on

203
00:07:45,430 --> 00:07:43,599
four continents

204
00:07:47,749 --> 00:07:45,440
voyager represents traditional media

205
00:07:50,309 --> 00:07:47,759
reporting where the journalists flocked

206
00:07:51,589 --> 00:07:50,319
to get news about the mission when

207
00:07:53,510 --> 00:07:51,599
public affairs worked with the

208
00:07:55,749 --> 00:07:53,520
journalists to provide backgrounders and

209
00:07:57,589 --> 00:07:55,759
hold press briefings and the journalists

210
00:08:03,589 --> 00:07:57,599
became the primary communicator for

211
00:08:07,350 --> 00:08:05,670
shifting forward galileo's news coverage

212
00:08:08,869 --> 00:08:07,360
followed very similar patterns in the

213
00:08:10,550 --> 00:08:08,879

print media

214

00:08:12,629 --> 00:08:10,560

although pioneer and voyager completed

215

00:08:14,550 --> 00:08:12,639

flybys galileo became the first

216

00:08:16,629 --> 00:08:14,560

spacecraft to remain in orbit around

217

00:08:19,430 --> 00:08:16,639

jupiter and send a descent probe into

218

00:08:21,510 --> 00:08:19,440

the atmosphere in 1995.

219

00:08:23,830 --> 00:08:21,520

before reaching its destination galileo

220

00:08:25,270 --> 00:08:23,840

flew by venus and earth from 1990 to

221

00:08:27,909 --> 00:08:25,280

1992

222

00:08:30,150 --> 00:08:27,919

traveled to an asteroid in 1991 and

223

00:08:33,029 --> 00:08:30,160

discovered a moon on another asteroid in

224

00:08:36,469 --> 00:08:33,039

1993 and also covered the comet

225

00:08:38,630 --> 00:08:36,479

shoemaker levy 9 in 1994

226

00:08:40,230 --> 00:08:38,640

galileo received extra pre-launch cut

227

00:08:42,230 --> 00:08:40,240

news coverage because of its many

228

00:08:45,670 --> 00:08:42,240

unfortunate delays and cost overruns

229

00:08:47,910 --> 00:08:45,680

before its launch in 1989.

230

00:08:49,990 --> 00:08:47,920

galileo's high gain antenna also failed

231

00:08:51,910 --> 00:08:50,000

to fully open on its long voyage and the

232

00:08:55,590 --> 00:08:51,920

multiple attempts to remedy the issue

233

00:08:57,829 --> 00:08:55,600

received coverage as well

234

00:08:59,829 --> 00:08:57,839

this is an example going forward a

235

00:09:04,630 --> 00:08:59,839

little bit more than the slide that will

236

00:09:10,870 --> 00:09:08,070

published on july 22nd 1996 and it's

237

00:09:13,030 --> 00:09:10,880

galileo spin on driven moons and it was

238

00:09:16,710 --> 00:09:13,040

a half page feature and you'll not note

239

00:09:18,310 --> 00:09:16,720

at the top it's nicely labeled science

240

00:09:20,710 --> 00:09:18,320

with a little print underneath it this

241

00:09:23,910 --> 00:09:20,720

is astronomy

242

00:09:25,910 --> 00:09:23,920

and looking at what's on the front page

243

00:09:27,670 --> 00:09:25,920

the front page actually has

244

00:09:30,230 --> 00:09:27,680

information about the olympics that year

245

00:09:33,350 --> 00:09:30,240

and the failure to find transworld

246

00:09:34,470 --> 00:09:33,360

airlines flight 800 flight recorders

247

00:09:36,470 --> 00:09:34,480

so this is

248

00:09:43,829 --> 00:09:36,480

a couple pages within the front page of

249

00:09:49,829 --> 00:09:47,350

this is a word cloud for some

250

00:09:51,509 --> 00:09:49,839

subset of galileo text taken from the

251
00:09:56,389 --> 00:09:51,519
new york times and washington post from

252
00:09:58,070 --> 00:09:56,399
december 3rd 1995 to january 24th 1996.

253
00:09:59,829 --> 00:09:58,080
an attempt to gather information in new

254
00:10:02,230 --> 00:09:59,839
ways i tried using this word cloud to

255
00:10:03,990 --> 00:10:02,240
visually interpret textual data and it

256
00:10:05,750 --> 00:10:04,000
makes frequent words bigger which can

257
00:10:07,590 --> 00:10:05,760
vary depending on the algorithm used to

258
00:10:09,350 --> 00:10:07,600
determine their importance

259
00:10:11,750 --> 00:10:09,360
the next slide actually shows a more

260
00:10:16,470 --> 00:10:11,760
organized variation where we can see

261
00:10:19,190 --> 00:10:17,590
here i'm going

262
00:10:21,190 --> 00:10:19,200
pick out another pair of front page

263
00:10:23,190 --> 00:10:21,200

articles to examine a bit from december

264

00:10:24,550 --> 00:10:23,200

8th 1995.

265

00:10:26,630 --> 00:10:24,560

from the new york times wilford

266

00:10:29,750 --> 00:10:26,640

published probe pierce's jupiter's

267

00:10:31,829 --> 00:10:29,760

clouds and first interior look at planet

268

00:10:34,710 --> 00:10:31,839

he quotes dr william o'neill the project

269

00:10:36,470 --> 00:10:34,720

manager as being ecstatic and dr

270

00:10:38,069 --> 00:10:36,480

torrance johnson the chief project

271

00:10:40,949 --> 00:10:38,079

scientist saying

272

00:10:42,870 --> 00:10:40,959

this is really neat

273

00:10:44,949 --> 00:10:42,880

wilfred reminds his readers about the

274

00:10:46,870 --> 00:10:44,959

antenna failure that will result in

275

00:10:49,269 --> 00:10:46,880

fewer pictures and none before next

276
00:10:51,990 --> 00:10:49,279
summer although software advances will

277
00:10:54,550 --> 00:10:52,000
allow the mission to complete 70 percent

278
00:10:56,630 --> 00:10:54,560
of its science objectives

279
00:10:59,910 --> 00:10:56,640
the washington post staff writer kathy

280
00:11:02,150 --> 00:10:59,920
sawyer published galileo starts tour of

281
00:11:04,150 --> 00:11:02,160
giant planet after six year trek

282
00:11:05,910 --> 00:11:04,160
spacecraft first to transmit from drove

283
00:11:07,990 --> 00:11:05,920
in skies

284
00:11:10,870 --> 00:11:08,000
she poetically uses descriptions like

285
00:11:12,949 --> 00:11:10,880
the first tiny emissary to send messages

286
00:11:15,750 --> 00:11:12,959
from inside the atmosphere of an outer

287
00:11:18,470 --> 00:11:15,760
planet and also kamikaze probe

288
00:11:19,829 --> 00:11:18,480

dispatched from the mother ship

289

00:11:21,990 --> 00:11:19,839

she relayed the importance of the

290

00:11:24,630 --> 00:11:22,000

research as understanding the planet's

291

00:11:26,870 --> 00:11:24,640

evolution by looking at a planet that

292

00:11:29,110 --> 00:11:26,880

retained more primeval characteristics

293

00:11:31,430 --> 00:11:29,120

like a rosetta stone

294

00:11:34,630 --> 00:11:31,440

the article focused on the probe's path

295

00:11:37,030 --> 00:11:34,640

to descent like a celestial ballet as

296

00:11:39,110 --> 00:11:37,040

described by william o'neill

297

00:11:41,190 --> 00:11:39,120

sawyer also mentions a quote from carl

298

00:11:43,829 --> 00:11:41,200

sagan from a televised chat where he

299

00:11:47,350 --> 00:11:43,839

says it's a very exciting moment to be

300

00:11:48,710 --> 00:11:47,360

alive and interested in these issues

301
00:11:51,190 --> 00:11:48,720
going back to the data from the word

302
00:11:53,910 --> 00:11:51,200
cloud we see some unremarkable words

303
00:11:55,829 --> 00:11:53,920
like scientists or atmosphere

304
00:11:58,150 --> 00:11:55,839
minutes gets repeated from both the

305
00:11:59,190 --> 00:11:58,160
orbital insertion and communications

306
00:12:02,069 --> 00:11:59,200
time

307
00:12:05,269 --> 00:12:02,079
billion refers to the 1.3 billion dollar

308
00:12:07,030 --> 00:12:05,279
price tag and 2.3 billion miles traveled

309
00:12:08,790 --> 00:12:07,040
since launch

310
00:12:10,389 --> 00:12:08,800
while this method gives me the common

311
00:12:12,230 --> 00:12:10,399
words it turns out the uncommon

312
00:12:14,790 --> 00:12:12,240
descriptions seem much more interesting

313
00:12:16,790 --> 00:12:14,800

to see what these writers use to explain

314

00:12:18,550 --> 00:12:16,800

complex phenomena in so many different

315

00:12:20,629 --> 00:12:18,560

ways

316

00:12:22,790 --> 00:12:20,639

the galileo mission at this particular

317

00:12:25,269 --> 00:12:22,800

time seemed less immediate and

318

00:12:26,470 --> 00:12:25,279

definitive from long delays and data and

319

00:12:28,470 --> 00:12:26,480

images

320

00:12:30,310 --> 00:12:28,480

in addition to technical issues the

321

00:12:33,110 --> 00:12:30,320

federal government shut down and delayed

322

00:12:36,069 --> 00:12:33,120

the initial briefing from december 19 to

323

00:12:38,470 --> 00:12:36,079

january 22nd which is why

324

00:12:44,550 --> 00:12:38,480

the articles for this particular mission

325

00:12:48,710 --> 00:12:46,790

moving on to cassini the cassini mission

326

00:12:50,710 --> 00:12:48,720

became an international endeavor between

327

00:12:52,389 --> 00:12:50,720

nasa the european space agency and the

328

00:12:54,949 --> 00:12:52,399

italian space agency

329

00:12:57,110 --> 00:12:54,959

the cassini spacecraft also carried the

330

00:12:59,110 --> 00:12:57,120

huygens probe that would be released

331

00:13:00,389 --> 00:12:59,120

into the atmosphere of titan saturn's

332

00:13:03,269 --> 00:13:00,399

largest moon

333

00:13:06,310 --> 00:13:03,279

cassini-huygens launched on october 15

334

00:13:10,470 --> 00:13:06,320

1997 and finally arrived at saturn on

335

00:13:16,310 --> 00:13:13,990

now this is an example of a article

336

00:13:18,949 --> 00:13:16,320

published by john noble wilford in the

337

00:13:22,949 --> 00:13:18,959

new york times 31 moons now close enough

338

00:13:24,949 --> 00:13:22,959

to touch on june 15 2004 this is about

339

00:13:26,150 --> 00:13:24,959

two weeks before

340

00:13:28,069 --> 00:13:26,160

cassini

341

00:13:29,910 --> 00:13:28,079

makes it to saturn you get the initial

342

00:13:32,150 --> 00:13:29,920

photos from that

343

00:13:33,990 --> 00:13:32,160

and i have this here because i want to

344

00:13:35,670 --> 00:13:34,000

point out

345

00:13:37,829 --> 00:13:35,680

for newspapers there's something called

346

00:13:39,509 --> 00:13:37,839

above the fold and below the fold above

347

00:13:42,069 --> 00:13:39,519

the fold

348

00:13:43,910 --> 00:13:42,079

here on this particular page well it is

349

00:13:46,389 --> 00:13:43,920

the science time so it's still within

350

00:13:48,310 --> 00:13:46,399

the newspaper but for the front page of

351
00:13:49,910 --> 00:13:48,320
this particular section you have

352
00:13:51,829 --> 00:13:49,920
something about hair

353
00:13:53,910 --> 00:13:51,839
restoration techniques

354
00:13:56,710 --> 00:13:53,920
which apparently to the editors was more

355
00:13:58,150 --> 00:13:56,720
important than this preview of saturn's

356
00:14:01,829 --> 00:13:58,160
moons

357
00:14:03,590 --> 00:14:01,839
and also inside and a couple pages later

358
00:14:06,470 --> 00:14:03,600
i found interesting there's an article

359
00:14:09,590 --> 00:14:06,480
by kenneth chang made making science

360
00:14:11,750 --> 00:14:09,600
fact now chronicling science fiction

361
00:14:14,310 --> 00:14:11,760
and it's about donna shirley who managed

362
00:14:16,230 --> 00:14:14,320
the mars exploration program and led the

363
00:14:17,590 --> 00:14:16,240

team that built the mars pathfinder

364

00:14:19,189 --> 00:14:17,600

rover

365

00:14:21,110 --> 00:14:19,199

has become the new director for the

366

00:14:22,550 --> 00:14:21,120

science fiction museum and hall of fame

367

00:14:24,230 --> 00:14:22,560

in seattle

368

00:14:26,150 --> 00:14:24,240

and there's some comments in there about

369

00:14:28,389 --> 00:14:26,160

using science fiction to excite and

370

00:14:30,310 --> 00:14:28,399

teach people about science

371

00:14:32,470 --> 00:14:30,320

so i have this particular example

372

00:14:37,110 --> 00:14:32,480

because i i like the juxtaposition of

373

00:14:41,430 --> 00:14:39,670

the 1997 mars pathfinder landing may

374

00:14:43,910 --> 00:14:41,440

have become the first event to make the

375

00:14:45,829 --> 00:14:43,920

ground breaking transition into digital

376

00:14:48,310 --> 00:14:45,839

media and redefine how the general

377

00:14:50,750 --> 00:14:48,320

public learns about outer space

378

00:14:54,230 --> 00:14:50,760

the new york times reported

379

00:14:56,069 --> 00:14:54,240

566 million hits in 30 days and 47

380

00:14:57,910 --> 00:14:56,079

million hits as the highest number on a

381

00:15:02,949 --> 00:14:57,920

single day which surpassed the

382

00:15:09,670 --> 00:15:06,389

here's the artistic word cloud

383

00:15:12,230 --> 00:15:09,680

and here's a more readable one

384

00:15:14,069 --> 00:15:12,240

this was generated again from selected

385

00:15:16,150 --> 00:15:14,079

articles from the new york times and

386

00:15:22,550 --> 00:15:16,160

washington post and this time it's from

387

00:15:27,990 --> 00:15:24,870

voyager rep

388

00:15:29,829 --> 00:15:28,000

wrong page by 2004 i can't just talk

389

00:15:31,350 --> 00:15:29,839

about newspapers anymore as a source for

390

00:15:33,829 --> 00:15:31,360

information because we're firmly into

391

00:15:35,269 --> 00:15:33,839

the digital age while newspapers sources

392

00:15:37,430 --> 00:15:35,279

decreased i'm finding more short

393

00:15:40,470 --> 00:15:37,440

mentions on cable news shows and

394

00:15:42,629 --> 00:15:40,480

web publications like space daily during

395

00:15:45,030 --> 00:15:42,639

the 64 hours around the saturn orbit

396

00:15:47,230 --> 00:15:45,040

insertion period space ref

397

00:15:49,749 --> 00:15:47,240

reported

398

00:15:51,590 --> 00:15:49,759

136.6 million hits to the mission's

399

00:15:53,910 --> 00:15:51,600

website

400

00:15:55,430 --> 00:15:53,920

when huygens landed on titan issa

401
00:15:56,509 --> 00:15:55,440
reported on their website that they

402
00:15:58,230 --> 00:15:56,519
received

403
00:16:00,949 --> 00:15:58,240
919

404
00:16:06,069 --> 00:16:00,959
000 visitors external visitors and 6.8

405
00:16:08,550 --> 00:16:06,079
million page views on january 15 2005.

406
00:16:10,230 --> 00:16:08,560
looking at this word cloud carolyn porco

407
00:16:12,470 --> 00:16:10,240
lead for the cassini imaging team

408
00:16:13,990 --> 00:16:12,480
appears because she gets quoted a lot in

409
00:16:15,749 --> 00:16:14,000
the news coverage

410
00:16:17,910 --> 00:16:15,759
wilford quotes her about the beauty and

411
00:16:19,670 --> 00:16:17,920
clarity in the black and white images as

412
00:16:21,189 --> 00:16:19,680
just mind-blowing

413
00:16:24,629 --> 00:16:21,199

while explaining that color would have

414

00:16:27,350 --> 00:16:24,639

reduced the total quantity possible

415

00:16:30,550 --> 00:16:27,360

orco presented the ted talks in october

416

00:16:33,350 --> 00:16:30,560

2007 the ted conferences invite speakers

417

00:16:35,350 --> 00:16:33,360

to discuss ideas worth spreading and

418

00:16:37,670 --> 00:16:35,360

their videos have been available online

419

00:16:39,110 --> 00:16:37,680

since june 2006

420

00:16:41,430 --> 00:16:39,120

her visibility on the web is the

421

00:16:44,069 --> 00:16:41,440

development of the digital age and that

422

00:16:50,870 --> 00:16:44,079

still continues to draw visitors and new

423

00:16:54,389 --> 00:16:52,710

while cassini made its own new

424

00:16:56,470 --> 00:16:54,399

scientific discoveries voyager

425

00:16:58,389 --> 00:16:56,480

technically claimed the new status more

426

00:17:00,150 --> 00:16:58,399

than a mission returning for further

427

00:17:02,310 --> 00:17:00,160

observation

428

00:17:05,350 --> 00:17:02,320

cassini images have also been labeled as

429

00:17:07,029 --> 00:17:05,360

art in some online communities and blogs

430

00:17:09,590 --> 00:17:07,039

in comparison to the hubble space

431

00:17:13,189 --> 00:17:09,600

telescope's popular brightly colored

432

00:17:15,110 --> 00:17:13,199

images cassini images also often hold a

433

00:17:19,189 --> 00:17:15,120

stark quality in black and white that

434

00:17:21,029 --> 00:17:19,199

emphasizes the contrast in space

435

00:17:23,189 --> 00:17:21,039

the voyager mission illustrated how the

436

00:17:24,870 --> 00:17:23,199

mass media traditionally advanced

437

00:17:26,150 --> 00:17:24,880

scientific discoveries into the public

438

00:17:27,909 --> 00:17:26,160

understanding

439

00:17:29,510 --> 00:17:27,919

the information from the press releases

440

00:17:31,590 --> 00:17:29,520

and briefings presented technical

441

00:17:33,590 --> 00:17:31,600

science that the journalists expanded

442

00:17:35,190 --> 00:17:33,600

upon to make the stories interesting for

443

00:17:36,549 --> 00:17:35,200

the public

444

00:17:38,549 --> 00:17:36,559

in the process the mass media

445

00:17:40,470 --> 00:17:38,559

necessarily popularized and simplified

446

00:17:41,830 --> 00:17:40,480

the science through real-world analogies

447

00:17:43,590 --> 00:17:41,840

or references

448

00:17:45,110 --> 00:17:43,600

the journalists also added the human

449

00:17:46,549 --> 00:17:45,120

element through emotional cues and

450

00:17:48,390 --> 00:17:46,559

quotes

451
00:17:50,150 --> 00:17:48,400
although journalists often attributed

452
00:17:52,789 --> 00:17:50,160
surprise and wonder to the scientists

453
00:17:54,950 --> 00:17:52,799
they also made statistical statistical

454
00:17:56,950 --> 00:17:54,960
or philosophic

455
00:17:59,750 --> 00:17:56,960
philosophical appeals for their

456
00:18:02,150 --> 00:17:59,760
audiences to feel wonder as well

457
00:18:03,669 --> 00:18:02,160
a small robotic spacecraft hurtling

458
00:18:05,350 --> 00:18:03,679
millions of miles

459
00:18:08,070 --> 00:18:05,360
learning something scientists had not

460
00:18:10,789 --> 00:18:08,080
known before or even simple curiosity as

461
00:18:12,870 --> 00:18:10,799
a driving human characteristic

462
00:18:15,270 --> 00:18:12,880
in addition the images became both the

463
00:18:17,270 --> 00:18:15,280

source and evidence for wonder viewers

464

00:18:20,630 --> 00:18:17,280

might feel awe over the planetary

465

00:18:22,870 --> 00:18:20,640

snapshots and they might also be amazed

466

00:18:24,710 --> 00:18:22,880

at the technological prowess necessary

467

00:18:26,789 --> 00:18:24,720

in obtaining the picture through robotic

468

00:18:29,270 --> 00:18:26,799

eyes

469

00:18:31,350 --> 00:18:29,280

during galileo readers got continually

470

00:18:34,150 --> 00:18:31,360

reminded about the many disasters and

471

00:18:35,830 --> 00:18:34,160

news coverage upon reaching its desk and

472

00:18:38,549 --> 00:18:35,840

the news coverage upon reaching its

473

00:18:40,950 --> 00:18:38,559

destination seems to have had less

474

00:18:42,549 --> 00:18:40,960

impact without new images alongside the

475

00:18:44,950 --> 00:18:42,559

text

476
00:18:46,950 --> 00:18:44,960
the galileo mission coverage also seems

477
00:18:48,710 --> 00:18:46,960
to follow the predictable patterns

478
00:18:51,029 --> 00:18:48,720
driven from press release to news

479
00:18:52,870 --> 00:18:51,039
article during this time period

480
00:18:54,470 --> 00:18:52,880
now a different aspect of the galileo

481
00:18:56,789 --> 00:18:54,480
mission may have

482
00:18:58,390 --> 00:18:56,799
drastically different results but if

483
00:19:00,789 --> 00:18:58,400
you've noticed i'm

484
00:19:02,630 --> 00:19:00,799
pinpointing the moment of when the

485
00:19:06,150 --> 00:19:02,640
primary mission begins often when the

486
00:19:07,990 --> 00:19:06,160
planetary encounter begins

487
00:19:10,390 --> 00:19:08,000
cassini becomes remarkable for breaking

488
00:19:12,150 --> 00:19:10,400

these patterns using web publishing

489

00:19:13,510 --> 00:19:12,160

more information about new scientific

490

00:19:15,110 --> 00:19:13,520

discoveries appear on the mission

491

00:19:17,830 --> 00:19:15,120

website than gets followed by the

492

00:19:19,830 --> 00:19:17,840

national print and television media

493

00:19:21,990 --> 00:19:19,840

information sources proliferate over the

494

00:19:26,630 --> 00:19:22,000

web from traditional journalism to space

495

00:19:31,590 --> 00:19:29,430

what does this digital transition mean

496

00:19:34,150 --> 00:19:31,600

some digital evangelists have promoted

497

00:19:35,990 --> 00:19:34,160

democratization through new media while

498

00:19:38,390 --> 00:19:36,000

others have expressed concerns about the

499

00:19:40,230 --> 00:19:38,400

web that have contracted in different

500

00:19:42,390 --> 00:19:40,240

ways

501
00:19:44,630 --> 00:19:42,400
the internet allows users to choose what

502
00:19:46,870 --> 00:19:44,640
to view where to view it and whether to

503
00:19:48,549 --> 00:19:46,880
participate for nearly an infinite

504
00:19:50,789 --> 00:19:48,559
number of interests

505
00:19:52,710 --> 00:19:50,799
for the publication side writers or

506
00:19:54,950 --> 00:19:52,720
creators might find greater audiences

507
00:19:57,110 --> 00:19:54,960
online through blogs and sharing sites

508
00:19:58,630 --> 00:19:57,120
than traditional media

509
00:20:00,549 --> 00:19:58,640
the internet however becomes an

510
00:20:02,950 --> 00:20:00,559
overwhelming

511
00:20:04,870 --> 00:20:02,960
in quantity and abundance

512
00:20:07,190 --> 00:20:04,880
visitors develop filters or act more

513
00:20:09,990 --> 00:20:07,200

selectively to manage the information

514

00:20:12,390 --> 00:20:10,000

deluge which also results

515

00:20:14,390 --> 00:20:12,400

narrows

516

00:20:15,990 --> 00:20:14,400

what they access based on their active

517

00:20:18,070 --> 00:20:16,000

interests

518

00:20:19,830 --> 00:20:18,080

in other words interested audiences may

519

00:20:21,830 --> 00:20:19,840

seek information only about their

520

00:20:23,510 --> 00:20:21,840

particular interests and not the wider

521

00:20:25,669 --> 00:20:23,520

world web

522

00:20:27,669 --> 00:20:25,679

it becomes significantly harder to gauge

523

00:20:29,669 --> 00:20:27,679

public enthusiasm for planetary

524

00:20:31,830 --> 00:20:29,679

exploration

525

00:20:33,669 --> 00:20:31,840

when a handful of published editorials

526
00:20:35,029 --> 00:20:33,679
used to stimulate and indicate

527
00:20:36,710 --> 00:20:35,039
conversation about a relevant

528
00:20:38,390 --> 00:20:36,720
contemporary topic

529
00:20:40,630 --> 00:20:38,400
and now the entire internet has

530
00:20:42,310 --> 00:20:40,640
thousands upon thousands of opinions and

531
00:20:44,789 --> 00:20:42,320
topics

532
00:20:46,630 --> 00:20:44,799
despite these issues the web remains

533
00:20:49,669 --> 00:20:46,640
essential as a direct method to

534
00:20:51,830 --> 00:20:49,679
disseminate information and science news

535
00:20:54,149 --> 00:20:51,840
remains strong on the web although its

536
00:20:56,710 --> 00:20:54,159
sources for the public have deviated

537
00:21:11,029 --> 00:20:56,720
greatly from the comfortable definition

538
00:21:16,070 --> 00:21:12,950

we have questions

539

00:21:23,270 --> 00:21:16,080

for this perfectly timed talk

540

00:21:26,310 --> 00:21:24,710

but you mentioned

541

00:21:27,590 --> 00:21:26,320

digital publication and the use of

542

00:21:30,549 --> 00:21:27,600

websites so

543

00:21:33,350 --> 00:21:30,559

from my insight is inside jpl's media

544

00:21:36,070 --> 00:21:33,360

relations and so forth is that there's

545

00:21:38,630 --> 00:21:36,080

there's now perceived attention between

546

00:21:41,510 --> 00:21:38,640

traditional media and our use of web

547

00:21:43,990 --> 00:21:41,520

publication is the same time is that we

548

00:21:45,669 --> 00:21:44,000

nasa jpl want to market itself ourselves

549

00:21:46,950 --> 00:21:45,679

to traditional media at the same time

550

00:21:48,870 --> 00:21:46,960

we're also trying to sell ourselves

551
00:21:49,669 --> 00:21:48,880
directly to the public

552
00:21:52,070 --> 00:21:49,679
and

553
00:21:53,669 --> 00:21:52,080
sometimes from the outside perspective

554
00:22:02,789 --> 00:21:53,679
perspective those two things are seem to

555
00:22:07,110 --> 00:22:04,549
then you don't need to answer it

556
00:22:08,630 --> 00:22:07,120
jeff hi jeff thousand space review uh

557
00:22:10,789 --> 00:22:08,640
it's very interesting presentation i

558
00:22:12,549 --> 00:22:10,799
wanted to expand upon or maybe maybe

559
00:22:14,549 --> 00:22:12,559
even challenge a little bit one of your

560
00:22:15,909 --> 00:22:14,559
premises towards the very end about

561
00:22:17,430 --> 00:22:15,919
gauging public interest and the

562
00:22:19,110 --> 00:22:17,440
challenge of trying to gauge public

563
00:22:21,190 --> 00:22:19,120

interest now in this fractured media

564

00:22:23,029 --> 00:22:21,200

environment it seems in some respect it

565

00:22:24,710 --> 00:22:23,039

might actually be easier to track public

566

00:22:26,310 --> 00:22:24,720

interest because you now know how many

567

00:22:27,830 --> 00:22:26,320

people you know how many hits are on a

568

00:22:29,909 --> 00:22:27,840

website

569

00:22:31,430 --> 00:22:29,919

you know nasa can provide lots of

570

00:22:32,549 --> 00:22:31,440

information about how many millions of

571

00:22:35,029 --> 00:22:32,559

people viewed the web stream of the

572

00:22:36,789 --> 00:22:35,039

curiosity mars landing for example

573

00:22:38,470 --> 00:22:36,799

whereas you don't know how many people

574

00:22:41,669 --> 00:22:38,480

read that editorial in the new york

575

00:22:42,870 --> 00:22:41,679

times or the washington post uh about

576
00:22:43,590 --> 00:22:42,880
promoting

577
00:22:48,789 --> 00:22:43,600
or

578
00:22:51,590 --> 00:22:48,799
point a little bit on on the challenges

579
00:22:52,830 --> 00:22:51,600
of of public perceptions and engaging

580
00:22:55,110 --> 00:22:52,840
that level of

581
00:22:57,590 --> 00:22:55,120
interest well i can answer that a little

582
00:23:00,549 --> 00:22:57,600
bit with the challenges of engaging new

583
00:23:03,350 --> 00:23:00,559
media in general when you say there are

584
00:23:05,110 --> 00:23:03,360
a lot of statistics on web hits i could

585
00:23:07,029 --> 00:23:05,120
argue the same thing about nice papers

586
00:23:09,750 --> 00:23:07,039
and circulation numbers and subscription

587
00:23:11,990 --> 00:23:09,760
numbers we may have these numbers but

588
00:23:15,909 --> 00:23:12,000

they don't necessarily mean anything

589

00:23:18,549 --> 00:23:15,919

unless you have a good way to

590

00:23:21,590 --> 00:23:18,559

refine them down just because

591

00:23:24,710 --> 00:23:21,600

the mars pathfinder website gained

592

00:23:26,789 --> 00:23:24,720

400 million hits across the period of a

593

00:23:30,950 --> 00:23:26,799

month well what do we measure that

594

00:23:31,990 --> 00:23:30,960

against and hits tends to be sort of a

595

00:23:33,909 --> 00:23:32,000

fuzzy

596

00:23:36,390 --> 00:23:33,919

measuring tool

597

00:23:39,510 --> 00:23:36,400

we now know that hits can mean

598

00:23:42,070 --> 00:23:39,520

every time a person came to a website

599

00:23:44,789 --> 00:23:42,080

other people will instead say unique

600

00:23:48,789 --> 00:23:44,799

visitors as an indication of how many

601
00:23:50,549 --> 00:23:48,799
individual people came to the website

602
00:23:52,230 --> 00:23:50,559
we also don't

603
00:23:55,029 --> 00:23:52,240
necessarily

604
00:23:56,070 --> 00:23:55,039
have that kind of information available

605
00:23:57,909 --> 00:23:56,080
so

606
00:23:59,350 --> 00:23:57,919
in a way when i say

607
00:24:01,830 --> 00:23:59,360
it's difficult to

608
00:24:03,590 --> 00:24:01,840
take these numbers how do you aggregate

609
00:24:06,310 --> 00:24:03,600
these numbers how do you take the

610
00:24:08,789 --> 00:24:06,320
numbers from cnn from space daily from

611
00:24:10,789 --> 00:24:08,799
your website and how do you know how

612
00:24:12,870 --> 00:24:10,799
many of these people are the same people

613
00:24:14,789 --> 00:24:12,880

how many of them are different people

614

00:24:16,789 --> 00:24:14,799

and like some of the other presentations

615

00:24:19,750 --> 00:24:16,799

we've heard this session

616

00:24:22,070 --> 00:24:19,760

if there is so much interest how has it

617

00:24:23,669 --> 00:24:22,080

not translated to some sort of public

618

00:24:27,190 --> 00:24:23,679

policy boost

619

00:24:29,909 --> 00:24:27,200

for planetary exploration

620

00:24:31,430 --> 00:24:29,919

good good points all thanks

621

00:24:34,149 --> 00:24:31,440

yeah i wanted to

622

00:24:36,149 --> 00:24:34,159

john what more i wanted to touch on a

623

00:24:38,549 --> 00:24:36,159

related angle and that is

624

00:24:40,549 --> 00:24:38,559

uh you know when 100 million people look

625

00:24:42,710 --> 00:24:40,559

at something on the web those are people

626
00:24:45,350 --> 00:24:42,720
that were interested in the subject and

627
00:24:47,269 --> 00:24:45,360
actively looking for it but what about

628
00:24:48,149 --> 00:24:47,279
the 200 million people

629
00:24:50,390 --> 00:24:48,159
that

630
00:24:52,230 --> 00:24:50,400
won't see it at all because

631
00:24:53,430 --> 00:24:52,240
they don't see it in the newspaper where

632
00:24:55,430 --> 00:24:53,440
you used to

633
00:24:57,990 --> 00:24:55,440
accidentally run into it and they didn't

634
00:24:59,669 --> 00:24:58,000
actively seek it on the web and so how

635
00:25:01,990 --> 00:24:59,679
do you get

636
00:25:03,269 --> 00:25:02,000
so you you may be getting a better way

637
00:25:05,430 --> 00:25:03,279
to reach the people that are already

638
00:25:07,830 --> 00:25:05,440

interested in space but completely

639

00:25:09,830 --> 00:25:07,840

missing the general public that doesn't

640

00:25:11,669 --> 00:25:09,840

have that interest already uh

641

00:25:12,870 --> 00:25:11,679

any thoughts on that

642

00:25:14,390 --> 00:25:12,880

well that was pretty much the point i

643

00:25:17,510 --> 00:25:14,400

was trying to make at the very end of my

644

00:25:20,710 --> 00:25:17,520

conclusion just because there are direct

645

00:25:22,310 --> 00:25:20,720

methods for jpl and missions to reach

646

00:25:24,470 --> 00:25:22,320

the public whether it's through

647

00:25:26,549 --> 00:25:24,480

newsletters or websites or educational

648

00:25:29,029 --> 00:25:26,559

material

649

00:25:30,789 --> 00:25:29,039

how do you count those people and how do

650

00:25:33,350 --> 00:25:30,799

you know if those people are the same

651
00:25:35,830 --> 00:25:33,360
ones that will devour space daily every

652
00:25:37,350 --> 00:25:35,840
day anyway or

653
00:25:38,870 --> 00:25:37,360
is it actually

654
00:25:41,029 --> 00:25:38,880
a child that

655
00:25:44,149 --> 00:25:41,039
has never known anything about space and

656
00:25:46,870 --> 00:25:44,159
is now really starting to get interested

657
00:25:49,750 --> 00:25:46,880
with the web it's very difficult to know

658
00:25:51,510 --> 00:25:49,760
who it is that's coming to your website

659
00:25:54,230 --> 00:25:51,520
i mean the web can

660
00:25:55,669 --> 00:25:54,240
get some statistics off your cookies or

661
00:25:58,310 --> 00:25:55,679
whatever but

662
00:26:00,470 --> 00:25:58,320
generally they know what computer you're

663
00:26:02,470 --> 00:26:00,480

using and where you're coming from in

664

00:26:04,789 --> 00:26:02,480

the united states or other countries

665

00:26:06,310 --> 00:26:04,799

maybe but they don't actually know very

666

00:26:07,909 --> 00:26:06,320

much about you

667

00:26:10,870 --> 00:26:07,919

whether you're male or female whether

668

00:26:12,549 --> 00:26:10,880

you're in the space industry or you're

669

00:26:14,070 --> 00:26:12,559

just a random member of the general

670

00:26:15,110 --> 00:26:14,080

public

671

00:26:17,430 --> 00:26:15,120

so

672

00:26:19,510 --> 00:26:17,440

that is the difficulty with determining

673

00:26:22,070 --> 00:26:19,520

audience anymore how do you reach the

674

00:26:23,269 --> 00:26:22,080

people that you know hasn't seen this

675

00:26:25,430 --> 00:26:23,279

before

676
00:26:26,870 --> 00:26:25,440
versus the audience that you know is

677
00:26:29,029 --> 00:26:26,880
definitely interested because they're

678
00:26:30,710 --> 00:26:29,039
subscribing to your newsletters now and

679
00:26:33,669 --> 00:26:30,720
they're coming to your websites during

680
00:26:37,750 --> 00:26:36,070
i'm going to ask you guys to stay keep

681
00:26:39,350 --> 00:26:37,760
standing because we're going to have a

682
00:26:40,630 --> 00:26:39,360
panel discussion now but stay with there

683
00:26:42,870 --> 00:26:40,640
you'll get a chance and also i know

684
00:26:44,870 --> 00:26:42,880
lindley had a question about asteroids

685
00:26:47,669 --> 00:26:44,880
so i want to invite my panelists to come

686
00:26:50,470 --> 00:26:47,679
up and to have a seat

687
00:26:52,549 --> 00:26:50,480
don't i do want to bring another voice

688
00:26:55,430 --> 00:26:52,559

to this discussion though because we've

689

00:26:57,510 --> 00:26:55,440

been talking about public perceptions

690

00:27:00,710 --> 00:26:57,520

and we have been talking about our

691

00:27:03,269 --> 00:27:00,720

perceptions of the public but the public

692

00:27:05,510 --> 00:27:03,279

isn't really here we're all people who

693

00:27:08,710 --> 00:27:05,520

are involved somehow and i wanted to

694

00:27:12,230 --> 00:27:08,720

share with you an actual statement from

695

00:27:14,310 --> 00:27:12,240

somebody from the public which is short

696

00:27:15,909 --> 00:27:14,320

it was written after the curiosity

697

00:27:18,630 --> 00:27:15,919

landing and it was sent to president

698

00:27:20,389 --> 00:27:18,640

obama who sent it to jim green

699

00:27:22,470 --> 00:27:20,399

who then shared it with me and i

700

00:27:24,630 --> 00:27:22,480

contacted this young person and said can

701
00:27:25,590 --> 00:27:24,640
i share with this group because we're

702
00:27:28,149 --> 00:27:25,600
going to be talking about public

703
00:27:30,549 --> 00:27:28,159
perceptions of nasa so i want to read

704
00:27:33,190 --> 00:27:30,559
this to you so that you hear

705
00:27:36,070 --> 00:27:33,200
the current public's voice this is not

706
00:27:37,990 --> 00:27:36,080
ancient history or like us

707
00:27:39,669 --> 00:27:38,000
but this is current all right this is a

708
00:27:40,630 --> 00:27:39,679
young man

709
00:27:43,110 --> 00:27:40,640
and

710
00:27:45,430 --> 00:27:43,120
he says dear president obama

711
00:27:47,830 --> 00:27:45,440
i just wanted to let you know how much

712
00:27:49,350 --> 00:27:47,840
curiosity successful landing on mars

713
00:27:51,990 --> 00:27:49,360

means to me

714

00:27:54,789 --> 00:27:52,000

the fact that any organization in the

715

00:27:57,590 --> 00:27:54,799

world could send a one-ton mobile

716

00:28:00,789 --> 00:27:57,600

research platform to mars and land it

717

00:28:02,710 --> 00:28:00,799

safely much less using a hovering rocket

718

00:28:05,830 --> 00:28:02,720

propelled sky crane

719

00:28:08,470 --> 00:28:05,840

is a triumph of human intelligence

720

00:28:10,710 --> 00:28:08,480

civilization and cooperation

721

00:28:12,389 --> 00:28:10,720

the fact that it was our national

722

00:28:14,230 --> 00:28:12,399

aeronautics and space administration

723

00:28:16,710 --> 00:28:14,240

makes me more proud to be an american

724

00:28:18,710 --> 00:28:16,720

than anything has in a long time

725

00:28:21,269 --> 00:28:18,720

what truly inspires me about this

726

00:28:23,510 --> 00:28:21,279

mission however is not the flawless

727

00:28:25,669 --> 00:28:23,520

success the nasa scientists and

728

00:28:28,230 --> 00:28:25,679

engineers achieved last night

729

00:28:30,070 --> 00:28:28,240

or the staggering technological advances

730

00:28:31,830 --> 00:28:30,080

that have been fueled by similar

731

00:28:32,870 --> 00:28:31,840

exploration

732

00:28:36,470 --> 00:28:32,880

rather

733

00:28:39,110 --> 00:28:36,480

it is the unbridled joy and the unity i

734

00:28:41,750 --> 00:28:39,120

have seen on the faces of the crying

735

00:28:44,389 --> 00:28:41,760

hugging members of mission control in

736

00:28:46,870 --> 00:28:44,399

countless celebratory internet posts and

737

00:28:47,909 --> 00:28:46,880

an excited conversation with people this

738

00:28:51,750 --> 00:28:47,919

morning

739

00:28:53,669 --> 00:28:51,760

i am 20 years old and the only times i

740

00:28:56,070 --> 00:28:53,679

can remember feeling as close to my

741

00:28:59,110 --> 00:28:56,080

fellow americans as i do now have been

742

00:29:01,830 --> 00:28:59,120

during national tragedies

743

00:29:04,230 --> 00:29:01,840

the unifying effect of scientific

744

00:29:07,430 --> 00:29:04,240

expeditions like the curiosity and the

745

00:29:09,750 --> 00:29:07,440

apollo landings is incredibly powerful

746

00:29:12,470 --> 00:29:09,760

all the more so because it is born out

747

00:29:13,990 --> 00:29:12,480

of triumphant national success rather

748

00:29:16,950 --> 00:29:14,000

than sorrow

749

00:29:18,310 --> 00:29:16,960

please continue to fund nasa and its

750

00:29:21,110 --> 00:29:18,320

expeditions

751

00:29:23,669 --> 00:29:21,120

in so many ways we lift ourselves up

752

00:29:27,110 --> 00:29:23,679

when we shoot for the stars sincerely

753

00:29:29,350 --> 00:29:27,120

isaac larkin

754

00:29:32,549 --> 00:29:29,360

beyond the nationalism in the statement

755

00:29:35,190 --> 00:29:32,559

which is laudable i think it touches on

756

00:29:37,750 --> 00:29:35,200

the unif unifying themes that this

757

00:29:40,230 --> 00:29:37,760

brings to all of humanity

758

00:29:42,230 --> 00:29:40,240

like apollo did that wasn't just the u.s

759

00:29:44,149 --> 00:29:42,240

although it was but people around the

760

00:29:45,830 --> 00:29:44,159

world were looking at the moon and

761

00:29:48,070 --> 00:29:45,840

knowing that humans were walking on the

762

00:29:50,310 --> 00:29:48,080

moon people around the world were

763

00:29:53,190 --> 00:29:50,320

looking at mars when we were landing on

764

00:29:55,510 --> 00:29:53,200

mars and i think that that that is an

765

00:29:57,590 --> 00:29:55,520

aspect that we need to keep in mind

766

00:29:59,190 --> 00:29:57,600

that's what touches people

767

00:30:01,350 --> 00:29:59,200

we're talking about people here and if

768

00:30:02,710 --> 00:30:01,360

you noticed on her word clouds

769

00:30:04,630 --> 00:30:02,720

scientists

770

00:30:05,990 --> 00:30:04,640

appeared a lot and i think it's because

771

00:30:08,389 --> 00:30:06,000

it's people

772

00:30:10,070 --> 00:30:08,399

so you know we're at a we're at a

773

00:30:12,870 --> 00:30:10,080

turning point here

774

00:30:14,630 --> 00:30:12,880

um for planetary exploration

775

00:30:16,710 --> 00:30:14,640

um we've been at turning points in the

776

00:30:19,990 --> 00:30:16,720

past as we heard from john logsdon and

777

00:30:24,149 --> 00:30:20,000

others uh nevertheless we are at a

778

00:30:26,870 --> 00:30:24,159

turning point right now and we we know

779

00:30:28,950 --> 00:30:26,880

from letters like this that the public

780

00:30:32,630 --> 00:30:28,960

the public perceives planetary

781

00:30:34,710 --> 00:30:32,640

exploration as a priority for nasa it's

782

00:30:37,190 --> 00:30:34,720

question in my mind whether nasa

783

00:30:39,430 --> 00:30:37,200

perceives planetary exploration as a

784

00:30:40,950 --> 00:30:39,440

priority for nasa

785

00:30:43,830 --> 00:30:40,960

we have a choice whether or not we can

786

00:30:45,990 --> 00:30:43,840

have another 50 fabulous years

787

00:30:48,070 --> 00:30:46,000

doing amazing planetary exploration or

788

00:30:50,470 --> 00:30:48,080

whether we will retreat to being monkeys

789

00:30:51,909 --> 00:30:50,480

in a dark box

790

00:30:56,470 --> 00:30:51,919

and with that we're going to open this

791

00:31:01,430 --> 00:30:58,070

hello i'm actually going to slide this

792

00:31:03,430 --> 00:31:01,440

because i can't see any of you hi

793

00:31:05,750 --> 00:31:03,440

um this is just more of a follow-up to

794

00:31:07,029 --> 00:31:05,760

the social media and i just wanted to

795

00:31:09,029 --> 00:31:07,039

follow up on the person who asked the

796

00:31:11,590 --> 00:31:09,039

question about uh

797

00:31:12,710 --> 00:31:11,600

tracking in um in a digital age so i

798

00:31:13,909 --> 00:31:12,720

work in digital media national

799

00:31:17,669 --> 00:31:13,919

geographic

800

00:31:19,990 --> 00:31:17,679

and i i would argue that it's incredibly

801
00:31:21,190 --> 00:31:20,000
it's so much easier to track impact now

802
00:31:23,029 --> 00:31:21,200
and meaning

803
00:31:24,789 --> 00:31:23,039
than it was back when you just had a

804
00:31:26,389 --> 00:31:24,799
one-way communication you don't know the

805
00:31:27,909 --> 00:31:26,399
impact i think it's it's very difficult

806
00:31:30,549 --> 00:31:27,919
to track the impact of journalism

807
00:31:31,909 --> 00:31:30,559
generally on the public um just last

808
00:31:34,310 --> 00:31:31,919
night we had bill nye the science guy

809
00:31:36,310 --> 00:31:34,320
hosting an event at national geographic

810
00:31:38,630 --> 00:31:36,320
and uh for all intents and purposes you

811
00:31:40,470 --> 00:31:38,640
would think he's like not relevant to

812
00:31:41,990 --> 00:31:40,480
more recent generations but how many

813
00:31:43,430 --> 00:31:42,000

people stood up in the audience and said

814

00:31:45,029 --> 00:31:43,440

you changed my life you're the reason

815

00:31:46,950 --> 00:31:45,039

i'm in science you're the reason i'm an

816

00:31:48,710 --> 00:31:46,960

engineer right now you're the reason i'm

817

00:31:50,389 --> 00:31:48,720

you know studying what i'm studying or

818

00:31:52,630 --> 00:31:50,399

just tonight you've changed my mind to

819

00:31:54,710 --> 00:31:52,640

go study something else and and you know

820

00:31:56,470 --> 00:31:54,720

public figures like him and journalism

821

00:31:58,549 --> 00:31:56,480

will never know how many people those

822

00:32:00,710 --> 00:31:58,559

stories inspired i remember voyager

823

00:32:01,990 --> 00:32:00,720

being covered in ever like it might not

824

00:32:03,909 --> 00:32:02,000

have been one story i read but the

825

00:32:04,870 --> 00:32:03,919

collective impact of voyager had an

826

00:32:06,389 --> 00:32:04,880

impact

827

00:32:08,070 --> 00:32:06,399

and that's very hard to measure but in

828

00:32:09,750 --> 00:32:08,080

social we can actually measure that

829

00:32:11,350 --> 00:32:09,760

engagement now we know how many people

830

00:32:12,870 --> 00:32:11,360

are talking about it who are commenting

831

00:32:15,190 --> 00:32:12,880

on it who are sharing it we know the

832

00:32:16,950 --> 00:32:15,200

extended impact of that we can track

833

00:32:19,590 --> 00:32:16,960

with social flow the whole like we have

834

00:32:21,590 --> 00:32:19,600

this unbelievable almost too much

835

00:32:23,509 --> 00:32:21,600

information about how much engagement

836

00:32:25,590 --> 00:32:23,519

and sharing is happening so i just can't

837

00:32:27,269 --> 00:32:25,600

i would bring that in and and factor it

838

00:32:28,630 --> 00:32:27,279

in more as a commentary because i do

839

00:32:30,389 --> 00:32:28,640

think the tools are out there we do know

840

00:32:31,990 --> 00:32:30,399

demographics we do know exactly where

841

00:32:33,029 --> 00:32:32,000

everybody lives so that's great thank

842

00:32:34,789 --> 00:32:33,039

you

843

00:32:36,630 --> 00:32:34,799

i will comment a little bit about that

844

00:32:38,630 --> 00:32:36,640

and that's the

845

00:32:41,029 --> 00:32:38,640

fact that i am kind of looking

846

00:32:44,230 --> 00:32:41,039

retroactively at historical events

847

00:32:45,750 --> 00:32:44,240

despite the fact that 2004 was not that

848

00:32:47,990 --> 00:32:45,760

far back into history

849

00:32:50,789 --> 00:32:48,000

so right now yeah i can look at google

850

00:32:52,230 --> 00:32:50,799

trends and other tools that tell me lots

851
00:32:54,870 --> 00:32:52,240
of things about what people are

852
00:32:57,909 --> 00:32:54,880
searching for and that's great

853
00:32:59,430 --> 00:32:57,919
but i can't go back to even 2004 and

854
00:33:01,430 --> 00:32:59,440
necessarily pull up the same kind of

855
00:33:03,990 --> 00:33:01,440
data and that's what i mean by it's

856
00:33:05,990 --> 00:33:04,000
really difficult to determine audience

857
00:33:07,669 --> 00:33:06,000
and as a historian

858
00:33:10,070 --> 00:33:07,679
i will probably always have this

859
00:33:12,630 --> 00:33:10,080
question unless i kind of look forward

860
00:33:14,630 --> 00:33:12,640
in the future and start storing away

861
00:33:15,430 --> 00:33:14,640
this stuff

862
00:33:17,350 --> 00:33:15,440
so

863
00:33:20,070 --> 00:33:17,360

it's just a clarification of what i mean

864

00:33:23,029 --> 00:33:20,080

by the difficulty in it okay

865

00:33:25,350 --> 00:33:23,039

i wanted to offer a tangible example of

866

00:33:27,830 --> 00:33:25,360

something that susan poulton just said

867

00:33:29,990 --> 00:33:27,840

from the national geographic uh from my

868

00:33:32,470 --> 00:33:30,000

own recent experience of uh

869

00:33:34,549 --> 00:33:32,480

understanding the impact of social media

870

00:33:35,750 --> 00:33:34,559

the week after curiosity landed i just

871

00:33:37,350 --> 00:33:35,760

happened to be here in town having

872

00:33:39,509 --> 00:33:37,360

dinner with susan and we were talking

873

00:33:41,590 --> 00:33:39,519

about the uh about the events over at

874

00:33:44,230 --> 00:33:41,600

nat geo which we had last night susan is

875

00:33:47,029 --> 00:33:44,240

the vice president for the digital media

876

00:33:49,430 --> 00:33:47,039

division of uh national geographic so

877

00:33:51,830 --> 00:33:49,440

she knows a lot about this stuff and

878

00:33:53,909 --> 00:33:51,840

over the course of dinner uh she said

879

00:33:55,990 --> 00:33:53,919

hey by the way have you seen this latest

880

00:33:57,750 --> 00:33:56,000

youtube thing that just came out today

881

00:34:00,549 --> 00:33:57,760

and she pulls out her iphone

882

00:34:01,990 --> 00:34:00,559

and she fires it up and it's where nasa

883

00:34:04,630 --> 00:34:02,000

and we know it

884

00:34:06,870 --> 00:34:04,640

it had 382 hits and i suspect most of

885

00:34:09,589 --> 00:34:06,880

you have seen it by this time the next

886

00:34:11,510 --> 00:34:09,599

morning i wake up in my hotel room and i

887

00:34:12,869 --> 00:34:11,520

said geez i got to go get that link and

888

00:34:14,629 --> 00:34:12,879

see what that and see that again you

889

00:34:17,030 --> 00:34:14,639

know now that i'm awake and sober and

890

00:34:19,030 --> 00:34:17,040

such and by that time it was already up

891

00:34:20,310 --> 00:34:19,040

to 300 000

892

00:34:22,790 --> 00:34:20,320

and i don't know what it is at this

893

00:34:24,950 --> 00:34:22,800

point but i mean things like that that

894

00:34:26,869 --> 00:34:24,960

we do that are so exciting that can

895

00:34:30,310 --> 00:34:26,879

capture people's imagination can go

896

00:34:32,149 --> 00:34:30,320

viral and as susan had told me

897

00:34:33,430 --> 00:34:32,159

the key to making this happen is just

898

00:34:35,349 --> 00:34:33,440

get the stuff out there get the

899

00:34:37,349 --> 00:34:35,359

information out there let people

900

00:34:39,030 --> 00:34:37,359

let the people out there in the country

901
00:34:41,109 --> 00:34:39,040
take it and run with it that's great

902
00:34:44,310 --> 00:34:41,119
thank you very powerful yeah

903
00:34:47,669 --> 00:34:45,750
hi janet for testing princeton

904
00:34:50,230 --> 00:34:47,679
university um that's great you

905
00:34:51,909 --> 00:34:50,240
discovered nasa and we know it uh that

906
00:34:53,750 --> 00:34:51,919
link has been out there for a good six

907
00:34:55,510 --> 00:34:53,760
months so so it may be that you're

908
00:34:57,030 --> 00:34:55,520
seeing different versions as someone who

909
00:34:59,109 --> 00:34:57,040
works in human computer interaction and

910
00:35:00,710 --> 00:34:59,119
publishes in that domain i'd also like

911
00:35:02,630 --> 00:35:00,720
to make it clear that there's different

912
00:35:03,750 --> 00:35:02,640
versions of tweeting and retweeting we

913
00:35:05,670 --> 00:35:03,760

all know the difference between

914

00:35:07,750 --> 00:35:05,680

different kinds of friends and it's that

915

00:35:09,109 --> 00:35:07,760

qualitative assessment of what it is

916

00:35:10,870 --> 00:35:09,119

people are doing with digital material

917

00:35:11,829 --> 00:35:10,880

that i think is also i'm really glad you

918

00:35:13,510 --> 00:35:11,839

pointed that out because i think that's

919

00:35:15,430 --> 00:35:13,520

very tricky to get at despite the

920

00:35:17,270 --> 00:35:15,440

numbers of counts one can get it's very

921

00:35:18,950 --> 00:35:17,280

different the qualitative experience but

922

00:35:20,870 --> 00:35:18,960

that leads into my question which has to

923

00:35:23,190 --> 00:35:20,880

do with the construction of various

924

00:35:25,910 --> 00:35:23,200

publics and there's something about the

925

00:35:27,430 --> 00:35:25,920

use of the monolithic term public again

926
00:35:29,670 --> 00:35:27,440
that is a facing the fact that these

927
00:35:30,390 --> 00:35:29,680
media and these personages whether

928
00:35:31,829 --> 00:35:30,400
they're

929
00:35:34,069 --> 00:35:31,839
uh whether you're making a film or

930
00:35:36,230 --> 00:35:34,079
whether you're a um

931
00:35:38,630 --> 00:35:36,240
or whether you're a reporter that you're

932
00:35:40,069 --> 00:35:38,640
not just seamlessly reporting or

933
00:35:41,990 --> 00:35:40,079
seamlessly producing something but

934
00:35:44,310 --> 00:35:42,000
you're also producing a particular

935
00:35:46,230 --> 00:35:44,320
public and a particular audience and i'd

936
00:35:48,470 --> 00:35:46,240
really like to know a little more about

937
00:35:49,829 --> 00:35:48,480
the fine distinctions between you know

938
00:35:50,710 --> 00:35:49,839

if you're writing for the new york times

939

00:35:53,430 --> 00:35:50,720

it's very different than if you're

940

00:35:54,630 --> 00:35:53,440

writing for uh science science daily

941

00:35:55,910 --> 00:35:54,640

it's very different than the big spreads

942

00:35:58,230 --> 00:35:55,920

on voyage that i remember seeing a

943

00:35:59,750 --> 00:35:58,240

national geographic when i was a child

944

00:36:00,950 --> 00:35:59,760

if you're producing you know documentary

945

00:36:03,030 --> 00:36:00,960

films it's very different than if you're

946

00:36:03,910 --> 00:36:03,040

producing deep impact et cetera so i

947

00:36:06,069 --> 00:36:03,920

really like to know a little bit more

948

00:36:07,349 --> 00:36:06,079

about the fine grain distinctions in

949

00:36:09,190 --> 00:36:07,359

publics

950

00:36:10,710 --> 00:36:09,200

that nasa is speaking to and the variety

951
00:36:12,790 --> 00:36:10,720
of different media that they're using to

952
00:36:14,630 --> 00:36:12,800
do that

953
00:36:17,030 --> 00:36:14,640
thank you for that because it's actually

954
00:36:19,190 --> 00:36:17,040
far more detail that i would go into in

955
00:36:20,550 --> 00:36:19,200
the paper but wouldn't be able to do in

956
00:36:22,950 --> 00:36:20,560
the presentation

957
00:36:24,630 --> 00:36:22,960
and i try to

958
00:36:26,950 --> 00:36:24,640
meet that challenge by trying to go

959
00:36:29,510 --> 00:36:26,960
across a variety of major national

960
00:36:31,030 --> 00:36:29,520
papers so today i think i talked about

961
00:36:32,790 --> 00:36:31,040
the washington post new york times in

962
00:36:34,950 --> 00:36:32,800
the la times

963
00:36:37,589 --> 00:36:34,960

i took a variety of more papers than

964

00:36:38,790 --> 00:36:37,599

that to try to get more of an aggregate

965

00:36:40,870 --> 00:36:38,800

sample

966

00:36:43,270 --> 00:36:40,880

with different kinds of audiences and i

967

00:36:44,950 --> 00:36:43,280

recognize that a newspaper reading

968

00:36:47,430 --> 00:36:44,960

audience is

969

00:36:49,349 --> 00:36:47,440

often a somewhat more educated audience

970

00:36:50,870 --> 00:36:49,359

who wants to pay attention to what's

971

00:36:51,670 --> 00:36:50,880

happening in the news

972

00:36:54,550 --> 00:36:51,680

so

973

00:36:57,589 --> 00:36:54,560

and of itself i've limited the public to

974

00:36:59,349 --> 00:36:57,599

that particular segment that is either

975

00:37:01,510 --> 00:36:59,359

reading the paper or watching the

976
00:37:03,910 --> 00:37:01,520
nightly news which is actually most of

977
00:37:05,750 --> 00:37:03,920
the hits that i get for even voyager

978
00:37:08,470 --> 00:37:05,760
coverage it's the evening news from the

979
00:37:11,910 --> 00:37:08,480
three major networks

980
00:37:16,150 --> 00:37:13,910
there's also things like the magazines

981
00:37:17,990 --> 00:37:16,160
you mentioned like national geographic i

982
00:37:19,349 --> 00:37:18,000
can look in newsweek which is definitely

983
00:37:21,349 --> 00:37:19,359
a different audience than national

984
00:37:23,349 --> 00:37:21,359
geographic

985
00:37:25,750 --> 00:37:23,359
i actually do tend to stay away from the

986
00:37:27,349 --> 00:37:25,760
more specialized publications like

987
00:37:30,069 --> 00:37:27,359
aviation week

988
00:37:32,550 --> 00:37:30,079

because i know that that audience is

989

00:37:33,990 --> 00:37:32,560

very self-selected in wanting to see

990

00:37:37,270 --> 00:37:34,000

that news

991

00:37:40,550 --> 00:37:37,280

so i've even looked at um

992

00:37:44,069 --> 00:37:40,560

kind of not so great newspapers like usa

993

00:37:46,230 --> 00:37:44,079

today to see if they do mention

994

00:37:49,109 --> 00:37:46,240

these missions at all because it's a

995

00:37:51,670 --> 00:37:49,119

great source that's a quick easy read

996

00:37:53,270 --> 00:37:51,680

and it's found in hotels all around the

997

00:37:54,950 --> 00:37:53,280

united states

998

00:37:57,109 --> 00:37:54,960

so

999

00:37:59,270 --> 00:37:57,119

i do kind of toss around the public in

1000

00:38:00,069 --> 00:37:59,280

my presentation a lot without making

1001
00:38:01,670 --> 00:38:00,079
this

1002
00:38:02,630 --> 00:38:01,680
specification

1003
00:38:08,550 --> 00:38:02,640
that

1004
00:38:11,510 --> 00:38:08,560
to keep up on national news and chooses

1005
00:38:13,030 --> 00:38:11,520
to keep themselves informed

1006
00:38:14,710 --> 00:38:13,040
to answer your question more generally i

1007
00:38:16,390 --> 00:38:14,720
think nasa is very aware of the

1008
00:38:19,030 --> 00:38:16,400
different audiences that are out there

1009
00:38:21,430 --> 00:38:19,040
and they do track things like usa today

1010
00:38:23,190 --> 00:38:21,440
public news and the new york they were

1011
00:38:24,550 --> 00:38:23,200
working on the times square because they

1012
00:38:26,870 --> 00:38:24,560
know they're reaching a different

1013
00:38:29,349 --> 00:38:26,880

audience in times square than they would

1014

00:38:31,030 --> 00:38:29,359

in the new york times so they're very

1015

00:38:33,109 --> 00:38:31,040

aware of that and

1016

00:38:34,790 --> 00:38:33,119

that factors in let's keep going so we

1017

00:38:36,310 --> 00:38:34,800

get a few more questions in and i know

1018

00:38:38,390 --> 00:38:36,320

lindley you were very patient last time

1019

00:38:40,390 --> 00:38:38,400

so you know calling you now that's okay

1020

00:38:43,829 --> 00:38:40,400

thanks so lonely johnson your local

1021

00:38:45,510 --> 00:38:43,839

planetary asteroid defense officer

1022

00:38:47,829 --> 00:38:45,520

the question is going to be for laura

1023

00:38:49,829 --> 00:38:47,839

but i also appreciate the thoughts of

1024

00:38:51,910 --> 00:38:49,839

the rest of you uh lori

1025

00:38:53,750 --> 00:38:51,920

you pointed out that the public doesn't

1026
00:38:55,270 --> 00:38:53,760
seem to be worried about the about the

1027
00:38:58,069 --> 00:38:55,280
asteroid threat

1028
00:39:00,230 --> 00:38:58,079
and i like your thoughts and uh um

1029
00:39:03,430 --> 00:39:00,240
how much that perception might be

1030
00:39:05,829 --> 00:39:03,440
influenced uh by the storyline that you

1031
00:39:08,470 --> 00:39:05,839
you see in all these popular

1032
00:39:09,750 --> 00:39:08,480
movies and and and fiction stories that

1033
00:39:14,710 --> 00:39:09,760
uh

1034
00:39:16,550 --> 00:39:14,720
seems to think nasa has all this money

1035
00:39:19,430 --> 00:39:16,560
and we can do anything you know we can

1036
00:39:21,030 --> 00:39:19,440
land a 110 spacecraft on on on the

1037
00:39:23,750 --> 00:39:21,040
surface of mars

1038
00:39:26,069 --> 00:39:23,760

uh and the storyline always gets to a

1039

00:39:27,829 --> 00:39:26,079

happy ending you know that nasa might be

1040

00:39:29,270 --> 00:39:27,839

trials and tribulations but we always

1041

00:39:31,910 --> 00:39:29,280

save the day

1042

00:39:33,750 --> 00:39:31,920

and so how much do you think uh

1043

00:39:38,870 --> 00:39:33,760

public perception

1044

00:39:40,230 --> 00:39:38,880

uh always the happy ending to the to the

1045

00:39:42,310 --> 00:39:40,240

to the movie

1046

00:39:44,950 --> 00:39:42,320

well um it's it's a little bit more

1047

00:39:45,670 --> 00:39:44,960

complex than that in the sense that i i

1048

00:40:10,470 --> 00:39:45,680

i

1049

00:40:12,150 --> 00:40:10,480

there to save the day oh yes yeah oh yes

1050

00:40:13,829 --> 00:40:12,160

they may not know about many of the

1051
00:40:15,670 --> 00:40:13,839
nests of the things that nasa does

1052
00:40:17,670 --> 00:40:15,680
they're surprised every time you know

1053
00:40:19,990 --> 00:40:17,680
the general public that's not that

1054
00:40:21,589 --> 00:40:20,000
doesn't follow space all that well um

1055
00:40:23,349 --> 00:40:21,599
that kind of the segment on the public

1056
00:40:25,510 --> 00:40:23,359
but i think if they

1057
00:40:27,670 --> 00:40:25,520
knew that that threat was coming they

1058
00:40:30,630 --> 00:40:27,680
would think they would be pretty sure

1059
00:40:42,150 --> 00:40:30,640
they would bet that nasa would solve it

1060
00:40:46,230 --> 00:40:44,069
it's always an interesting bar a

1061
00:40:47,190 --> 00:40:46,240
conversation when i tell people what i

1062
00:40:50,069 --> 00:40:47,200
do and

1063
00:40:52,550 --> 00:40:50,079

and and they talk about uh you know well

1064

00:40:54,950 --> 00:40:52,560

nasa's you know obviously got the

1065

00:40:56,550 --> 00:40:54,960

wherewithal and the material to you know

1066

00:40:58,790 --> 00:40:56,560

to prevent this and

1067

00:41:00,309 --> 00:40:58,800

and uh uh it's always an interesting

1068

00:41:01,030 --> 00:41:00,319

perception from them when i tell them

1069

00:41:04,069 --> 00:41:01,040

that

1070

00:41:06,710 --> 00:41:04,079

no we really we really don't at best we

1071

00:41:08,309 --> 00:41:06,720

might be able to find them right now

1072

00:41:10,069 --> 00:41:08,319

i think though it's clear that um the

1073

00:41:12,230 --> 00:41:10,079

public perception is that nasa has a

1074

00:41:14,630 --> 00:41:12,240

whole lot of really smart people

1075

00:41:16,710 --> 00:41:14,640

and if they discover an asteroid coming

1076
00:41:18,630 --> 00:41:16,720
in that nasa would marshal its resources

1077
00:41:20,630 --> 00:41:18,640
and put all those real smart people on

1078
00:41:21,990 --> 00:41:20,640
on the subject and try to get something

1079
00:41:23,990 --> 00:41:22,000
done

1080
00:41:25,910 --> 00:41:24,000
and i talk about this a lot in public

1081
00:41:27,190 --> 00:41:25,920
lectures and um

1082
00:41:29,270 --> 00:41:27,200
you know even though one of your

1083
00:41:31,670 --> 00:41:29,280
conclusions was that education is not

1084
00:41:33,829 --> 00:41:31,680
the answer i think that was sort of what

1085
00:41:35,109 --> 00:41:33,839
you said i found that people honestly

1086
00:41:37,430 --> 00:41:35,119
don't know

1087
00:41:38,550 --> 00:41:37,440
about things like comet impacts asteroid

1088
00:41:40,150 --> 00:41:38,560

impacts

1089

00:41:41,829 --> 00:41:40,160

they get those little wake-up calls like

1090

00:41:44,550 --> 00:41:41,839

you said and then they kind of drift

1091

00:41:46,950 --> 00:41:44,560

back into complacency but i do want to

1092

00:41:49,030 --> 00:41:46,960

say that you know there were things that

1093

00:41:51,190 --> 00:41:49,040

were threats i want to make this analogy

1094

00:41:53,349 --> 00:41:51,200

and maybe have you comment on it um

1095

00:41:55,109 --> 00:41:53,359

people didn't used to wear seat belts

1096

00:41:56,230 --> 00:41:55,119

ever like when i was a kid you know

1097

00:41:58,309 --> 00:41:56,240

throw all the kids in the back of the

1098

00:42:00,550 --> 00:41:58,319

car and drive off but now everybody

1099

00:42:02,710 --> 00:42:00,560

wears seat belts because we've learned

1100

00:42:05,589 --> 00:42:02,720

that it is important for saving lives do

1101
00:42:07,349 --> 00:42:05,599
you think there's an analogy one one is

1102
00:42:09,030 --> 00:42:07,359
my conclusion was not that we should

1103
00:42:11,190 --> 00:42:09,040
stop the education effort please please

1104
00:42:12,870 --> 00:42:11,200
let me clarify that i think nasa should

1105
00:42:14,550 --> 00:42:12,880
continue to educate because we have to

1106
00:42:16,150 --> 00:42:14,560
because the learned society is a worthy

1107
00:42:17,670 --> 00:42:16,160
goal and you know we have to continue

1108
00:42:20,390 --> 00:42:17,680
that but i

1109
00:42:23,190 --> 00:42:20,400
what i meant to say was that if the goal

1110
00:42:24,790 --> 00:42:23,200
is to drive public policy change

1111
00:42:27,030 --> 00:42:24,800
then you know you may find that

1112
00:42:28,710 --> 00:42:27,040
education may not lead you to that

1113
00:42:30,790 --> 00:42:28,720

education in and of itself will be a

1114

00:42:33,270 --> 00:42:30,800

worthy goal but maybe it won't lead to

1115

00:42:35,750 --> 00:42:33,280

the public policy change that you want

1116

00:42:37,510 --> 00:42:35,760

that that was the point um but also on

1117

00:42:39,990 --> 00:42:37,520

the thread again it's this very unique

1118

00:42:42,069 --> 00:42:40,000

threat it's not car collisions it's not

1119

00:42:45,349 --> 00:42:42,079

you will see accident we've all seen car

1120

00:42:47,990 --> 00:42:45,359

accidents we have not all seen a really

1121

00:42:50,390 --> 00:42:48,000

um big catastrophic asteroid people had

1122

00:42:51,750 --> 00:42:50,400

seen an asteroid in but not not you know

1123

00:42:53,990 --> 00:42:51,760

not one that will scare you don't

1124

00:42:55,510 --> 00:42:54,000

connect the two yeah so you know in the

1125

00:42:57,990 --> 00:42:55,520

literature you will find that scientists

1126
00:42:59,349 --> 00:42:58,000
are very aware of you know crying wolf

1127
00:43:01,030 --> 00:42:59,359
and if they start

1128
00:43:02,550 --> 00:43:01,040
saying you know blowing up the threat

1129
00:43:04,630 --> 00:43:02,560
and saying that you know

1130
00:43:06,550 --> 00:43:04,640
comets and asteroids do impact the earth

1131
00:43:09,030 --> 00:43:06,560
every day and you know therefore a real

1132
00:43:10,630 --> 00:43:09,040
big impact can come at any moment um you

1133
00:43:12,470 --> 00:43:10,640
know they could be crying wolf and the

1134
00:43:14,309 --> 00:43:12,480
public may not like that because then

1135
00:43:16,150 --> 00:43:14,319
they will be proven wrong and and they

1136
00:43:18,150 --> 00:43:16,160
may not believe that message so

1137
00:43:19,990 --> 00:43:18,160
it's again it's also not saying that

1138
00:43:21,910 --> 00:43:20,000

that that effort should be discontinued

1139

00:43:23,670 --> 00:43:21,920

but it's that there's a challenge there

1140

00:43:25,430 --> 00:43:23,680

and that i don't think that just talking

1141

00:43:27,670 --> 00:43:25,440

about the issue and trying to explain it

1142

00:43:29,109 --> 00:43:27,680

the best way you can will solve that

1143

00:43:31,270 --> 00:43:29,119

yeah i just want to make sure i bring

1144

00:43:33,270 --> 00:43:31,280

linda in discussion by mentioning the

1145

00:43:35,589 --> 00:43:33,280

andromeda strain you know where we

1146

00:43:37,589 --> 00:43:35,599

combine the impacts and the microbes

1147

00:43:39,430 --> 00:43:37,599

together

1148

00:43:41,109 --> 00:43:39,440

we'll get to i'm going to turn first

1149

00:43:43,589 --> 00:43:41,119

assessment of this issue because there's

1150

00:43:44,950 --> 00:43:43,599

there's a small uh credible body of

1151

00:43:46,630 --> 00:43:44,960

research and science and risk

1152

00:43:49,430 --> 00:43:46,640

communication that

1153

00:43:52,230 --> 00:43:49,440

explains how

1154

00:43:54,470 --> 00:43:52,240

informing and educating non-expert

1155

00:43:56,710 --> 00:43:54,480

audiences about

1156

00:43:59,670 --> 00:43:56,720

science and risk

1157

00:44:02,309 --> 00:43:59,680

may not have the effect that you desire

1158

00:44:05,190 --> 00:44:02,319

in other words the more informed that a

1159

00:44:07,109 --> 00:44:05,200

non-expert becomes about a scientific or

1160

00:44:08,470 --> 00:44:07,119

technological issue

1161

00:44:12,710 --> 00:44:08,480

that

1162

00:44:14,630 --> 00:44:12,720

is a potential hazard or risk

1163

00:44:16,150 --> 00:44:14,640

the more they may decide this is a

1164

00:44:18,390 --> 00:44:16,160

problem they don't want to deal with it

1165

00:44:20,790 --> 00:44:18,400

could go you know it could go either way

1166

00:44:22,630 --> 00:44:20,800

so my feeling personally as a scholar

1167

00:44:24,470 --> 00:44:22,640

and as a citizen i think that it's an

1168

00:44:26,069 --> 00:44:24,480

obligation

1169

00:44:27,910 --> 00:44:26,079

on the part of

1170

00:44:31,030 --> 00:44:27,920

federal agencies and federally funded

1171

00:44:32,790 --> 00:44:31,040

researchers like myself uh to inform

1172

00:44:34,870 --> 00:44:32,800

anybody who wants to know about the work

1173

00:44:36,230 --> 00:44:34,880

that we do everything we do know it's

1174

00:44:37,990 --> 00:44:36,240

you know we're doing this in the public

1175

00:44:40,309 --> 00:44:38,000

interest but

1176

00:44:42,710 --> 00:44:40,319

education is not the key

1177

00:44:43,910 --> 00:44:42,720

it doesn't solve all your problems okay

1178

00:44:45,270 --> 00:44:43,920

question

1179

00:44:47,829 --> 00:44:45,280

all right thank you my name is steve

1180

00:44:50,790 --> 00:44:47,839

williams i'm i work in jim green shop as

1181

00:44:52,230 --> 00:44:50,800

the epo guy but i'm my i'm a detailee

1182

00:44:53,910 --> 00:44:52,240

from the national air space museum where

1183

00:44:55,349 --> 00:44:53,920

i was chair of education

1184

00:44:57,510 --> 00:44:55,359

so i've been working for the last 10

1185

00:44:59,430 --> 00:44:57,520

years with the general public and i

1186

00:45:02,470 --> 00:44:59,440

really wanted to resonate on

1187

00:45:04,150 --> 00:45:02,480

uh the discussion going back to greg and

1188

00:45:05,589 --> 00:45:04,160

some of the previous uh

1189

00:45:07,589 --> 00:45:05,599

responses

1190

00:45:09,430 --> 00:45:07,599

in how the public uh how we deal with

1191

00:45:12,230 --> 00:45:09,440

the public we are trying to drive

1192

00:45:15,910 --> 00:45:12,240

public perceptions okay we do a great

1193

00:45:17,750 --> 00:45:15,920

job with the specialist to be in their

1194

00:45:19,430 --> 00:45:17,760

educational process our good students

1195

00:45:20,630 --> 00:45:19,440

are as good as they ever were and

1196

00:45:22,950 --> 00:45:20,640

they're as

1197

00:45:25,270 --> 00:45:22,960

plentiful as they ever were but we're

1198

00:45:26,630 --> 00:45:25,280

doing a progressively less good job in

1199

00:45:28,150 --> 00:45:26,640

my opinion

1200

00:45:30,790 --> 00:45:28,160

in dealing with the public

1201

00:45:32,390 --> 00:45:30,800

uh in in the non-specialist now let's

1202

00:45:35,510 --> 00:45:32,400

see in a private universe and some of

1203

00:45:37,510 --> 00:45:35,520

these other things jaywalking

1204

00:45:38,710 --> 00:45:37,520

there are people who most people at

1205

00:45:41,349 --> 00:45:38,720

least the united states have a

1206

00:45:43,670 --> 00:45:41,359

fundamental misunderstanding of basic

1207

00:45:46,470 --> 00:45:43,680

science and if you're going to use a

1208

00:45:47,829 --> 00:45:46,480

risk assessment argument you're talking

1209

00:45:50,550 --> 00:45:47,839

to people who live on the san andreas

1210

00:45:51,349 --> 00:45:50,560

fault in the shadow of mount st helens

1211

00:45:53,510 --> 00:45:51,359

and

1212

00:45:55,349 --> 00:45:53,520

who actually believe that if they roll

1213

00:45:57,829 --> 00:45:55,359

sevens three times in a row they're

1214

00:45:59,589 --> 00:45:57,839

never going to roll a seven again

1215

00:46:01,270 --> 00:45:59,599

you know las vegas pays a lot of

1216

00:46:02,790 --> 00:46:01,280

electrical bills on these kinds of

1217

00:46:04,150 --> 00:46:02,800

misperceptions

1218

00:46:07,030 --> 00:46:04,160

so uh

1219

00:46:09,510 --> 00:46:07,040

my point is that uh we have to do the

1220

00:46:11,670 --> 00:46:09,520

same thing any kind of a mass uh

1221

00:46:13,510 --> 00:46:11,680

audience entertainment thing does the

1222

00:46:16,550 --> 00:46:13,520

reason that they have the little kid

1223

00:46:19,670 --> 00:46:16,560

with a crummy telescope discover the

1224

00:46:21,670 --> 00:46:19,680

killer asteroid is because the audience

1225

00:46:24,069 --> 00:46:21,680

would never identify with a real

1226
00:46:26,710 --> 00:46:24,079
scientist doing a real study using real

1227
00:46:28,470 --> 00:46:26,720
equipment that's foreign to them

1228
00:46:29,190 --> 00:46:28,480
they've got to feel like they're part of

1229
00:46:31,750 --> 00:46:29,200
the

1230
00:46:34,470 --> 00:46:31,760
participatory exploration process in

1231
00:46:36,390 --> 00:46:34,480
learning as well as space exploration

1232
00:46:38,390 --> 00:46:36,400
in our day the baby boomers i'll be

1233
00:46:41,109 --> 00:46:38,400
quick

1234
00:46:43,190 --> 00:46:41,119
wanted to use role models to stimulate

1235
00:46:44,309 --> 00:46:43,200
their imaginations but young people

1236
00:46:45,510 --> 00:46:44,319
today

1237
00:46:47,990 --> 00:46:45,520
don't do that

1238
00:46:50,470 --> 00:46:48,000

they're more attuned to mechanical

1239

00:46:52,069 --> 00:46:50,480

assistance electronic assistance to the

1240

00:46:54,390 --> 00:46:52,079

exploration process

1241

00:46:56,470 --> 00:46:54,400

so by approaching it that way and the

1242

00:46:59,349 --> 00:46:56,480

social media is a big help with that

1243

00:47:02,390 --> 00:46:59,359

is a big deal the one comment i feel

1244

00:47:03,750 --> 00:47:02,400

that more than any other since curiosity

1245

00:47:06,230 --> 00:47:03,760

added was

1246

00:47:08,390 --> 00:47:06,240

how cool is nasa these days they landed

1247

00:47:11,030 --> 00:47:08,400

a one ton craft on mars and one of the

1248

00:47:12,230 --> 00:47:11,040

guys that did it was wearing a mohawk

1249

00:47:14,150 --> 00:47:12,240

okay

1250

00:47:16,230 --> 00:47:14,160

never mind any of the science

1251
00:47:17,190 --> 00:47:16,240
they could identify with that and that's

1252
00:47:18,150 --> 00:47:17,200
what i would like to leave you with

1253
00:47:20,470 --> 00:47:18,160
sorry

1254
00:47:22,829 --> 00:47:20,480
now we have time for just two very brief

1255
00:47:25,670 --> 00:47:22,839
comments or questions would be even

1256
00:47:28,390 --> 00:47:25,680
better please okay i just thought it'd

1257
00:47:31,829 --> 00:47:28,400
be might be useful to add a couple of

1258
00:47:34,790 --> 00:47:31,839
numbers to the conversation that uh

1259
00:47:37,030 --> 00:47:34,800
much of the conversation in this entire

1260
00:47:38,549 --> 00:47:37,040
session has been limited to the united

1261
00:47:41,109 --> 00:47:38,559
states

1262
00:47:43,109 --> 00:47:41,119
but there is a self-selected group of

1263
00:47:46,870 --> 00:47:43,119

people out there members of the

1264

00:47:49,750 --> 00:47:46,880

planetary society in 100 countries the

1265

00:47:51,829 --> 00:47:49,760

planetary society exploded from nothing

1266

00:47:52,790 --> 00:47:51,839

to a hundred thousand members at its

1267

00:47:54,790 --> 00:47:52,800

founding

1268

00:47:56,150 --> 00:47:54,800

uh they're not that many now but they're

1269

00:48:00,230 --> 00:47:56,160

still in a hundred

1270

00:48:02,710 --> 00:48:00,240

countries uh and uh cost them forty five

1271

00:48:05,030 --> 00:48:02,720

dollars a year if they're not in the us

1272

00:48:06,150 --> 00:48:05,040

35 if they're here i think

1273

00:48:07,910 --> 00:48:06,160

but

1274

00:48:10,710 --> 00:48:07,920

i think it's relevant

1275

00:48:13,670 --> 00:48:10,720

to the whole conversation

1276
00:48:14,790 --> 00:48:13,680
to introduce the international element

1277
00:48:16,549 --> 00:48:14,800
here

1278
00:48:19,030 --> 00:48:16,559
the other thing i've been involved in

1279
00:48:21,750 --> 00:48:19,040
since i retired from jpl is the

1280
00:48:23,750 --> 00:48:21,760
international space university

1281
00:48:26,950 --> 00:48:23,760
which just celebrated its 25th

1282
00:48:29,750 --> 00:48:26,960
anniversary over across town

1283
00:48:31,990 --> 00:48:29,760
i'd like to see the conversation

1284
00:48:35,190 --> 00:48:32,000
continue to include

1285
00:48:37,030 --> 00:48:35,200
this other public that's out there

1286
00:48:39,270 --> 00:48:37,040
uh i realize that they don't have as

1287
00:48:42,150 --> 00:48:39,280
much influence perhaps no influence on

1288
00:48:43,990 --> 00:48:42,160

what happens in congress or whatever uh

1289

00:48:45,270 --> 00:48:44,000

but they are important because they're

1290

00:48:46,870 --> 00:48:45,280

supporters

1291

00:48:49,349 --> 00:48:46,880

yep that's thank you very much for those

1292

00:48:51,430 --> 00:48:49,359

comments and uh you know i i do want to

1293

00:48:53,270 --> 00:48:51,440

echo that and and remark that the

1294

00:48:55,990 --> 00:48:53,280

planetary society's

1295

00:48:57,270 --> 00:48:56,000

current vision is to cultivate a global

1296

00:49:00,470 --> 00:48:57,280

culture

1297

00:49:02,390 --> 00:49:00,480

that explores our earth and

1298

00:49:04,150 --> 00:49:02,400

other worlds so

1299

00:49:06,390 --> 00:49:04,160

the planters side is very much aware of

1300

00:49:08,710 --> 00:49:06,400

that and i encourage you all to

1301
00:49:10,790 --> 00:49:08,720
engage with that organization

1302
00:49:13,190 --> 00:49:10,800
yes please last question thank you honey

1303
00:49:15,750 --> 00:49:13,200
i'm john sykison from csiro this is to

1304
00:49:18,230 --> 00:49:15,760
to linda linda i just want to applaud

1305
00:49:21,109 --> 00:49:18,240
your efforts um in

1306
00:49:23,430 --> 00:49:21,119
correcting the public record about the

1307
00:49:25,270 --> 00:49:23,440
um the the bacteria that was found on

1308
00:49:28,309 --> 00:49:25,280
the apollo 12 camera

1309
00:49:30,069 --> 00:49:28,319
um as someone who works at parks and has

1310
00:49:33,990 --> 00:49:30,079
been researching the role of the apollo

1311
00:49:36,710 --> 00:49:34,000
missions over the last decade and a half

1312
00:49:37,750 --> 00:49:36,720
the film capricorn 1 has a lot to answer

1313
00:49:39,270 --> 00:49:37,760

for

1314

00:49:41,270 --> 00:49:39,280

and

1315

00:49:43,750 --> 00:49:41,280

you know once in the raid a narrative

1316

00:49:46,150 --> 00:49:43,760

takes hold in the public mind it's very

1317

00:49:47,670 --> 00:49:46,160

very difficult to to correct that

1318

00:49:49,510 --> 00:49:47,680

misconception

1319

00:49:56,790 --> 00:49:49,520

and

1320

00:49:58,630 --> 00:49:56,800

efforts on that

1321

00:50:01,030 --> 00:49:58,640

um also i think

1322

00:50:03,430 --> 00:50:01,040

nasa was founded partly to to boost

1323

00:50:05,030 --> 00:50:03,440

public morale in the united states and

1324

00:50:07,349 --> 00:50:05,040

and um

1325

00:50:09,910 --> 00:50:07,359

to demonstrate american

1326
00:50:11,750 --> 00:50:09,920
leadership in science and technology and

1327
00:50:13,750 --> 00:50:11,760
in many ways it's become a victim of its

1328
00:50:15,990 --> 00:50:13,760
own success

1329
00:50:18,309 --> 00:50:16,000
so you know when when something they do

1330
00:50:19,990 --> 00:50:18,319
nasa does do spectacular things like

1331
00:50:22,630 --> 00:50:20,000
land people on

1332
00:50:24,230 --> 00:50:22,640
on the moon and rovers on mars and so on

1333
00:50:26,309 --> 00:50:24,240
and so when something

1334
00:50:29,270 --> 00:50:26,319
does threaten the earth it's only

1335
00:50:31,349 --> 00:50:29,280
natural that people go to the to the

1336
00:50:33,990 --> 00:50:31,359
organization that has a proven record of

1337
00:50:36,390 --> 00:50:34,000
success to do that and so um

1338
00:50:38,430 --> 00:50:36,400

um and it's i don't think it's a it's a

1339

00:50:41,510 --> 00:50:38,440

an accident that deep impact in

1340

00:50:44,150 --> 00:50:41,520

armageddon um appeared just two or three

1341

00:50:46,390 --> 00:50:44,160

years after the comet schumacher level 9

1342

00:50:48,790 --> 00:50:46,400

impacts on jupiter

1343

00:50:50,870 --> 00:50:48,800

and nasa's fantastic

1344

00:50:54,069 --> 00:50:50,880

pr in publicizing that to the world with

1345

00:50:57,030 --> 00:50:54,079

the hubble images and so on um

1346

00:51:00,309 --> 00:50:57,040

so um you know i again lin i do applaud

1347

00:51:02,710 --> 00:51:00,319

you your efforts in in correcting that

1348

00:51:04,150 --> 00:51:02,720

that record thank you

1349

00:51:05,750 --> 00:51:04,160

i was having a little problem

1350

00:51:08,230 --> 00:51:05,760

coordinating my brain with my remote

1351
00:51:09,910 --> 00:51:08,240
finger and somehow other didn't show my

1352
00:51:11,349 --> 00:51:09,920
acknowledgement slide so there were a

1353
00:51:13,510 --> 00:51:11,359
lot of people who

1354
00:51:16,150 --> 00:51:13,520
collected the information i did a lot of

1355
00:51:18,549 --> 00:51:16,160
reading and a lot of research myself but

1356
00:51:19,990 --> 00:51:18,559
they're all acknowledged in the paper

1357
00:51:21,829 --> 00:51:20,000
so thank you all thank you to my

1358
00:51:23,510 --> 00:51:21,839
panelists um and it's been very

1359
00:51:29,190 --> 00:51:23,520
interesting and i'm turning this over to

1360
00:51:33,430 --> 00:51:31,349
thank you heidi and the gang of three

1361
00:51:35,270 --> 00:51:33,440
pale but certainly not stale ladies that

1362
00:51:37,030 --> 00:51:35,280
was a very stimulating

1363
00:51:38,630 --> 00:51:37,040

conversation and in fact the whole the

1364

00:51:40,069 --> 00:51:38,640

whole day has been

1365

00:51:46,549 --> 00:51:40,079

i think we should thank all of our

1366

00:51:51,270 --> 00:51:48,630

so so bill asked me if i might say a few

1367

00:51:53,589 --> 00:51:51,280

words to kind of wrap up today as we

1368

00:51:55,589 --> 00:51:53,599

segue over to the reception here

1369

00:51:57,510 --> 00:51:55,599

and uh

1370

00:51:59,349 --> 00:51:57,520

my mind has been expanded i mean setting

1371

00:52:01,190 --> 00:51:59,359

aside the fact that i'm a member of the

1372

00:52:02,230 --> 00:52:01,200

you know the program committee that put

1373

00:52:04,790 --> 00:52:02,240

this together

1374

00:52:06,069 --> 00:52:04,800

this has exceeded my expectations uh

1375

00:52:08,230 --> 00:52:06,079

tremendously

1376

00:52:10,390 --> 00:52:08,240

and i think the fact that everybody is

1377

00:52:12,230 --> 00:52:10,400

still glued to their seats since 8 30

1378

00:52:14,470 --> 00:52:12,240

this morning and still raring to go says

1379

00:52:16,230 --> 00:52:14,480

we probably all feel the same way

1380

00:52:18,470 --> 00:52:16,240

i don't know how you wrap up a day like

1381

00:52:20,710 --> 00:52:18,480

this because we've covered so much uh

1382

00:52:23,109 --> 00:52:20,720

territory and we've all learned so much

1383

00:52:24,790 --> 00:52:23,119

uh from it uh that it would probably

1384

00:52:27,829 --> 00:52:24,800

take a day to wrap the whole thing up

1385

00:52:30,309 --> 00:52:27,839

you know just the past day i did want to

1386

00:52:32,950 --> 00:52:30,319

uh to share with you one

1387

00:52:36,150 --> 00:52:32,960

major insight that i got from uh from

1388

00:52:38,950 --> 00:52:36,160

today's conversations uh that i didn't

1389

00:52:40,950 --> 00:52:38,960

really appreciate up until today and i

1390

00:52:42,549 --> 00:52:40,960

say that in spite of the fact that i've

1391

00:52:45,270 --> 00:52:42,559

personally had a passion for solar

1392

00:52:47,349 --> 00:52:45,280

system exploration for all of my life in

1393

00:52:49,270 --> 00:52:47,359

fact i have to tell the story

1394

00:52:50,150 --> 00:52:49,280

i was first

1395

00:52:52,309 --> 00:52:50,160

caught

1396

00:52:54,390 --> 00:52:52,319

i guess i should say bitten by the bug

1397

00:52:55,670 --> 00:52:54,400

of insatiable curiosity at the tender

1398

00:52:57,670 --> 00:52:55,680

age of seven

1399

00:52:59,030 --> 00:52:57,680

it was a starry summer night in rural

1400

00:53:00,710 --> 00:52:59,040

indiana

1401
00:53:03,270 --> 00:53:00,720
my brother and sister and i were in the

1402
00:53:05,109 --> 00:53:03,280
back seat of my dad's packard

1403
00:53:06,710 --> 00:53:05,119
convertible the top was down we were on

1404
00:53:09,190 --> 00:53:06,720
our way home from a drive-in movie

1405
00:53:11,190 --> 00:53:09,200
theater our heads were on the back you

1406
00:53:12,710 --> 00:53:11,200
know looking up at the starry skies the

1407
00:53:14,230 --> 00:53:12,720
you know the spectacular milky way

1408
00:53:15,349 --> 00:53:14,240
overhead because the skies were really

1409
00:53:18,790 --> 00:53:15,359
dark then

1410
00:53:20,470 --> 00:53:18,800
and heidi a spectacular bolide went

1411
00:53:22,630 --> 00:53:20,480
streaming overhead

1412
00:53:25,190 --> 00:53:22,640
exploded into two pieces with a loud

1413
00:53:26,950 --> 00:53:25,200

boom sparks flying out of it

1414

00:53:29,270 --> 00:53:26,960

it was unbelievable

1415

00:53:31,270 --> 00:53:29,280

so in unison i'm sure my brother and

1416

00:53:32,870 --> 00:53:31,280

sister and i all said the same thing dad

1417

00:53:35,270 --> 00:53:32,880

what was that

1418

00:53:37,910 --> 00:53:35,280

my father was a metallurgical engineer

1419

00:53:39,430 --> 00:53:37,920

and a great fan of science fiction and

1420

00:53:41,750 --> 00:53:39,440

we had been seeing science fiction

1421

00:53:43,829 --> 00:53:41,760

movies from a tender age but to his

1422

00:53:46,069 --> 00:53:43,839

credit he answered responsibly that

1423

00:53:48,069 --> 00:53:46,079

night

1424

00:53:49,190 --> 00:53:48,079

he said son i don't think it was a

1425

00:53:50,790 --> 00:53:49,200

spaceship

1426

00:53:52,549 --> 00:53:50,800

why don't we go to the library tomorrow

1427

00:53:55,030 --> 00:53:52,559

and we'll start researching it

1428

00:53:56,390 --> 00:53:55,040

and i've had this passion and i'm sure

1429

00:53:58,150 --> 00:53:56,400

that virtually everybody in this

1430

00:54:01,190 --> 00:53:58,160

audience has as well

1431

00:54:03,430 --> 00:54:01,200

so uh getting new insights you know at

1432

00:54:05,349 --> 00:54:03,440

this time at this phase of my career i'm

1433

00:54:07,190 --> 00:54:05,359

i'm really impressed by that the thing

1434

00:54:08,710 --> 00:54:07,200

that really hit me today

1435

00:54:13,430 --> 00:54:08,720

is

1436

00:54:15,829 --> 00:54:13,440

do but i've come to appreciate even more

1437

00:54:17,910 --> 00:54:15,839

just how tenuous our fate is

1438

00:54:21,190 --> 00:54:17,920

and i think that when jason

1439

00:54:23,430 --> 00:54:21,200

callahan gave his marvelous uh

1440

00:54:24,950 --> 00:54:23,440

background this uh this morning that's

1441

00:54:26,710 --> 00:54:24,960

when it really hit me i mean we've had

1442

00:54:27,990 --> 00:54:26,720

the ups and downs we've had the lost

1443

00:54:30,630 --> 00:54:28,000

decade

1444

00:54:33,510 --> 00:54:30,640

and you know it really takes a perfect

1445

00:54:35,349 --> 00:54:33,520

alignment of three major constituencies

1446

00:54:37,190 --> 00:54:35,359

to keep us on this track

1447

00:54:39,349 --> 00:54:37,200

we got the folks who are the well

1448

00:54:41,030 --> 00:54:39,359

they're really for jim is right i'll get

1449

00:54:42,549 --> 00:54:41,040

to the fourth one in a minute

1450

00:54:44,470 --> 00:54:42,559

one of them is

1451
00:54:45,670 --> 00:54:44,480
on capitol hill

1452
00:54:47,589 --> 00:54:45,680
another is at the other end of

1453
00:54:49,750 --> 00:54:47,599
pennsylvania avenue

1454
00:54:51,750 --> 00:54:49,760
there's a constituency within nasa the

1455
00:54:53,589 --> 00:54:51,760
senior leadership when they're all

1456
00:54:56,150 --> 00:54:53,599
aligned and the public the fourth is

1457
00:54:58,230 --> 00:54:56,160
behind all of this fantastic things

1458
00:55:00,309 --> 00:54:58,240
happen but what we have seen through the

1459
00:55:03,109 --> 00:55:00,319
history of the past 50 years is

1460
00:55:05,109 --> 00:55:03,119
most of the time they're not all aligned

1461
00:55:07,510 --> 00:55:05,119
and i've realized today from our

1462
00:55:09,190 --> 00:55:07,520
conversations that the thing that sees

1463
00:55:11,109 --> 00:55:09,200

us through those periods of time and the

1464

00:55:12,870 --> 00:55:11,119

reason that we're still here

1465

00:55:14,630 --> 00:55:12,880

is the leadership

1466

00:55:17,270 --> 00:55:14,640

that our community has produced the

1467

00:55:19,750 --> 00:55:17,280

people with the vision with the moxie

1468

00:55:21,430 --> 00:55:19,760

with the savvy the passion

1469

00:55:24,069 --> 00:55:21,440

and i should say the savvy to know how

1470

00:55:26,309 --> 00:55:24,079

to use it in order to beat back the odds

1471

00:55:28,789 --> 00:55:26,319

and keep things going most of them are

1472

00:55:29,829 --> 00:55:28,799

actually in this room here today or they

1473

00:55:32,390 --> 00:55:29,839

have been

1474

00:55:34,549 --> 00:55:32,400

and i personally want to say thank you

1475

00:55:36,069 --> 00:55:34,559

thank you very much and i'm looking at

1476

00:55:38,150 --> 00:55:36,079

two of them right now

1477

00:55:40,390 --> 00:55:38,160

for what you have done to keep this

1478

00:55:42,549 --> 00:55:40,400

enterprise alive and i think that as

1479

00:55:44,789 --> 00:55:42,559

long as we can continue to do the

1480

00:55:47,270 --> 00:55:44,799

exciting things that we have been doing

1481

00:55:49,109 --> 00:55:47,280

curiosity on mars all of the new things

1482

00:55:51,910 --> 00:55:49,119

that are in the pipeline we will

1483

00:55:53,990 --> 00:55:51,920

continue to inspire the next generation

1484

00:55:55,510 --> 00:55:54,000

of leaders like the folks in this room

1485

00:55:57,349 --> 00:55:55,520

who will keep us going that's what we're

1486

00:55:59,589 --> 00:55:57,359

going to need because times are going to

1487

00:56:01,109 --> 00:55:59,599

be tough and we got to keep doing the

1488

00:56:03,670 --> 00:56:01,119

exciting stuff

1489

00:56:05,430 --> 00:56:03,680

so

1490

00:56:07,670 --> 00:56:05,440

i wanted to say one other thing i mean

1491

00:56:10,230 --> 00:56:07,680

this has been a magical day for a lot of

1492

00:56:11,589 --> 00:56:10,240

reasons but i think several of us

1493

00:56:14,870 --> 00:56:11,599

commented before that when you put

1494

00:56:17,030 --> 00:56:14,880

together historians and sociologists and

1495

00:56:18,390 --> 00:56:17,040

scientists really cool things happen who

1496

00:56:20,950 --> 00:56:18,400

would have thought

1497

00:56:24,230 --> 00:56:20,960

and i think we owe a big debt of

1498

00:56:26,630 --> 00:56:24,240

gratitude to nasa's chief historian bill

1499

00:56:34,150 --> 00:56:26,640

berry and the national air space museum

1500

00:56:38,950 --> 00:56:36,150

who had the vision to bring together

1501
00:56:40,150 --> 00:56:38,960
this diverse eclectic group of people we

1502
00:56:41,670 --> 00:56:40,160
were starting to think about doing

1503
00:56:42,870 --> 00:56:41,680
something out in pasadena wait a minute

1504
00:56:44,390 --> 00:56:42,880
just a bunch of scientists sitting

1505
00:56:47,030 --> 00:56:44,400
around talking you guys have really made

1506
00:56:51,990 --> 00:56:47,040
this thing successful and i thank you

1507
00:56:55,190 --> 00:56:53,510
i'll take the second to disavow any

1508
00:56:56,870 --> 00:56:55,200
credit for uh this thing is a it's a

1509
00:56:59,349 --> 00:56:56,880
very big team effort so thanks to

1510
00:57:01,030 --> 00:56:59,359
everybody for the help um

1511
00:57:02,390 --> 00:57:01,040
two quick announcements one there's been

1512
00:57:04,150 --> 00:57:02,400
a lot of talk about planetary protection

1513
00:57:05,910 --> 00:57:04,160

this afternoon we actually produced a

1514

00:57:08,470 --> 00:57:05,920

book about planetary protection last

1515

00:57:10,710 --> 00:57:08,480

year called when biospheres collide in

1516

00:57:12,470 --> 00:57:10,720

the nasa history program and i'm sorry

1517

00:57:13,510 --> 00:57:12,480

that i didn't think to bring some copies

1518

00:57:14,549 --> 00:57:13,520

over because we have some copies of

1519

00:57:16,309 --> 00:57:14,559

other books we've done so we'll try and

1520

00:57:17,670 --> 00:57:16,319

get some copies of planet that planetary

1521

00:57:19,109 --> 00:57:17,680

protection book over here tomorrow

1522

00:57:20,069 --> 00:57:19,119

anybody wants a copy feel free to help

1523

00:57:21,750 --> 00:57:20,079

yourself

1524

00:57:23,829 --> 00:57:21,760

okay so paid announcement about our

1525

00:57:26,789 --> 00:57:23,839

products that over with let's turn to

1526

00:57:27,990 --> 00:57:26,799

the reception those of you who

1527

00:57:29,829 --> 00:57:28,000

signed up for the reception you're

1528

00:57:31,030 --> 00:57:29,839

welcome to join us on the far side of

1529

00:57:32,470 --> 00:57:31,040

the lobby over there in the space

1530

00:57:34,870 --> 00:57:32,480

experience center

1531

00:57:36,150 --> 00:57:34,880

you'll be given a ticket for a drink and

1532

00:57:37,270 --> 00:57:36,160

if you want more than one drink you'll

1533

00:57:39,109 --> 00:57:37,280

have to buy it yourself there'll be a

1534

00:57:42,230 --> 00:57:39,119

cash bar available there

1535

00:57:44,069 --> 00:57:42,240

if you're a civil servant and you've

1536

00:57:46,230 --> 00:57:44,079

accepted more than 50 dollars worth of

1537

00:57:48,309 --> 00:57:46,240

things from lockheed martin in the last

1538

00:57:50,789 --> 00:57:48,319

year you should

1539

00:57:53,670 --> 00:57:50,799

hand some money over to

1540

00:57:55,430 --> 00:57:53,680

kelly you want to stand up for us

1541

00:57:56,470 --> 00:57:55,440

kelly victor french specter our intern

1542

00:57:57,430 --> 00:57:56,480

is going to be manning the table and

1543

00:57:59,030 --> 00:57:57,440

there'll be some of the folks over there

1544

00:58:01,030 --> 00:57:59,040

too they'll be happy to take cash or a

1545

00:58:02,630 --> 00:58:01,040

check from you to cover any difference

1546

00:58:04,549 --> 00:58:02,640

there or if you or if you're a political

1547

00:58:05,829 --> 00:58:04,559

appointee and you're required to do that

1548

00:58:07,109 --> 00:58:05,839

the rules have changed a lot thanks to

1549

00:58:08,309 --> 00:58:07,119

our friends

1550

00:58:09,750 --> 00:58:08,319

who have had some issues with

1551

00:58:11,510 --> 00:58:09,760

conferences in the last couple years so

1552

00:58:14,150 --> 00:58:11,520

please be careful about it

1553

00:58:15,829 --> 00:58:14,160

attending to those issues