

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1

00:00:00,000 --> 00:00:01,999

(music)

2

00:00:02,000 --> 00:00:03,999

You know, on WALL-E it's

towards the end

3

00:00:04,000 --> 00:00:04,999

and we're racing

to beat the clock

4

00:00:05,000 --> 00:00:05,999

to get it done in time.

5

00:00:06,000 --> 00:00:08,999

And all of a sudden,

the director says,

6

00:00:09,000 --> 00:00:12,999

"I'm so sorry, but I've

realized that if I make this

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

7

00:00:13,000 --> 00:00:14,999

critical change in the story,

8

00:00:15,000 --> 00:00:16,999

that it's going to make it
a better film.

9

00:00:17,000 --> 00:00:17,999

And I know it means
you guys are going to

10

00:00:18,000 --> 00:00:19,999

have to throw some of this
out and start over.

11

00:00:20,000 --> 00:00:21,999

And we're already down
to the wire,

12

00:00:22,000 --> 00:00:24,999

but I think it's going to
make a better movie."

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

13

00:00:25,000 --> 00:00:32,999

(music)

14

00:00:33,000 --> 00:00:33,999

>>Hi, everyone.

15

00:00:34,000 --> 00:00:34,999

Welcome to

Behind the Tech.

16

00:00:35,000 --> 00:00:35,999

I'm your host, Kevin Scott

17

00:00:36,000 --> 00:00:38,999

Chief Technology Officer

for Microsoft.

18

00:00:39,000 --> 00:00:40,999

In this podcast, we're going

to get behind the tech.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

19

00:00:41,000 --> 00:00:41,999

We'll talk with some
of the people who

20

00:00:42,000 --> 00:00:43,999

have made our modern
tech world possible,

21

00:00:44,000 --> 00:00:45,999

and understand what
motivated them

22

00:00:46,000 --> 00:00:46,999

to create what they did.

23

00:00:47,000 --> 00:00:48,999

So, join me to maybe learn
a little bit about

24

00:00:49,000 --> 00:00:50,999

the history of computing,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

25

00:00:51,000 --> 00:00:52,999

and get a few behind-the-scenes insights

26

00:00:53,000 --> 00:00:53,999

into what's happening today.

27

00:00:54,000 --> 00:00:54,999

Stick around.

28

00:00:55,000 --> 00:01:00,999

(music)

29

00:01:01,000 --> 00:01:02,999

Today, I'm here with my colleague, Christina Warren.

30

00:01:03,000 --> 00:01:04,999

Christina is a senior cloud developer advocate

31

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:01:05,000 --> 00:01:05,999

at Microsoft.

32

00:01:06,000 --> 00:01:06,999

>>Hey, Kevin.

33

00:01:07,000 --> 00:01:09,999

I'm so excited about

your conversation today.

34

00:01:10,000 --> 00:01:10,999

>>Yeah, today we're

going to chat with

35

00:01:11,000 --> 00:01:11,999

Danielle Feinberg.

36

00:01:12,000 --> 00:01:13,999

I've been really excited

to get her on the show.

37

00:01:14,000 --> 00:01:15,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>Yeah, I think this will be
really interesting

38

00:01:16,000 --> 00:01:18,999

to a lot of engineers because
not only does she work

39

00:01:19,000 --> 00:01:22,999

at one of the coolest tech
companies on the planet --

40

00:01:23,000 --> 00:01:23,999

Pixar.

41

00:01:24,000 --> 00:01:24,999

But they're also one of the
most creative companies

42

00:01:25,000 --> 00:01:25,999

on the planet.

43

00:01:26,000 --> 00:01:27,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

So, she gets to mix these

two worlds

44

00:01:28,000 --> 00:01:30,999

where she's literally

programming movies.

45

00:01:31,000 --> 00:01:34,999

>>Yeah, and she's so

incredibly inspirational

46

00:01:35,000 --> 00:01:36,999

in addition to being a

brilliant technologist

47

00:01:37,000 --> 00:01:38,999

and a brilliant storyteller,

48

00:01:39,000 --> 00:01:41,999

she also is doing this

really incredible work

49

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:01:42,000 --> 00:01:44,999

to inspire the next generation
of computer scientists

50

00:01:45,000 --> 00:01:46,999

to come into the field.

51

00:01:47,000 --> 00:01:49,999

She has a really great
platform for doing that

52

00:01:50,000 --> 00:01:54,999

in that her work is literally
so visual and captivating.

53

00:01:55,000 --> 00:01:56,999

>>And she's working on
some of the most iconic

54

00:01:57,000 --> 00:01:58,999

films and projects.

55

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:01:59,000 --> 00:02:00,999

Things that all of us

kind of look at.

56

00:02:01,000 --> 00:02:02,999

>>Yeah, absolutely.

57

00:02:03,000 --> 00:02:04,999

She goes and puts in all of

this crazy work

58

00:02:05,000 --> 00:02:06,999

on these film projects.

59

00:02:07,000 --> 00:02:09,999

And then the thing that

comes out

60

00:02:10,000 --> 00:02:13,999

is, by and large, adored by

many, many, many millions of people.

61

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:02:14,000 --> 00:02:15,999

>>Well, I can't wait to hear

what you two talk about.

62

00:02:16,000 --> 00:02:17,999

>>Yeah, so, we will

chat later.

63

00:02:18,000 --> 00:02:19,999

(music)

64

00:02:20,000 --> 00:02:22,999

Coming up next,

Danielle Feinberg.

65

00:02:23,000 --> 00:02:24,999

Danielle is Director of

Photography for Lighting

66

00:02:25,000 --> 00:02:25,999

at Pixar Studios.

67

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:02:26,000 --> 00:02:27,999

Her love of combining
computers and art

68

00:02:28,000 --> 00:02:30,999

began when she was
eight years old.

69

00:02:31,000 --> 00:02:32,999

This eventually led her
to a BA in computer science

70

00:02:33,000 --> 00:02:33,999

from Harvard.

71

00:02:34,000 --> 00:02:35,999

Today, besides making films
for Pixar,

72

00:02:36,000 --> 00:02:38,999

she mentors teenage girls,
encouraging them

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

73

00:02:39,000 --> 00:02:41,999

to pursue code, math,
and science.

74

00:02:42,000 --> 00:02:42,999

Welcome, Danielle.

75

00:02:43,000 --> 00:02:42,999

>>Thank you.

76

00:02:43,000 --> 00:02:46,999

>>I'm so, so, so excited.

(laughter)

77

00:02:47,000 --> 00:02:47,999

In some ways,
I think you have

78

00:02:48,000 --> 00:02:49,999

the best job in the world.

79

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:02:50,000 --> 00:02:52,999

Because you get to code,
and it's non-trivial,

80

00:02:53,000 --> 00:02:55,999

very mathematical coding.

81

00:02:56,000 --> 00:02:57,999

And at the same time,
you get to indulge

82

00:02:58,000 --> 00:02:58,999

your creative side.

83

00:02:59,000 --> 00:03:01,999

So, let's talk for a second
about lighting.

84

00:03:02,000 --> 00:03:03,999

Do you think you could do
a little two- or three-minute

85

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:03:04,000 --> 00:03:06,999

explanation of what the

lighting problem is?

86

00:03:07,000 --> 00:03:07,999

>>Sure.

87

00:03:08,000 --> 00:03:10,999

Because the software is

mimicking real life

88

00:03:11,000 --> 00:03:11,999

in many ways,

89

00:03:12,000 --> 00:03:15,999

if we don't put any lights in,

it actually comes out black.

90

00:03:16,000 --> 00:03:16,999

Because it looks around

the room.

91

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:03:17,000 --> 00:03:16,999

Where are the lights?

92

00:03:17,000 --> 00:03:19,999

And what color am I going
to make these pixels?

93

00:03:20,000 --> 00:03:21,999

If we don't put lights in,
it comes out black.

94

00:03:22,000 --> 00:03:23,999

>>And in some ways,
it's really similar to cinema.

95

00:03:24,000 --> 00:03:25,999

If you go onto a movie set,
you've got these lights.

96

00:03:26,000 --> 00:03:25,999

>>Absolutely.

97

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:03:26,000 --> 00:03:27,999

>>And they know where the shadows are going to fall.

98

00:03:28,000 --> 00:03:30,999

>>Yes. And it's mimicking all that, but ultimately,

99

00:03:31,000 --> 00:03:31,999

we want control.

100

00:03:32,000 --> 00:03:33,999

And so we want to kind of harness the power of

101

00:03:34,000 --> 00:03:35,999

what are the physics of real-world stuff?

102

00:03:36,000 --> 00:03:37,999

But then let me tweak that because I'm making a movie;

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

103

00:03:38,000 --> 00:03:39,999

I'm making art.

104

00:03:40,000 --> 00:03:40,999

Our biggest job in lighting is
actually to help tell the story.

105

00:03:41,000 --> 00:03:43,999

We have a humongous
impact on the mood.

106

00:03:44,000 --> 00:03:47,999

Now, if you can imagine
your favorite film,

107

00:03:48,000 --> 00:03:49,999

lit as if it all took place
at the DMV.

108

00:03:50,000 --> 00:03:51,999

With that horrible overhead,
boring, fluorescent light.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

109

00:03:52,000 --> 00:03:52,999

(Kevin laughs)

110

00:03:53,000 --> 00:03:55,999

That's a really different
movie than if you put Coco

111

00:03:56,000 --> 00:03:58,999

all in DMV lighting,
the feel of that movie

112

00:03:59,000 --> 00:03:58,999

is completely different.

113

00:03:59,000 --> 00:03:59,999

>>Yes.

114

00:04:00,000 --> 00:04:02,999

And Coco is a really good
example for a great many

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

115

00:04:03,000 --> 00:04:04,999

reasons that would just be
impossible to do

116

00:04:05,000 --> 00:04:05,999

with classic lighting.

117

00:04:06,000 --> 00:04:06,999

>>Yeah.

118

00:04:07,000 --> 00:04:07,999

>>The number of light
sources.

119

00:04:08,000 --> 00:04:09,999

Like when you go into the --

120

00:04:10,000 --> 00:04:10,999

>>Yeah. The Land
of the Dead.

121

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:04:11,000 --> 00:04:11,999

>>Oh, my god.

It's unbelievable.

122

00:04:12,000 --> 00:04:13,999

I still don't know

how you did it.

123

00:04:14,000 --> 00:04:15,999

>>Well, that first show has

8.5 million lights in it.

124

00:04:16,000 --> 00:04:18,999

And it took so much time

to figure out how to do it.

125

00:04:19,000 --> 00:04:19,999

We had to develop

new technology.

126

00:04:20,000 --> 00:04:21,999

That's like eight million more

than we ever had.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

127

00:04:22,000 --> 00:04:23,999

>>Yeah, you can't hand
place eight million.

128

00:04:24,000 --> 00:04:24,999

>>You can't hand place
all of them, right?

129

00:04:25,000 --> 00:04:26,999

And so we get the sets
department to build

130

00:04:27,000 --> 00:04:28,999

all the street lamps named
a certain way.

131

00:04:29,000 --> 00:04:30,999

And then we write the code
to find all the street lamps.

132

00:04:31,000 --> 00:04:32,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And then it points a point

at every street lamp

133

00:04:33,000 --> 00:04:32,999

that, then, is a light.

134

00:04:33,000 --> 00:04:35,999

But then you do this

super-special light

135

00:04:36,000 --> 00:04:37,999

that does all this, essentially,

fancy math

136

00:04:38,000 --> 00:04:38,999

and special sampling.

137

00:04:39,000 --> 00:04:40,999

So, the computer considers it

one expansive light,

138

00:04:41,000 --> 00:04:41,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

even though you have a
million street lamps.

139

00:04:42,000 --> 00:04:44,999

And so I can change the
color of all of them at once.

140

00:04:45,000 --> 00:04:47,999

I change how much
the throw is all at once.

141

00:04:48,000 --> 00:04:48,999

But let's say you end up in
one little spot

142

00:04:49,000 --> 00:04:50,999

where you need a couple
of those street lamps.

143

00:04:51,000 --> 00:04:52,999

You don't want it controlled
by the whole thing.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

144

00:04:53,000 --> 00:04:54,999

We have a way to upgrade
them into their own lights.

145

00:04:55,000 --> 00:04:55,999

And on and on and on.

146

00:04:56,000 --> 00:04:58,999

And so there's this massive
complexity to it.

147

00:04:59,000 --> 00:04:59,999

But put all that aside.

148

00:05:00,000 --> 00:05:01,999

We're trying to make this
magical world.

149

00:05:02,000 --> 00:05:02,999

We want you to walk into
The Land of the Dead

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

150

00:05:03,000 --> 00:05:04,999

and feel this enormous awe

151

00:05:05,000 --> 00:05:06,999

because we want you to feel

what Miguel feels.

152

00:05:07,000 --> 00:05:07,999

>>Yeah.

153

00:05:08,000 --> 00:05:08,999

I know if I were trying to do

your job,

154

00:05:09,000 --> 00:05:11,999

I am such am such a

technical nerd

155

00:05:12,000 --> 00:05:15,999

that I would be completely

overwhelmed by all of the

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

156

00:05:16,000 --> 00:05:17,999

sort of sterile technical bits.

157

00:05:18,000 --> 00:05:18,999

(Danielle chuckles)

158

00:05:19,000 --> 00:05:19,999

And there must be this

tension

159

00:05:20,000 --> 00:05:21,999

that people fight against.

160

00:05:22,000 --> 00:05:22,999

Here's all of this

technical complexity,

161

00:05:23,000 --> 00:05:26,999

and there has to be a human

story somewhere in there.

162

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:05:27,000 --> 00:05:27,999

>>Yeah.

163

00:05:28,000 --> 00:05:27,999

>>That must be interesting.

164

00:05:28,000 --> 00:05:28,999

>>Yeah.

165

00:05:29,000 --> 00:05:31,999

And I think everyone at Pixar
is so nerded-out about

166

00:05:32,000 --> 00:05:34,999

making great movies, that
anything you need to do

167

00:05:35,000 --> 00:05:37,999

to get to that point, and that
you get the opportunity

168

00:05:38,000 --> 00:05:38,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

to contribute to that,

169

00:05:39,000 --> 00:05:40,999

everybody gets totally into

it, you know.

170

00:05:41,000 --> 00:05:43,999

And so, sometimes you have

to wade through a lot of

171

00:05:44,000 --> 00:05:46,999

sort of technical stuff to

get to the thing that's

172

00:05:47,000 --> 00:05:47,999

your contribution

to the movie.

173

00:05:48,000 --> 00:05:50,999

But I think, in secret,

174

00:05:51,000 --> 00:05:53,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

most people love

that part, too. (laughter)

175

00:05:54,000 --> 00:05:54,999

>>So, I want to go

all the way back

176

00:05:55,000 --> 00:05:55,999

to when you were a little kid

177

00:05:56,000 --> 00:05:57,999

and try to understand how

this started.

178

00:05:58,000 --> 00:06:02,999

When did you start to

either develop your

179

00:06:03,000 --> 00:06:05,999

creative tendencies or

your coding tendencies

180

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:06:06,000 --> 00:06:06,999

when you were little?

181

00:06:07,000 --> 00:06:09,999

>>Yeah. My parents are

both super artistic.

182

00:06:10,000 --> 00:06:10,999

My sister's super artistic.

183

00:06:11,000 --> 00:06:13,999

We just grew up

in this family where

184

00:06:14,000 --> 00:06:17,999

the after-school stuff

or the classes or whatever

185

00:06:18,000 --> 00:06:19,999

were always art classes

that my parents put us in.

186

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:06:20,000 --> 00:06:21,999

And so that was sort of
a part of life.

187

00:06:22,000 --> 00:06:23,999

>>And what sort of stuff
did you do?

188

00:06:24,000 --> 00:06:24,999

Did you draw?
Was it painting?

189

00:06:25,000 --> 00:06:25,999

It was all kinds of stuff.

190

00:06:26,000 --> 00:06:27,999

I remember taking, when I
was really little,

191

00:06:28,000 --> 00:06:28,999

a pottery class.

192

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:06:29,000 --> 00:06:29,999

And then I remember

when I was maybe

193

00:06:30,000 --> 00:06:31,999

seven or eight

years old going --

194

00:06:32,000 --> 00:06:32,999

I grew up in

Boulder, Colorado.

195

00:06:33,000 --> 00:06:34,999

Going to the University

of Colorado, and we made

196

00:06:35,000 --> 00:06:36,999

those paper mache masks,

where you take a balloon

197

00:06:37,000 --> 00:06:38,999

and blow it up and do

paper mache on it.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

198

00:06:39,000 --> 00:06:42,999

And so I just sort of

grew up with art all around.

199

00:06:43,000 --> 00:06:45,999

And then I went to this

really cool, creative, unusual

200

00:06:46,000 --> 00:06:47,999

kind of private

elementary school

201

00:06:48,000 --> 00:06:48,999

called Bixby School

in Boulder.

202

00:06:49,000 --> 00:06:51,999

And one day, one of the

dads said,

203

00:06:52,000 --> 00:06:53,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

"Hey, I want to teach a
programming class

204

00:06:54,000 --> 00:06:54,999

after school for the kids."

205

00:06:55,000 --> 00:06:57,999

And I was eight or nine.

206

00:06:58,000 --> 00:07:00,999

This is like mid to early

'80s, I guess.

207

00:07:01,000 --> 00:07:01,999

And so it was like we had

three of the first

208

00:07:02,000 --> 00:07:02,999

Apple computers.

209

00:07:03,000 --> 00:07:03,999

>>Oh, that's awesome.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

210

00:07:04,000 --> 00:07:04,999

>>And it was, like, well,

211

00:07:05,000 --> 00:07:05,999

I don't know what
programming is,

212

00:07:06,000 --> 00:07:06,999

but I love these
computer things.

213

00:07:07,000 --> 00:07:08,999

And so it turned out to be
in the language Logo.

214

00:07:09,000 --> 00:07:11,999

And so it just happened that
my very first programming

215

00:07:12,000 --> 00:07:14,999

experience was writing

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

code that made this little

216

00:07:15,000 --> 00:07:16,999

icon of a turtle drive around
on the screen

217

00:07:17,000 --> 00:07:18,999

and everywhere it went,
it left a line.

218

00:07:19,000 --> 00:07:21,999

And so, my first coding
experience made pictures.

219

00:07:22,000 --> 00:07:22,999

And coming from this art
background, but also

220

00:07:23,000 --> 00:07:25,999

really deeply already
loving math and science,

221

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:07:26,000 --> 00:07:27,999

it was like this magical

combo of the two

222

00:07:28,000 --> 00:07:29,999

that I had no idea at the time

what it meant.

223

00:07:30,000 --> 00:07:31,999

I just was like,

"This is really cool."

224

00:07:32,000 --> 00:07:32,999

"I like programming."

(laugh)

225

00:07:33,000 --> 00:07:34,999

>>Yeah. I remember I had

similar experiences.

226

00:07:35,000 --> 00:07:39,999

The thing that enticed me

to want to understand

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

227

00:07:40,000 --> 00:07:42,999

programming more, part of
it was just -- it's the mystery.

228

00:07:43,000 --> 00:07:42,999

Right?

>>Yeah.

229

00:07:43,000 --> 00:07:43,999

And the more mysterious
the thing,

230

00:07:44,000 --> 00:07:45,999

the more I wanted to
understand how it worked.

231

00:07:46,000 --> 00:07:48,999

But the real hook for me
were video games.

232

00:07:49,000 --> 00:07:50,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

When I grew up,

the console video games

233

00:07:51,000 --> 00:07:52,999

had just started coming out.

234

00:07:53,000 --> 00:07:53,999

And I'm, like, "Oh, my god."

235

00:07:54,000 --> 00:07:54,999

"These are the most
amazing things ever."

236

00:07:55,000 --> 00:07:56,999

And there were video games
on the Apple IIe.

237

00:07:57,000 --> 00:07:57,999

And I'm like,
"I've got to figure out

238

00:07:58,000 --> 00:07:58,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

how to make these games."

239

00:07:59,000 --> 00:08:00,999

>>Or the games were --

240

00:08:01,000 --> 00:08:01,999

The kids would probably

cringe at now,

241

00:08:02,000 --> 00:08:04,999

but it was all text, but you

were writing things

242

00:08:05,000 --> 00:08:05,999

and investigating a world.

243

00:08:06,000 --> 00:08:07,999

And you had to figure out

where the key was

244

00:08:08,000 --> 00:08:08,999

and the thing that the --

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

245

00:08:09,000 --> 00:08:09,999

You know, and there were
no pictures.

246

00:08:10,000 --> 00:08:11,999

It was all text.

247

00:08:12,000 --> 00:08:12,999

But it was this whole world,

248

00:08:13,000 --> 00:08:13,999

and it all existed
inside the computer.

249

00:08:14,000 --> 00:08:14,999

>>And you were in charge
of it.

250

00:08:15,000 --> 00:08:15,999

>>Yeah. Yeah.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

251

00:08:16,000 --> 00:08:17,999

>>I just felt so empowered.

It was this amazing thing.

252

00:08:18,000 --> 00:08:18,999

So, where did you go

from there?

253

00:08:19,000 --> 00:08:19,999

You're eight years old,

you're learning Logo.

254

00:08:20,000 --> 00:08:20,999

>>Yeah.

255

00:08:21,000 --> 00:08:21,999

>>What's next?

256

00:08:22,000 --> 00:08:22,999

>>The school then

brought in --

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

257

00:08:23,000 --> 00:08:24,999

happened to be

a woman from

258

00:08:25,000 --> 00:08:25,999

the University of Colorado

259

00:08:26,000 --> 00:08:26,999

who was studying

programming.

260

00:08:27,000 --> 00:08:29,999

And she taught us

the language BASIC.

261

00:08:30,000 --> 00:08:30,999

I always think it's so

awesome that

262

00:08:31,000 --> 00:08:32,999

my second computer science

teacher was a woman.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

263

00:08:33,000 --> 00:08:33,999

And my third one

was a woman.

264

00:08:34,000 --> 00:08:34,999

And my fourth one

was a woman.

265

00:08:35,000 --> 00:08:35,999

>>Wow.

266

00:08:36,000 --> 00:08:37,999

>>Which had to have some

impact in there somewhere.

267

00:08:38,000 --> 00:08:38,999

But she came in

and taught us BASIC.

268

00:08:39,000 --> 00:08:41,999

And then, of course, I could

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

do things with BASIC

269

00:08:42,000 --> 00:08:42,999

at home on my

Apple computer.

270

00:08:43,000 --> 00:08:44,999

And so it became

just this hobby

271

00:08:45,000 --> 00:08:46,999

to program in my

spare time.

272

00:08:47,000 --> 00:08:47,999

>>And so, what were some

of the first programs

273

00:08:48,000 --> 00:08:49,999

that you wrote, that were

like actually real programs?

274

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:08:50,000 --> 00:08:52,999

>>Like, I made a horse-
racing program. (laugh)

275

00:08:53,000 --> 00:08:54,999

And it had little animations
of these horses

276

00:08:55,000 --> 00:08:56,999

running across the screen.

277

00:08:57,000 --> 00:08:57,999

>>That's awesome.

278

00:08:58,000 --> 00:08:58,999

>>You might have been
able to bet on the horses

279

00:08:59,000 --> 00:09:02,999

and whether they
won or not. (laughter)

280

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:09:03,000 --> 00:09:03,999

>>So, you literally were

just destined

281

00:09:04,000 --> 00:09:04,999

to do what you do.

282

00:09:05,000 --> 00:09:05,999

>>I think I was, yeah.

283

00:09:06,000 --> 00:09:08,999

And it's like of course, not anything
you realize at the time.

284

00:09:09,000 --> 00:09:09,999

You're just messing around
and having fun.

285

00:09:10,000 --> 00:09:10,999

>>Yeah.

286

00:09:11,000 --> 00:09:12,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And did you share any of the
programs that you wrote

287

00:09:13,000 --> 00:09:13,999

with your friends?

288

00:09:14,000 --> 00:09:14,999

Was there community there?

289

00:09:15,000 --> 00:09:15,999

Or were you just doing it
mostly for yourself?

290

00:09:16,000 --> 00:09:18,999

>>You know, it was all
for myself.

291

00:09:19,000 --> 00:09:19,999

I mean, maybe, like I did a
programming class

292

00:09:20,000 --> 00:09:21,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

in junior high.

293

00:09:22,000 --> 00:09:23,999

And there were three of us
in the class I think.

294

00:09:24,000 --> 00:09:25,999

And so I probably shared it
with the other two people

295

00:09:26,000 --> 00:09:27,999

in the class, but it wasn't a
big thing then, I don't think.

296

00:09:28,000 --> 00:09:29,999

>>Yeah. Super interesting.

297

00:09:30,000 --> 00:09:32,999

And, eventually, I read
somewhere

298

00:09:33,000 --> 00:09:33,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

in some of your bio

materials

299

00:09:34,000 --> 00:09:35,999

that you learned Pascal?

300

00:09:36,000 --> 00:09:36,999

>>Uh-huh. (affirmative)

301

00:09:37,000 --> 00:09:39,999

>>So, was this Turbo

Pascal or was it MPW Pascal?

302

00:09:40,000 --> 00:09:40,999

>>MPW Pascal.

303

00:09:41,000 --> 00:09:41,999

>>Gotcha.

304

00:09:42,000 --> 00:09:43,999

>>And in high school, I was

dying to learn something

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

305

00:09:44,000 --> 00:09:46,999

with more depth to it
than BASIC.

306

00:09:47,000 --> 00:09:47,999

Because, you know, that was
a limited language

307

00:09:48,000 --> 00:09:48,999

that I loved, but I was like,

308

00:09:49,000 --> 00:09:50,999

"I want to be a
real programmer."

309

00:09:51,000 --> 00:09:51,999

"I've got to learn --"

310

00:09:52,000 --> 00:09:53,999

And it turned out, like, okay,
Pascal seemed to be

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

311

00:09:54,000 --> 00:09:54,999

the most accessible thing.

312

00:09:55,000 --> 00:09:55,999

>>Yeah. (laugh)

313

00:09:56,000 --> 00:09:58,999

>>And then I sign up for

the Pascal class.

314

00:09:59,000 --> 00:09:59,999

And the first class, I look

around and I'm like,

315

00:10:00,000 --> 00:10:01,999

"This is sort of a weird

collection of people

316

00:10:02,000 --> 00:10:03,999

for a programming class."

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

317

00:10:04,000 --> 00:10:05,999

And the teacher comes in
and she takes roll

318

00:10:06,000 --> 00:10:06,999

and she shows us how to
turn the computers on.

319

00:10:07,000 --> 00:10:07,999

And she says,
"I'm going to get coffee."

320

00:10:08,000 --> 00:10:09,999

And she never came back.
(laugh)

321

00:10:10,000 --> 00:10:12,999

And it turned out, it was like
the classroom for derelicts.

322

00:10:13,000 --> 00:10:14,999

Where everybody sat there

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

and played video games.

323

00:10:15,000 --> 00:10:16,999

And the teacher went left

and never came back.

324

00:10:17,000 --> 00:10:17,999

(laugh)

325

00:10:18,000 --> 00:10:19,999

And so my friend and I were

so bored after the first week

326

00:10:20,000 --> 00:10:20,999

that we broke into

the cabinets

327

00:10:21,000 --> 00:10:22,999

to get the textbooks

to teach ourselves.

328

00:10:23,000 --> 00:10:23,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And so in the room full

of derelicts,

329

00:10:24,000 --> 00:10:26,999

the little honors students

were actually the people

330

00:10:27,000 --> 00:10:28,999

that were breaking and

entering on school property.

331

00:10:29,000 --> 00:10:29,999

(laugh)

332

00:10:30,000 --> 00:10:30,999

>>That's outstanding.

333

00:10:31,000 --> 00:10:31,999

Outstanding.

334

00:10:32,000 --> 00:10:33,999

And were you able

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

to teach yourself?

335

00:10:34,000 --> 00:10:35,999

>>We did a little bit.

336

00:10:36,000 --> 00:10:37,999

But I really learned freshman
year in college.

337

00:10:38,000 --> 00:10:39,999

When Pascal was the
language that they taught us

338

00:10:40,000 --> 00:10:40,999

first semester of
freshman year.

339

00:10:41,000 --> 00:10:42,999

>>And so you, basically,

340

00:10:43,000 --> 00:10:45,999

just had this positive

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

reinforcement the whole time.

341

00:10:46,000 --> 00:10:47,999

You show up at Harvard,
and you know that you

342

00:10:48,000 --> 00:10:49,999

wanted to major in
computer science?

343

00:10:50,000 --> 00:10:51,999

>>I thought I wanted to do
mechanical engineering,

344

00:10:52,000 --> 00:10:52,999

because in my head, that
was equivalent

345

00:10:53,000 --> 00:10:54,999

to inventing things.

346

00:10:55,000 --> 00:10:55,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

But it satisfied the math

and science

347

00:10:56,000 --> 00:10:56,999

and the creation thing.

348

00:10:57,000 --> 00:10:58,999

But I kind of looked

at the classes and I went,

349

00:10:59,000 --> 00:11:01,999

"These don't look that great

anymore."

350

00:11:02,000 --> 00:11:02,999

"But I can take these

computer science classes,

351

00:11:03,000 --> 00:11:04,999

because they count towards

engineering, and that'll

352

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:11:05,000 --> 00:11:05,999

buy me some time, while I

figure out

353

00:11:06,000 --> 00:11:07,999

what I actually want to do."

354

00:11:08,000 --> 00:11:08,999

And then I think it was

really two weeks

355

00:11:09,000 --> 00:11:10,999

into the first semester,

I was like,

356

00:11:11,000 --> 00:11:11,999

"Wait, why am I not

studying computer science?"

357

00:11:12,000 --> 00:11:13,999

"This is idiotic."

358

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:11:14,000 --> 00:11:15,999

So, it took me two weeks

to figure it out,

359

00:11:16,000 --> 00:11:17,999

but then it was

pretty obvious.

360

00:11:18,000 --> 00:11:19,999

>>And how mathematically

prepared were you?

361

00:11:20,000 --> 00:11:22,999

Because you chose a

specialty inside of

362

00:11:23,000 --> 00:11:24,999

computer science, where

math is really important.

363

00:11:25,000 --> 00:11:25,999

>>Yeah.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

364

00:11:26,000 --> 00:11:27,999

>>It's not just the lie that
we tell that's, like,

365

00:11:28,000 --> 00:11:28,999

"Oh, it's important
for everything."

366

00:11:29,000 --> 00:11:30,999

>>Right. Right. Totally.

367

00:11:31,000 --> 00:11:31,999

>>It's really important
for computer graphics.

368

00:11:32,000 --> 00:11:34,999

>>Yeah. You know, I
loved math.

369

00:11:35,000 --> 00:11:35,999

And I would say --

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

370

00:11:36,000 --> 00:11:37,999

I was always in honors math.

371

00:11:38,000 --> 00:11:39,999

And I was on the math team
in junior high.

372

00:11:40,000 --> 00:11:42,999

But I went to public
junior high and high school.

373

00:11:43,000 --> 00:11:45,999

And at my high school,
at least then,

374

00:11:46,000 --> 00:11:47,999

you couldn't take calculus
unless you were honors

375

00:11:48,000 --> 00:11:48,999

and a year ahead.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

376

00:11:49,000 --> 00:11:50,999

And so I was honors,
but not a year ahead.

377

00:11:51,000 --> 00:11:53,999

And so I never got to
take calculus.

378

00:11:54,000 --> 00:11:55,999

And so I got to Harvard,

379

00:11:56,000 --> 00:11:58,999

and like everybody had
taken calculus.

380

00:11:59,000 --> 00:11:59,999

And so you do the testing,
you know,

381

00:12:00,000 --> 00:12:00,999

when you first get there,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

382

00:12:01,000 --> 00:12:01,999

to see what you test into.

383

00:12:02,000 --> 00:12:04,999

And I test into calculus.

384

00:12:05,000 --> 00:12:05,999

Seemingly, obviously, right?

385

00:12:06,000 --> 00:12:06,999

>>Right.

386

00:12:07,000 --> 00:12:07,999

>>But I realized pretty

quickly that

387

00:12:08,000 --> 00:12:09,999

everyone else in there

had already taken calculus.

388

00:12:10,000 --> 00:12:10,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

They just hadn't

tested out of it.

389

00:12:11,000 --> 00:12:14,999

And so I was at a massive

deficit going into it

390

00:12:15,000 --> 00:12:16,999

because I was trying to

learn stuff that people

391

00:12:17,000 --> 00:12:18,999

had already spent

a year learning.

392

00:12:19,000 --> 00:12:20,999

>>And that's one of the

hard things.

393

00:12:21,000 --> 00:12:23,999

Like, I found when I was

teaching computer sciences.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

394

00:12:24,000 --> 00:12:26,999

I taught CS201 at the
University of Virginia --

395

00:12:27,000 --> 00:12:28,999

or I TA'd a section of it.

396

00:12:29,000 --> 00:12:31,999

And I had this huge
diversity in my class.

397

00:12:32,000 --> 00:12:34,999

I had some kids who had
no business being there

398

00:12:35,000 --> 00:12:37,999

because everything was just
trivially easy for them.

399

00:12:38,000 --> 00:12:38,999

We should have just
tested them out

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

400

00:12:39,000 --> 00:12:41,999

and sent them on to

something more challenging.

401

00:12:42,000 --> 00:12:42,999

And then we had kids who

402

00:12:43,000 --> 00:12:45,999

had no programming

experience whatsoever

403

00:12:46,000 --> 00:12:46,999

and no talent for it.

404

00:12:47,000 --> 00:12:47,999

And it was just sort of awful.

405

00:12:48,000 --> 00:12:49,999

It's just hard teaching

a class like that.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

406

00:12:50,000 --> 00:12:52,999

And it's really hard
being a student.

407

00:12:53,000 --> 00:12:55,999

How did you figure out that
it was sort of okay that

408

00:12:56,000 --> 00:12:57,999

you were where you were,

409

00:12:58,000 --> 00:12:59,999

and that the people who
were doing better than you

410

00:13:00,000 --> 00:13:01,999

it was just because
they got a chance

411

00:13:02,000 --> 00:13:03,999

to take the materials
in high school?

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

412

00:13:04,000 --> 00:13:05,999

>>You know, I don't know
that I did ever figure that out

413

00:13:06,000 --> 00:13:07,999

really until long afterwards.

414

00:13:08,000 --> 00:13:10,999

It was that thing of like you
sit in there,

415

00:13:11,000 --> 00:13:11,999

and it's full-on
imposter syndrome,

416

00:13:12,000 --> 00:13:13,999

because you're already
sitting at Harvard.

417

00:13:14,000 --> 00:13:14,999

And I already felt like,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

418

00:13:15,000 --> 00:13:15,999

"Wow, somebody made a
giant mistake

419

00:13:16,000 --> 00:13:16,999

and let me in here."

420

00:13:17,000 --> 00:13:18,999

"And they're going to
figure it out at some point."

421

00:13:19,000 --> 00:13:21,999

And so, while experiencing
all that,

422

00:13:22,000 --> 00:13:24,999

I also just beared down
and was like,

423

00:13:25,000 --> 00:13:25,999

"I'm doing this."

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

424

00:13:26,000 --> 00:13:27,999

You know, I'm pretty dogged
about that kind of thing.

425

00:13:28,000 --> 00:13:29,999

When it's like, this is what
I want to do.

426

00:13:30,000 --> 00:13:30,999

I'm not giving up.

427

00:13:31,000 --> 00:13:33,999

And I may torture myself
with all these feelings

428

00:13:34,000 --> 00:13:35,999

of not deserving to be there
or whatever it is.

429

00:13:36,000 --> 00:13:37,999

But I'm not stopping.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

430

00:13:38,000 --> 00:13:40,999

And so I put in a huge
amount of effort.

431

00:13:41,000 --> 00:13:41,999

Every week, I'm going to
the office hours

432

00:13:42,000 --> 00:13:44,999

to get almost an extra hour
or two hours of class.

433

00:13:45,000 --> 00:13:46,999

And talking to the teachers.

434

00:13:47,000 --> 00:13:48,999

And, unfortunately, those
entry-level math classes

435

00:13:49,000 --> 00:13:50,999

are taught by

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

graduate students, who

436

00:13:51,000 --> 00:13:51,999

that's not their gig.

437

00:13:52,000 --> 00:13:52,999

They're not there to teach,
and so they don't actually

438

00:13:53,000 --> 00:13:53,999

really care that much.

439

00:13:54,000 --> 00:13:55,999

So, it was those first two
semesters that were

440

00:13:56,000 --> 00:13:58,999

the hardest, because it was
hard to get to someone

441

00:13:59,000 --> 00:13:59,999

who cared about teaching

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

you as much.

442

00:14:00,000 --> 00:14:00,999

>>Yes.

443

00:14:01,000 --> 00:14:01,999

>>And then the third

semester,

444

00:14:02,000 --> 00:14:02,999

I got the woman

who was

445

00:14:03,000 --> 00:14:03,999

the head of the

math department.

446

00:14:04,000 --> 00:14:05,999

And that lady was awesome.

447

00:14:06,000 --> 00:14:06,999

And I would go to

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

office hours

448

00:14:07,000 --> 00:14:07,999

and she would totally dig
into it with me.

449

00:14:08,000 --> 00:14:08,999

>>And what class was that
you were taking?

450

00:14:09,000 --> 00:14:10,999

>>That was linear
algebra, which --

451

00:14:11,000 --> 00:14:11,999

>>Oh! Murder!

452

00:14:12,000 --> 00:14:12,999

>>Yeah.

453

00:14:13,000 --> 00:14:14,999

>>And also probably

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

the most important thing --

454

00:14:15,000 --> 00:14:16,999

>>For computer graphics,
it's like critical.

455

00:14:17,000 --> 00:14:17,999

So, it was pretty awesome.

456

00:14:18,000 --> 00:14:18,999

>>Oh, that's great.

457

00:14:19,000 --> 00:14:23,999

So, when did you decide that
computer graphics

458

00:14:24,000 --> 00:14:24,999

was the thing?

459

00:14:25,000 --> 00:14:26,999

>>Well, you know, it's that
same thing of, like,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

460

00:14:27,000 --> 00:14:27,999

I'm looking at these
engineering classes.

461

00:14:28,000 --> 00:14:29,999

I don't know, looking
at the computer classes

462

00:14:30,000 --> 00:14:30,999

and I go, (gasps)

463

00:14:31,000 --> 00:14:31,999

"Look at that computer
graphics class."

464

00:14:32,000 --> 00:14:33,999

"That sounds awesome."

465

00:14:34,000 --> 00:14:34,999

"I want to take that."

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

466

00:14:35,000 --> 00:14:35,999

"How soon can I take that?"

467

00:14:36,000 --> 00:14:36,999

"Oh, well, it's got this
prerequisite here."

468

00:14:37,000 --> 00:14:38,999

And then, "Oh, I can't take it
till junior year."

469

00:14:39,000 --> 00:14:40,999

And so I'm such a nerd.

470

00:14:41,000 --> 00:14:42,999

Sophomore year,
I emailed the professor,

471

00:14:43,000 --> 00:14:45,999

and I was, like, "Hey, I'm so
excited to take your class,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

472

00:14:46,000 --> 00:14:46,999

is there anything I could do
to get ahead?

473

00:14:47,000 --> 00:14:49,999

Is there anything I could just
play with now?"

474

00:14:50,000 --> 00:14:51,999

And I got the most confused
e-mail back from him.

475

00:14:52,000 --> 00:14:53,999

You know, I don't think most
Harvard students are like

476

00:14:54,000 --> 00:14:55,999

emailing professors for
future classes

477

00:14:56,000 --> 00:14:58,999

and asking how they can

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

do work for it. (laugh)

478

00:14:59,000 --> 00:15:01,999

He was, like, "I guess you
could go buy the textbook."

479

00:15:02,000 --> 00:15:02,999

But it must have made an
impression.

480

00:15:03,000 --> 00:15:04,999

We're still friends
to this day.

481

00:15:05,000 --> 00:15:06,999

And he clearly knew
my enthusiasm

482

00:15:07,000 --> 00:15:07,999

going into the class.

483

00:15:08,000 --> 00:15:08,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And so I go in,

484

00:15:09,000 --> 00:15:10,999

and it was really a class

about programming --

485

00:15:11,000 --> 00:15:12,999

all the underpinnings of the

programming

486

00:15:13,000 --> 00:15:13,999

to get to the 3D world.

487

00:15:14,000 --> 00:15:17,999

But there was a day where

he turned off the lights

488

00:15:18,000 --> 00:15:18,999

and he started playing

these films.

489

00:15:19,000 --> 00:15:20,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And it was the Pixar

short films

490

00:15:21,000 --> 00:15:22,999

from the late '80s and

early '90s.

491

00:15:23,000 --> 00:15:24,999

And this is, I think, '94.

492

00:15:25,000 --> 00:15:28,999

And I still completely clearly

etched in my mind,

493

00:15:29,000 --> 00:15:29,999

just watched those with

my mouth hanging open.

494

00:15:30,000 --> 00:15:33,999

Was like, "That is what I

have to do with my life."

495

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:15:34,000 --> 00:15:35,999

Because it was all this math,
science, and code

496

00:15:36,000 --> 00:15:37,999

I'd been learning, but it
created world and stories

497

00:15:38,000 --> 00:15:39,999

and characters in this way,
that to me,

498

00:15:40,000 --> 00:15:41,999

was just the most perfect
combination

499

00:15:42,000 --> 00:15:43,999

of everything that I loved.

500

00:15:44,000 --> 00:15:45,999

>>Yeah. That's so
amazing.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

501

00:15:46,000 --> 00:15:48,999

Those films made an
impact on me as well.

502

00:15:49,000 --> 00:15:49,999

And for a while, I thought
I was going to be

503

00:15:50,000 --> 00:15:50,999

a computer graphics
person, but --

504

00:15:51,000 --> 00:15:51,999

>>Really?

505

00:15:52,000 --> 00:15:52,999

>>Yeah.

506

00:15:53,000 --> 00:15:54,999

I just decided I wasn't
creative enough to do it.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

507

00:15:55,000 --> 00:15:56,999

I had no role-modeling
for it.

508

00:15:57,000 --> 00:15:58,999

And I was super happy
with my specialization.

509

00:15:59,000 --> 00:15:59,999

I was a compiler guy.

510

00:16:00,000 --> 00:16:00,999

>>Nice!

511

00:16:01,000 --> 00:16:02,999

>>I've always had this great
degree of empathy

512

00:16:03,000 --> 00:16:06,999

for software developers
and wanting to do things

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

513

00:16:07,000 --> 00:16:08,999

for them that help them
practice their craft.

514

00:16:09,000 --> 00:16:12,999

And it's underlied
my entire career.

515

00:16:13,000 --> 00:16:13,999

But I've always sort of
wondered about the

516

00:16:14,000 --> 00:16:15,999

computer graphic stuff
because it's a little bit more

517

00:16:16,000 --> 00:16:18,999

performative than maybe any
other kind of

518

00:16:19,000 --> 00:16:19,999

software engineering.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

519

00:16:20,000 --> 00:16:20,999

>>Yeah.

520

00:16:21,000 --> 00:16:24,999

>>Because, I can't show, my

"Ooh! Look, I did static

521

00:16:25,000 --> 00:16:26,999

single assignment form."

522

00:16:27,000 --> 00:16:27,999

And show it to my mom and

like, "Yay!" (laugh)

523

00:16:28,000 --> 00:16:29,999

No, none of that.

524

00:16:30,000 --> 00:16:31,999

Whereas you

worked on Coco.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

525

00:16:32,000 --> 00:16:33,999

And I literally wept

three times

526

00:16:34,000 --> 00:16:34,999

in the course of this movie

527

00:16:35,000 --> 00:16:37,999

because it was so

compelling.

528

00:16:38,000 --> 00:16:38,999

So, that must be amazing.

529

00:16:39,000 --> 00:16:39,999

>>It's incredible. Yeah.

530

00:16:40,000 --> 00:16:40,999

It's really incredible.

531

00:16:41,000 --> 00:16:42,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>So, you see these films

in this class,

532

00:16:43,000 --> 00:16:45,999

and then how soon
were you able to

533

00:16:46,000 --> 00:16:48,999

connect programming to you
being able...

534

00:16:49,000 --> 00:16:50,999

That must have been a
really interesting journey.

535

00:16:51,000 --> 00:16:51,999

>>Yeah.

536

00:16:52,000 --> 00:16:53,999

Thinking back to then,
it was like,

537

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:16:54,000 --> 00:16:54,999

okay, I saw these Pixar

short films.

538

00:16:55,000 --> 00:16:55,999

But what's Pixar?

539

00:16:56,000 --> 00:16:57,999

Nobody knows what

Pixar is.

540

00:16:58,000 --> 00:16:58,999

It's nothing right now.

541

00:16:59,000 --> 00:17:01,999

It's some animation studio

you've never heard of.

542

00:17:02,000 --> 00:17:02,999

And even if I wanted to

watch those films again,

543

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:17:03,000 --> 00:17:04,999

I couldn't, because it's not

like we had iTunes

544

00:17:05,000 --> 00:17:05,999

or YouTube or something.

545

00:17:06,000 --> 00:17:06,999

You had to go to a

546

00:17:07,000 --> 00:17:09,999

Spike and Mike's Animation

festival in a theater

547

00:17:10,000 --> 00:17:12,999

or someone had to have

an actual copy of them --

548

00:17:13,000 --> 00:17:16,999

a VHS tape, perhaps. (laugh)

549

00:17:17,000 --> 00:17:18,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And so the next year,

my senior year,

550

00:17:19,000 --> 00:17:19,999

Toy Story came out.

551

00:17:20,000 --> 00:17:22,999

And it was like suddenly

that's that same company

552

00:17:23,000 --> 00:17:23,999

that made those short films.

553

00:17:24,000 --> 00:17:25,999

And they've made this

feature film.

554

00:17:26,000 --> 00:17:28,999

It was the first feature-length,

computer-animated film

555

00:17:29,000 --> 00:17:30,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

that was ever made.

556

00:17:31,000 --> 00:17:31,999

And I was, like,

"Those are the guys."

557

00:17:32,000 --> 00:17:33,999

But how do I work there?

558

00:17:34,000 --> 00:17:37,999

Like, what do I have to do

to qualify to work there?

559

00:17:38,000 --> 00:17:38,999

Because who knows?

560

00:17:39,000 --> 00:17:40,999

Because it's this brand-new

thing that's coming up.

561

00:17:41,000 --> 00:17:41,999

So I thought,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

562

00:17:42,000 --> 00:17:44,999

"Well, I'd better get some art
on my resume."

563

00:17:45,000 --> 00:17:45,999

So, I took a couple classes
through the art department.

564

00:17:46,000 --> 00:17:49,999

And my senior year, I took a
year-long animation class.

565

00:17:50,000 --> 00:17:51,999

That was more traditional
animation.

566

00:17:52,000 --> 00:17:52,999

But for my senior film,

567

00:17:53,000 --> 00:17:55,999

I managed to use some

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

computer animation

568

00:17:56,000 --> 00:17:56,999

for my senior film.

569

00:17:57,000 --> 00:17:57,999

>>Oh, that's awesome.

570

00:17:58,000 --> 00:17:58,999

Do you still have that

laying around?

571

00:17:59,000 --> 00:17:59,999

>>I do. The lighting is

atrocious.

572

00:18:00,000 --> 00:18:00,999

I didn't know what

lighting was at all.

573

00:18:01,000 --> 00:18:01,999

It's really funny,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

embarrassing.

574

00:18:02,000 --> 00:18:03,999

The whole thing's

embarrassing.

575

00:18:04,000 --> 00:18:04,999

But it sure was fun.

576

00:18:05,000 --> 00:18:06,999

And so I started to get a

little bit of a sense,

577

00:18:07,000 --> 00:18:08,999

but there were no

role models.

578

00:18:09,000 --> 00:18:11,999

There was no information

anywhere.

579

00:18:12,000 --> 00:18:12,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And so it was kind of
scrapping to try and

580

00:18:13,000 --> 00:18:14,999

figure out what to do
to get qualified.

581

00:18:15,000 --> 00:18:15,999

It turned out, I probably
didn't even have to think

582

00:18:16,000 --> 00:18:17,999

that hard about it.

583

00:18:18,000 --> 00:18:18,999

Because having gotten a
computer science degree

584

00:18:19,000 --> 00:18:20,999

and specialized in
computer graphics,

585

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:18:21,000 --> 00:18:22,999

no one had any experience.

586

00:18:23,000 --> 00:18:23,999

So, when I ended up

applying to Pixar,

587

00:18:24,000 --> 00:18:25,999

they were like, "You're great,

come work on this next film,

588

00:18:26,000 --> 00:18:28,999

A Bug's Life, because we

need people that know

589

00:18:29,000 --> 00:18:29,999

computer science.

590

00:18:30,000 --> 00:18:31,999

And if you know computer

graphics, fantastic."

591

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:18:32,000 --> 00:18:34,999

>>I remember going to see

A Bug's Life

592

00:18:35,000 --> 00:18:37,999

when I was taking a graduate
computer graphics seminar.

593

00:18:38,000 --> 00:18:38,999

>>Oh, really?

594

00:18:39,000 --> 00:18:41,999

>>And so we -- yeah, this
was a great part of this class,

595

00:18:42,000 --> 00:18:42,999

these full-length, animated
movies.

596

00:18:43,000 --> 00:18:43,999

So, there was Bug's Life.

597

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:18:44,000 --> 00:18:45,999

And there was Antz

from DreamWorks, I guess.

598

00:18:46,000 --> 00:18:46,999

>>Yeah. Yeah.

599

00:18:47,000 --> 00:18:47,999

>>And the pipeline was

just starting to go.

600

00:18:48,000 --> 00:18:52,999

And so part of our duty

as scholars,

601

00:18:53,000 --> 00:18:54,999

we would go see

these movies.

602

00:18:55,000 --> 00:18:55,999

>>Shoot, that's so hard.

603

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:18:56,000 --> 00:18:56,999

>>Yes, so difficult.

604

00:18:57,000 --> 00:18:59,999

And it just struck me that the
progress was so fast.

605

00:19:00,000 --> 00:19:02,999

How was experiencing that
as a Pixar employee?

606

00:19:03,000 --> 00:19:03,999

Because it must have been

607

00:19:04,000 --> 00:19:05,999

like just exponential curve
after exponential --

608

00:19:06,000 --> 00:19:07,999

>>Oh, it was insane.

609

00:19:08,000 --> 00:19:08,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

So, coming in after

Toy Story,

610

00:19:09,000 --> 00:19:10,999

I'm coming in early '97.

611

00:19:11,000 --> 00:19:13,999

Toy Story came out in

November of '95.

612

00:19:14,000 --> 00:19:14,999

And Bug's Life comes out

towards the end of '98.

613

00:19:15,000 --> 00:19:17,999

So, I worked on A Bug's Life

for over a year and a half.

614

00:19:18,000 --> 00:19:21,999

And sort of seeing a little bit

of how Toy Story was made

615

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:19:22,000 --> 00:19:24,999

and the giant leaps they

had made

616

00:19:25,000 --> 00:19:27,999

just in the software we were

using to make A Bug's Life.

617

00:19:28,000 --> 00:19:29,999

And the problems that were

faced were, like,

618

00:19:30,000 --> 00:19:32,999

on Toy Story, you're making

plastic toys

619

00:19:33,000 --> 00:19:35,999

that have very defined ways

in which they move.

620

00:19:36,000 --> 00:19:38,999

The best thing the computer

can do is make plastic.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

621

00:19:39,000 --> 00:19:39,999

For whatever dumb reason,

622

00:19:40,000 --> 00:19:41,999

that's the easiest thing

to simulate.

623

00:19:42,000 --> 00:19:42,999

So, now you're making

these bugs,

624

00:19:43,000 --> 00:19:44,999

down on the forest floor,

625

00:19:45,000 --> 00:19:48,999

with all this organic

plants and nature.

626

00:19:49,000 --> 00:19:52,999

And it was like such a

massive leap harder

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

627

00:19:53,000 --> 00:19:53,999

that on A Bug's Life,

628

00:19:54,000 --> 00:19:54,999

the last department that

happens is lighting.

629

00:19:55,000 --> 00:19:56,999

The last creative step.

630

00:19:57,000 --> 00:19:57,999

And they got half of my

department,

631

00:19:58,000 --> 00:19:58,999

the rendering department,

632

00:19:59,000 --> 00:20:01,999

to come help on lighting so

we could make the deadline

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

633

00:20:02,000 --> 00:20:02,999

because everybody's missing
their deadlines

634

00:20:03,000 --> 00:20:04,999

because it's so, so, so,
so hard.

635

00:20:05,000 --> 00:20:05,999

And we're trying to
hit the deadline.

636

00:20:06,000 --> 00:20:06,999

And that was actually how
I got my first taste

637

00:20:07,000 --> 00:20:10,999

of lighting was on A Bug's
Life because that movie was

638

00:20:11,000 --> 00:20:12,999

so much harder than

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

Toy Story, then.

639

00:20:13,000 --> 00:20:13,999

And Toy Story was so hard

because they're

640

00:20:14,000 --> 00:20:16,999

making it all up as they

go, too.

641

00:20:17,000 --> 00:20:16,999

You know, I get asked,

642

00:20:17,000 --> 00:20:17,999

"What was the hardest film

you've ever worked on?"

643

00:20:18,000 --> 00:20:18,999

I'm, like, "They all are."

644

00:20:19,000 --> 00:20:19,999

When you're working

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

on those films,

645

00:20:20,000 --> 00:20:22,999

every single one feels like

it's the hardest one

646

00:20:23,000 --> 00:20:23,999

you've ever done.

647

00:20:24,000 --> 00:20:27,999

We aren't biting off quite as

gigantic leaps of change

648

00:20:28,000 --> 00:20:29,999

and breaking barriers in

terms of, like,

649

00:20:30,000 --> 00:20:30,999

What? Hair?

We can't do hair.

650

00:20:31,000 --> 00:20:31,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

Now we can do hair.

651

00:20:32,000 --> 00:20:32,999

What? Curly hair?

We can't do curly hair.

652

00:20:33,000 --> 00:20:36,999

Okay, now it's not quite as

huge of barriers,

653

00:20:37,000 --> 00:20:37,999

but each one still feels like

it's the hardest thing

654

00:20:38,000 --> 00:20:39,999

you've ever worked on.

655

00:20:40,000 --> 00:20:42,999

>>Yeah. And I remember

seeing A Bug's Life.

656

00:20:43,000 --> 00:20:44,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

One of the incredible things

was just how many more

657

00:20:45,000 --> 00:20:47,999

polygons were in that movie

than Toy Story.

658

00:20:48,000 --> 00:20:49,999

>>Yeah. Yeah.

659

00:20:50,000 --> 00:20:50,999

>>Do you remember,

count-wise,

660

00:20:51,000 --> 00:20:52,999

what the increase in

complexity was?

661

00:20:53,000 --> 00:20:53,999

>>I don't know.

662

00:20:54,000 --> 00:20:54,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

A while ago, someone said,

663

00:20:55,000 --> 00:20:57,999

"Oh, if we tried to render
the original Toy Story now

664

00:20:58,000 --> 00:20:59,999

on our machines, it would
take like five minutes."

665

00:21:00,000 --> 00:21:01,999

Or something insane,
you know?

666

00:21:02,000 --> 00:21:03,999

But, I mean, it was.

667

00:21:04,000 --> 00:21:05,999

And especially if you look
at those couple early films,

668

00:21:06,000 --> 00:21:08,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

if you went from Toy Story

to Finding Nemo,

669

00:21:09,000 --> 00:21:11,999

the sort of visual jumps that

each one was taking

670

00:21:12,000 --> 00:21:12,999

was pretty phenomenal.

671

00:21:13,000 --> 00:21:13,999

>>Yeah, staggering.

672

00:21:14,000 --> 00:21:15,999

>>And part of that is

the software.

673

00:21:16,000 --> 00:21:17,999

And part of that is --

674

00:21:18,000 --> 00:21:19,999

Sharon Calahan, who I

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

learned lighting from,

675

00:21:20,000 --> 00:21:21,999

who's probably one of the

best computer lighters

676

00:21:22,000 --> 00:21:22,999

in the entire world.

677

00:21:23,000 --> 00:21:23,999

And she's saying,

678

00:21:24,000 --> 00:21:25,999

"Hey, can you do this to the
software now?"

679

00:21:26,000 --> 00:21:27,999

"Can you add this to the
software now?"

680

00:21:28,000 --> 00:21:28,999

"Can you add this?"

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

681

00:21:29,000 --> 00:21:31,999

And so part of it is people
with experience

682

00:21:32,000 --> 00:21:33,999

and technology and the two
of those things

683

00:21:34,000 --> 00:21:35,999

coming together, so your
art tool set

684

00:21:36,000 --> 00:21:36,999

is getting better and better.

685

00:21:37,000 --> 00:21:40,999

>>I can sort of understand
how you went from

686

00:21:41,000 --> 00:21:43,999

eight years old through your

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

senior year at Harvard,

687

00:21:44,000 --> 00:21:46,999

and you just sort of learned

all of the mechanical bits

688

00:21:47,000 --> 00:21:48,999

about how you write

computer programs

689

00:21:49,000 --> 00:21:51,999

and even the mathematical

bits about how you do

690

00:21:52,000 --> 00:21:54,999

like 3D modeling and the

cool lighting stuff.

691

00:21:55,000 --> 00:21:56,999

How did you learn

how to tell stories?

692

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:21:57,000 --> 00:21:59,999

>>That's really from

being at Pixar

693

00:22:00,000 --> 00:22:00,999

and just being around

694

00:22:01,000 --> 00:22:02,999

some of the best storytellers

in the world.

695

00:22:03,000 --> 00:22:04,999

And understanding that

696

00:22:05,000 --> 00:22:06,999

a massive part of it

is iteration,

697

00:22:07,000 --> 00:22:08,999

and people understanding

what makes great stories.

698

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:22:09,000 --> 00:22:12,999

And also the amount of
feedback people get

699

00:22:13,000 --> 00:22:14,999

at Pixar, there are directors
that have made

700

00:22:15,000 --> 00:22:16,999

these blockbusters, but they
still are talking to

701

00:22:17,000 --> 00:22:17,999

the creative brain trust.

702

00:22:18,000 --> 00:22:18,999

They're showing them
their movie,

703

00:22:19,000 --> 00:22:19,999

taking their comments.

704

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:22:20,000 --> 00:22:21,999

You know, art is such
a hard thing.

705

00:22:22,000 --> 00:22:23,999

Where, when you get into it,
you can't always see

706

00:22:24,000 --> 00:22:24,999

what's happening.

707

00:22:25,000 --> 00:22:27,999

You get really kind of
myopic about it.

708

00:22:28,000 --> 00:22:29,999

And to have these people
that you trust

709

00:22:30,000 --> 00:22:30,999

be able to give you
this feedback on it

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

710

00:22:31,000 --> 00:22:32,999

so that you can pull back
out again and you can

711

00:22:33,000 --> 00:22:34,999

solve those problems and
understand

712

00:22:35,000 --> 00:22:36,999

so that the movie plays for
all kinds of people,

713

00:22:37,000 --> 00:22:38,999

maybe not just you.

714

00:22:39,000 --> 00:22:40,999

And you watch all of that
happen over and over again

715

00:22:41,000 --> 00:22:42,999

and like, you know,
on WALL-E,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

716

00:22:43,000 --> 00:22:43,999

it's towards the end.

717

00:22:44,000 --> 00:22:44,999

And we're racing

to beat the clock,

718

00:22:45,000 --> 00:22:45,999

to get it done in time.

719

00:22:46,000 --> 00:22:48,999

And all of a sudden,

the director says,

720

00:22:49,000 --> 00:22:51,999

"I'm so sorry, but I've

realized that if I make

721

00:22:52,000 --> 00:22:53,999

this critical change

in the story,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

722

00:22:54,000 --> 00:22:55,999

that it's going to make it
a better film."

723

00:22:56,000 --> 00:22:56,999

"And I know it means
you guys are going to

724

00:22:57,000 --> 00:22:59,999

have to throw some of this
out and start over,

725

00:23:00,000 --> 00:23:01,999

and we're already down
to the wire,

726

00:23:02,000 --> 00:23:03,999

but I think it's going to
make a better movie."

727

00:23:04,000 --> 00:23:06,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And everyone sort of goes,

"Okay." You know?

728

00:23:07,000 --> 00:23:09,999

And there's no complaining
after that.

729

00:23:10,000 --> 00:23:10,999

I mean, our spouses and
stuff might complain

730

00:23:11,000 --> 00:23:12,999

a little bit because we're
gone on Saturdays.

731

00:23:13,000 --> 00:23:14,999

But people are so
dedicated to it that

732

00:23:15,000 --> 00:23:16,999

that you just go after it
in that way.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

733

00:23:17,000 --> 00:23:18,999

>>Yeah. And is that

something that Pixar had

734

00:23:19,000 --> 00:23:19,999

from the beginning?

735

00:23:20,000 --> 00:23:21,999

I know I've read the

famous story

736

00:23:22,000 --> 00:23:25,999

about the restart on

Toy Story 2.

737

00:23:26,000 --> 00:23:27,999

Where John Lasseter

wasn't as involved,

738

00:23:28,000 --> 00:23:28,999

and then came in and

realized that there was

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

739

00:23:29,000 --> 00:23:30,999

no way to bridge the gap

from where the movie was

740

00:23:31,000 --> 00:23:31,999

to like where it needed to be.

741

00:23:32,000 --> 00:23:32,999

>>Yeah. Yeah.

742

00:23:33,000 --> 00:23:34,999

And then just basically

a big restart.

743

00:23:35,000 --> 00:23:36,999

Was that one of those pivotal
moments in the company?

744

00:23:37,000 --> 00:23:39,999

Or did you guys always

have that?

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

745

00:23:40,000 --> 00:23:40,999

>>It's so easy to look back

and be, like,

746

00:23:41,000 --> 00:23:41,999

"Oh, we've always

done this."

747

00:23:42,000 --> 00:23:44,999

But the truth is, it felt like

748

00:23:45,000 --> 00:23:45,999

there's these guys

who are really brilliant.

749

00:23:46,000 --> 00:23:47,999

Some of the very core

Pixar folks,

750

00:23:48,000 --> 00:23:49,999

and some of them went to

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

CalArts together and stuff.

751

00:23:50,000 --> 00:23:51,999

But they were like buddies

752

00:23:52,000 --> 00:23:52,999

and they trusted each

other artistically.

753

00:23:53,000 --> 00:23:55,999

And so they're banding

together at this tiny

754

00:23:56,000 --> 00:23:57,999

little company that no one

knows who it is

755

00:23:58,000 --> 00:23:58,999

it has no money.

756

00:23:59,000 --> 00:23:59,999

You know, you're making

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

a movie.

757

00:24:00,000 --> 00:24:01,999

You don't know what
you're doing

758

00:24:02,000 --> 00:24:01,999

because no one else has
done it before.

759

00:24:02,000 --> 00:24:03,999

You're making
everything up.

760

00:24:04,000 --> 00:24:05,999

And so you're just figuring
it out as you go

761

00:24:06,000 --> 00:24:08,999

With some people
that you trust.

762

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:24:09,000 --> 00:24:09,999

And it works.

763

00:24:10,000 --> 00:24:10,999

And so then you go,

764

00:24:11,000 --> 00:24:12,999

"Whoa, okay, what part of
that worked?"

765

00:24:13,000 --> 00:24:10,999

And you go make the
next one and it works.

766

00:24:11,000 --> 00:24:11,999

And so then you go,

"Whoa, okay,

767

00:24:12,000 --> 00:24:12,999

what part of that worked?"

768

00:24:13,000 --> 00:24:13,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And you go make

the next one.

769

00:24:14,000 --> 00:24:15,999

And as you go, you find

the things that work.

770

00:24:16,000 --> 00:24:16,999

And that becomes

your process.

771

00:24:17,000 --> 00:24:18,999

But it's not like anyone

from the beginning was like

772

00:24:19,000 --> 00:24:19,999

"Well, this is the process."

773

00:24:20,000 --> 00:24:20,999

"And this is how we

should do it."

774

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:24:21,000 --> 00:24:22,999

"And it's always going to
work."

775

00:24:23,000 --> 00:24:24,999

And with the
Toy Story 2 one,

776

00:24:25,000 --> 00:24:27,999

I think, in a way, that
sealed our dedication

777

00:24:28,000 --> 00:24:31,999

to creating the very best
stories that we could,

778

00:24:32,000 --> 00:24:32,999

no matter what.

779

00:24:33,000 --> 00:24:34,999

Because what was happening
is that movie was originally

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

780

00:24:35,000 --> 00:24:35,999

supposed to go direct

to video

781

00:24:36,000 --> 00:24:37,999

which was a thing Disney

was doing a lot.

782

00:24:38,000 --> 00:24:41,999

And we all felt sort of like,

well, that in itself

783

00:24:42,000 --> 00:24:43,999

made it seem like it was

this second-rate story

784

00:24:44,000 --> 00:24:45,999

that we don't have to put as

much effort into or something.

785

00:24:46,000 --> 00:24:46,999

And that, already, even

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

at that point,

786

00:24:47,000 --> 00:24:48,999

felt really weird.

787

00:24:49,000 --> 00:24:50,999

We already knew that
wasn't what the root

788

00:24:51,000 --> 00:24:52,999

of that company.

789

00:24:53,000 --> 00:24:55,999

And so I think everybody
was actually quite relieved

790

00:24:56,000 --> 00:24:58,999

when it was we're not doing
this direct-to-video thing.

791

00:24:59,000 --> 00:25:00,999

This is going to be a

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

theatrical release,

792

00:25:01,000 --> 00:25:01,999

and we're going to drop

everything to make it

793

00:25:02,000 --> 00:25:03,999

the best thing possible.

794

00:25:04,000 --> 00:25:04,999

Actually, I think we made

that movie in nine months

795

00:25:05,000 --> 00:25:06,999

is my recollection.

796

00:25:07,000 --> 00:25:09,999

That's one of my happiest

golden moments

797

00:25:10,000 --> 00:25:11,999

of memories from then,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

798

00:25:12,000 --> 00:25:12,999

because the whole company
was sitting there

799

00:25:13,000 --> 00:25:15,999

all day, all night making
that movie together.

800

00:25:16,000 --> 00:25:17,999

And bonding that way.

801

00:25:18,000 --> 00:25:19,999

>>Yeah, so, in a way,
the mistake there

802

00:25:20,000 --> 00:25:20,999

was doing an
unnatural thing.

803

00:25:21,000 --> 00:25:22,999

>>Yeah, yeah, exactly.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

804

00:25:23,000 --> 00:25:23,999

>>Yeah, no,
that's interesting.

805

00:25:24,000 --> 00:25:27,999

And I've always
appreciated the consistent

806

00:25:28,000 --> 00:25:31,999

quality of the art and
the storytelling.

807

00:25:32,000 --> 00:25:32,999

I've got an eight-year-old
and a ten-year-old.

808

00:25:33,000 --> 00:25:36,999

And when they were much
younger,

809

00:25:37,000 --> 00:25:40,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

Disney was pushing out the
computer-animated films

810

00:25:41,000 --> 00:25:41,999

like Tinkerbell.

811

00:25:42,000 --> 00:25:43,999

So, I've seen all of these
dozens of times each.

812

00:25:44,000 --> 00:25:45,999

And they were so good.

813

00:25:46,000 --> 00:25:48,999

And you could just see
the John Lasseter touch

814

00:25:49,000 --> 00:25:49,999

on all of them.

815

00:25:50,000 --> 00:25:53,999

It's like even though they

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

were direct to video,

816

00:25:54,000 --> 00:25:54,999

they were just great.

817

00:25:55,000 --> 00:25:56,999

My kids would watch them
over and over again.

818

00:25:57,000 --> 00:25:58,999

Like, they were so good,
that my wife and I

819

00:25:59,000 --> 00:26:00,999

would watch them over
and over again with them.

820

00:26:01,000 --> 00:26:01,999

>>That's awesome.

821

00:26:02,000 --> 00:26:03,999

>>And we would

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

eagerly await

822

00:26:04,000 --> 00:26:05,999

the next one coming out.

823

00:26:06,000 --> 00:26:08,999

That's amazing discipline

for your product

824

00:26:09,000 --> 00:26:10,999

so that you're putting that

into this thing that,

825

00:26:11,000 --> 00:26:12,999

you probably could have

gotten by with less

826

00:26:13,000 --> 00:26:13,999

if you wanted.

827

00:26:14,000 --> 00:26:14,999

>>Yeah. Well, you have to

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

trust on some level

828

00:26:15,000 --> 00:26:17,999

that that's going to pay off

in the end.

829

00:26:18,000 --> 00:26:19,999

Because I think that's a

huge leap of faith

830

00:26:20,000 --> 00:26:20,999

most of the time

in the world, right?

831

00:26:21,000 --> 00:26:22,999

No, if you actually

spend this money

832

00:26:23,000 --> 00:26:25,999

to make this better,

833

00:26:26,000 --> 00:26:25,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

you will not only recoup

that money,

834

00:26:26,000 --> 00:26:27,999

but get more of it.

835

00:26:28,000 --> 00:26:29,999

It takes a very specific

kind of faith in things

836

00:26:30,000 --> 00:26:31,999

to follow through on that.

837

00:26:32,000 --> 00:26:34,999

>>So, how do you get

people to be vulnerable

838

00:26:35,000 --> 00:26:38,999

enough to put themselves

out there creatively

839

00:26:39,000 --> 00:26:41,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

in this process where you

need lots of feedback

840

00:26:42,000 --> 00:26:45,999

and lots of criticism in order

to get to the best thing?

841

00:26:46,000 --> 00:26:47,999

>>I think it's really hard.

842

00:26:48,000 --> 00:26:50,999

I mean, I think you know

coming in

843

00:26:51,000 --> 00:26:52,999

that that's what's

going to happen.

844

00:26:53,000 --> 00:26:55,999

I don't know that it's easy

for anyone.

845

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:26:56,000 --> 00:26:57,999

I mean, that's
particularly difficult.

846

00:26:58,000 --> 00:26:59,999

We've had people where
it didn't work out for them

847

00:27:00,000 --> 00:27:00,999

to be directors at Pixar.

848

00:27:01,000 --> 00:27:01,999

Being a director there,
it is no joke.

849

00:27:02,000 --> 00:27:03,999

People are like,

850

00:27:04,000 --> 00:27:04,999

"Oh, you want to direct
a film, right?"

851

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:27:05,000 --> 00:27:06,999

And I'm like, "Oh, geez,

I don't know." (laugh)

852

00:27:07,000 --> 00:27:08,999

We're a director-driven

studio.

853

00:27:09,000 --> 00:27:09,999

You're in charge of the story,

854

00:27:10,000 --> 00:27:09,999

but you're in charge of

everything else.

855

00:27:10,000 --> 00:27:11,999

Nothing goes into

those movies

856

00:27:12,000 --> 00:27:12,999

without someone presenting

it to you and saying,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

857

00:27:13,000 --> 00:27:15,999

"Do you like this? Is this
what you imagined?"

858

00:27:16,000 --> 00:27:17,999

And so you have to be a
story expert.

859

00:27:18,000 --> 00:27:19,999

And you also have to have
an opinion on everything

860

00:27:20,000 --> 00:27:22,999

or understand how to trust
your lieutenants and stuff.

861

00:27:23,000 --> 00:27:23,999

It's pretty challenging.

862

00:27:24,000 --> 00:27:26,999

>>And it must impact
everybody, though,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

863

00:27:27,000 --> 00:27:29,999

because you want everybody
whether they're

864

00:27:30,000 --> 00:27:31,999

a lighting engineer
or a storyboard artist

865

00:27:32,000 --> 00:27:36,999

or a director to take
creative risk.

866

00:27:37,000 --> 00:27:37,999

>>Yeah, definitely.

867

00:27:38,000 --> 00:27:39,999

>>And sort of the same
thing that you want

868

00:27:40,000 --> 00:27:42,999

in any high-performing

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

company, actually.

869

00:27:43,000 --> 00:27:44,999

You want employees to

come in and

870

00:27:45,000 --> 00:27:46,999

give their best idea to sort of

871

00:27:47,000 --> 00:27:49,999

push the boundaries

on things.

872

00:27:50,000 --> 00:27:51,999

And when you do that,

sometimes you fail.

873

00:27:52,000 --> 00:27:52,999

>>Yeah.

874

00:27:53,000 --> 00:27:54,999

One thing is that because

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

it's coming from

875

00:27:55,000 --> 00:27:55,999

an art background, where
people are particularly

876

00:27:56,000 --> 00:27:57,999

used to -- like, if you go to
art school,

877

00:27:58,000 --> 00:27:59,999

you get an art critique
every time.

878

00:28:00,000 --> 00:28:02,999

In my brain, it's almost
like hitting in baseball.

879

00:28:03,000 --> 00:28:04,999

If you're amazing,
you only succeed

880

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:28:05,000 --> 00:28:05,999

one out of three times

anyways.

881

00:28:06,000 --> 00:28:06,999

>>Right.

882

00:28:07,000 --> 00:28:09,999

>>And so I think some

part of it is people come

883

00:28:10,000 --> 00:28:11,999

in with that understanding

that this is art,

884

00:28:12,000 --> 00:28:14,999

and you can't always

control what's going on

885

00:28:15,000 --> 00:28:15,999

and so you need help

from people.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

886

00:28:16,000 --> 00:28:18,999

And you definitely have
to be vulnerable,

887

00:28:19,000 --> 00:28:21,999

but you also understand
the stakes involved.

888

00:28:22,000 --> 00:28:24,999

And also, that is another
part of the culture at Pixar

889

00:28:25,000 --> 00:28:26,999

is people want to take risks.

890

00:28:27,000 --> 00:28:29,999

So, a movie like WALL-E
with a robot who doesn't talk

891

00:28:30,000 --> 00:28:30,999

or Ratatouille,
with rats that cook,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

892

00:28:31,000 --> 00:28:34,999

you know, those are not
normal or low-risk ideas

893

00:28:35,000 --> 00:28:35,999

for movies, generally.

894

00:28:36,000 --> 00:28:37,999

But people are at Pixar
because that's the kind of

895

00:28:38,000 --> 00:28:39,999

stuff they want to make.

896

00:28:40,000 --> 00:28:41,999

They don't want to make
boring, schlocky films.

897

00:28:42,000 --> 00:28:43,999

They're into, like, the
excitement of it

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

898

00:28:44,000 --> 00:28:45,999

and doing cutting-edge
things.

899

00:28:46,000 --> 00:28:48,999

>>Yeah. How do you
onboard new people

900

00:28:49,000 --> 00:28:49,999

into your team?

901

00:28:50,000 --> 00:28:52,999

Like, what are the
big challenges?

902

00:28:53,000 --> 00:28:53,999

>>A lot of the challenge
is really the technology

903

00:28:54,000 --> 00:28:55,999

because we have this sort of

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

Frankenstein pipeline

904

00:28:56,000 --> 00:28:59,999

where we've built this

beast of a pipeline

905

00:29:00,000 --> 00:29:00,999

that is a beast so that

you can plug in

906

00:29:01,000 --> 00:29:01,999

different pieces

of software.

907

00:29:02,000 --> 00:29:03,999

And so part of it is our own

proprietary software,

908

00:29:04,000 --> 00:29:04,999

and part of it --

909

00:29:05,000 --> 00:29:05,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>And it evolves

pretty quickly, right?

910

00:29:06,000 --> 00:29:06,999

Probably from film to film,

they're like --

911

00:29:07,000 --> 00:29:08,999

>>Oh, yeah, day to day

sometimes.

912

00:29:09,000 --> 00:29:09,999

Which is awesome, because

then when you

913

00:29:10,000 --> 00:29:10,999

need something,

you can get something.

914

00:29:11,000 --> 00:29:12,999

You know, you're not

trying to talk to

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

915

00:29:13,000 --> 00:29:12,999

some other company

and convince them

916

00:29:13,000 --> 00:29:14,999

they need to do this

thing for you.

917

00:29:15,000 --> 00:29:18,999

But we can also plug in

third-party software as well.

918

00:29:19,000 --> 00:29:19,999

And so part of

the onboarding

919

00:29:20,000 --> 00:29:22,999

is really people getting up to

speed on that process.

920

00:29:23,000 --> 00:29:24,999

At least in lighting,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

we've made that a lot easier,

921

00:29:25,000 --> 00:29:26,999

where our tools have gotten

sort of streamlined

922

00:29:27,000 --> 00:29:28,999

and easier, and a little clearer.

923

00:29:29,000 --> 00:29:30,999

Plus, now, we're using

a software package

924

00:29:31,000 --> 00:29:32,999

that's used in other --

925

00:29:33,000 --> 00:29:33,999

it's a public package

called Katana.

926

00:29:34,000 --> 00:29:35,999

And so more people come in

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

with at least a little bit of

927

00:29:36,000 --> 00:29:36,999

experience with it.

928

00:29:37,000 --> 00:29:38,999

Where, before, it was our
own software.

929

00:29:39,000 --> 00:29:39,999

It was our own lights.

930

00:29:40,000 --> 00:29:40,999

It was everything was ours.

931

00:29:41,000 --> 00:29:42,999

And so you had to come in
and try and untangle

932

00:29:43,000 --> 00:29:44,999

the mess of what was
going on there.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

933

00:29:45,000 --> 00:29:46,999

>>Yeah. And sort of
culture-wise,

934

00:29:47,000 --> 00:29:50,999

how do you get people
acculturated?

935

00:29:51,000 --> 00:29:51,999

Because everywhere
I've worked,

936

00:29:52,000 --> 00:29:54,999

there's been this sort of
"Frankenpipeline"

937

00:29:55,000 --> 00:29:55,999

(laughter)

938

00:29:56,000 --> 00:29:56,999

of stuff, right?

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

939

00:29:57,000 --> 00:29:57,999

Like, I don't know why I
always choose to work for

940

00:29:58,000 --> 00:30:00,999

companies who have
a lot of, you know,

941

00:30:01,000 --> 00:30:02,999

"not invented here."

942

00:30:03,000 --> 00:30:03,999

But the culture stuff
is interesting as well.

943

00:30:04,000 --> 00:30:06,999

>>Yeah.

The hardest thing is that

944

00:30:07,000 --> 00:30:07,999

because the computer

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

graphics

945

00:30:08,000 --> 00:30:10,999

and visual effects industry

has been changing a lot

946

00:30:11,000 --> 00:30:13,999

over the last, I don't know,

ten years,

947

00:30:14,000 --> 00:30:15,999

where things are getting

shipped to, say,

948

00:30:16,000 --> 00:30:17,999

India and different parts

of Asia.

949

00:30:18,000 --> 00:30:20,999

And some of the visual

effects houses went under.

950

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:30:21,000 --> 00:30:20,999

And the whole industry,

951

00:30:21,000 --> 00:30:22,999

everybody was pretty

freaked out about

952

00:30:23,000 --> 00:30:24,999

how long it was going to

stick around.

953

00:30:25,000 --> 00:30:25,999

And then a lot of people,

954

00:30:26,000 --> 00:30:27,999

instead of being

at a company

955

00:30:28,000 --> 00:30:28,999

for years and years,

956

00:30:29,000 --> 00:30:29,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

they end up doing freelance

957

00:30:30,000 --> 00:30:30,999

and then kind of moving

place to place.

958

00:30:31,000 --> 00:30:32,999

And so people come

to Pixar,

959

00:30:33,000 --> 00:30:34,999

and we can't always do this,

but generally,

960

00:30:35,000 --> 00:30:36,999

when you work at Pixar,

you work at Pixar.

961

00:30:37,000 --> 00:30:37,999

We don't do contract hires.

962

00:30:38,000 --> 00:30:39,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

We don't hire per project

because we feel like

963

00:30:40,000 --> 00:30:42,999

the culture takes a hit then.

964

00:30:43,000 --> 00:30:43,999

And, you know, you build up

all this expertise,

965

00:30:44,000 --> 00:30:45,999

we want you to stay

and all these things.

966

00:30:46,000 --> 00:30:47,999

And so, people come in

and they're so used to

967

00:30:48,000 --> 00:30:50,999

having to sell

themselves quickly

968

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:30:51,000 --> 00:30:51,999

so that they can keep
getting jobs at this place

969

00:30:52,000 --> 00:30:53,999

because they're freelance.

970

00:30:54,000 --> 00:30:54,999

That's actually
the hardest thing

971

00:30:55,000 --> 00:30:55,999

is to get people to calm
down about that

972

00:30:56,000 --> 00:30:58,999

because it's so opposite
of what our culture is,

973

00:30:59,000 --> 00:30:59,999

that you're like,

974

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:31:00,000 --> 00:31:01,999

"Okay, you don't have to sell
yourself anymore."

975

00:31:02,000 --> 00:31:03,999

"Like, just come. Just be
a part of things."

976

00:31:04,000 --> 00:31:05,999

"Try not to get too
competitive about it."

977

00:31:06,000 --> 00:31:07,999

When the competitive part
gets introduced

978

00:31:08,000 --> 00:31:08,999

amongst people
within a department

979

00:31:09,000 --> 00:31:10,999

is when things
get really funky.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

980

00:31:11,000 --> 00:31:12,999

Because making these
movies is hard

981

00:31:13,000 --> 00:31:13,999

and it's like a very
team thing.

982

00:31:14,000 --> 00:31:14,999

You're very dependent
on your teammates and stuff.

983

00:31:15,000 --> 00:31:17,999

>>Yeah. Well, and it
sounds too like again,

984

00:31:18,000 --> 00:31:19,999

your process is about
competing against mediocrity

985

00:31:20,000 --> 00:31:20,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

not against each other.

986

00:31:21,000 --> 00:31:23,999

>>Exactly. Yes. Totally.

(laughter)

987

00:31:24,000 --> 00:31:25,999

>>So, speaking of this

big change in the industry,

988

00:31:26,000 --> 00:31:28,999

what are the big changes

that you've seen in

989

00:31:29,000 --> 00:31:30,999

either computer-animated

films or at Pixar

990

00:31:31,000 --> 00:31:32,999

over your tenure there?

991

00:31:33,000 --> 00:31:34,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>Well, I think at Pixar,

992

00:31:35,000 --> 00:31:36,999

a lot of it's about

the technology

993

00:31:37,000 --> 00:31:37,999

and continuing to

push it

994

00:31:38,000 --> 00:31:38,999

and see what you can do.

995

00:31:39,000 --> 00:31:40,999

And it's really about the story.

996

00:31:41,000 --> 00:31:41,999

People can think up any

story they want.

997

00:31:42,000 --> 00:31:43,999

And so, then, how does

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

the technology evolve

998

00:31:44,000 --> 00:31:45,999

to tell that story?

999

00:31:46,000 --> 00:31:47,999

And so there's

been a lot of that.

1000

00:31:48,000 --> 00:31:49,999

In general, in the sort of

bigger scope of things,

1001

00:31:50,000 --> 00:31:52,999

with VR coming out,

how does that impact us?

1002

00:31:53,000 --> 00:31:54,999

And I don't think anyone

really gets how to

1003

00:31:55,000 --> 00:31:56,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

use that in the way --

1004

00:31:57,000 --> 00:31:59,999

We tell these stories,

and we're super --

1005

00:32:00,000 --> 00:32:01,999

I don't know, really picky

and precise about

1006

00:32:02,000 --> 00:32:03,999

how we're framing a shot.

1007

00:32:04,000 --> 00:32:04,999

We spend a lot of time

thinking about

1008

00:32:05,000 --> 00:32:06,999

where we place the camera

and how we light it

1009

00:32:07,000 --> 00:32:08,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

so you're looking in the
right place.

1010

00:32:09,000 --> 00:32:10,999

And if the audience suddenly
could look

1011

00:32:11,000 --> 00:32:11,999

wherever they wanted,
I don't know if we know

1012

00:32:12,000 --> 00:32:13,999

how to tell stories
anymore.

1013

00:32:14,000 --> 00:32:14,999

And so someone will
crack the code.

1014

00:32:15,000 --> 00:32:16,999

I mean, there's already been
a bunch of VR stuff.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1015

00:32:17,000 --> 00:32:18,999

But someone will get that.

1016

00:32:19,000 --> 00:32:19,999

I don't know that it's

going to be us.

1017

00:32:20,000 --> 00:32:21,999

But, obviously, there's

stuff changing all around.

1018

00:32:22,000 --> 00:32:23,999

You look at video games,

they're doing some of that

1019

00:32:24,000 --> 00:32:24,999

sort of storytelling

in that way.

1020

00:32:25,000 --> 00:32:27,999

The visuals of storytelling

are getting much closer

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1021

00:32:28,000 --> 00:32:29,999

to the visuals of computer
animation.

1022

00:32:30,000 --> 00:32:31,999

There's all these things that
are starting to cross over.

1023

00:32:32,000 --> 00:32:33,999

And live-action movies
are using way more

1024

00:32:34,000 --> 00:32:35,999

computer graphics.

1025

00:32:36,000 --> 00:32:36,999

>>But that's an interesting
thing.

1026

00:32:37,000 --> 00:32:38,999

I mean, I remember being a

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

little kid,

1027

00:32:39,000 --> 00:32:40,999

I never enjoyed the choose-
your-own-adventure books

1028

00:32:41,000 --> 00:32:43,999

as much as I enjoyed
something where

1029

00:32:44,000 --> 00:32:44,999

the author had a perspective.

1030

00:32:45,000 --> 00:32:47,999

>>Carefully orchestrated
and set up so that the things

1031

00:32:48,000 --> 00:32:48,999

were revealed at this pace,

1032

00:32:49,000 --> 00:32:50,999

and when they wanted

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

them to be.

1033

00:32:51,000 --> 00:32:51,999

Yeah.

1034

00:32:52,000 --> 00:32:52,999

>>Yeah, it's a thing,

storytelling.

1035

00:32:53,000 --> 00:32:53,999

>>Yeah. Yeah.

1036

00:32:54,000 --> 00:32:55,999

>>Some people are good

at it.

1037

00:32:56,000 --> 00:32:56,999

And also, I'm guessing,

practice makes perfect.

1038

00:32:57,000 --> 00:32:58,999

So, after you've done it

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

for 20 years,

1039

00:32:59,000 --> 00:33:00,999

you're going to inherently

be better than

1040

00:33:01,000 --> 00:33:04,999

someone who's just trying

to extemporaneously

1041

00:33:05,000 --> 00:33:05,999

create an example for

themselves.

1042

00:33:06,000 --> 00:33:07,999

>>Right. Right. Totally.

1043

00:33:08,000 --> 00:33:08,999

>>Yeah. I think that's one

of the big challenges

1044

00:33:09,000 --> 00:33:09,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

in general with VR.

1045

00:33:10,000 --> 00:33:12,999

The technology is

actually really

1046

00:33:13,000 --> 00:33:14,999

at an incredible point

right now.

1047

00:33:15,000 --> 00:33:16,999

There are a bunch of really

compelling industrial

1048

00:33:17,000 --> 00:33:18,999

applications, but the

consumer applications

1049

00:33:19,000 --> 00:33:20,999

right now are --

1050

00:33:21,000 --> 00:33:23,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

we've got some thoughts

about what it could look like.

1051

00:33:24,000 --> 00:33:24,999

But that's the hard problem

I think.

1052

00:33:25,000 --> 00:33:25,999

>>Yeah.

1053

00:33:26,000 --> 00:33:27,999

The thing that's most

exciting about VR, to me,

1054

00:33:28,000 --> 00:33:29,999

is what you could do

in education.

1055

00:33:30,000 --> 00:33:31,999

And, like, how excited you

could get kids immediately

1056

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:33:32,000 --> 00:33:34,999

and engaged and feed them

all the things they

1057

00:33:35,000 --> 00:33:35,999

need to be learning,

1058

00:33:36,000 --> 00:33:37,999

but in a way where they

were totally engaged.

1059

00:33:38,000 --> 00:33:38,999

That, to me, is the thing.

1060

00:33:39,000 --> 00:33:40,999

I can't wait to see more of

that stuff coming out.

1061

00:33:41,000 --> 00:33:43,999

>>So, Danielle, I know one

of the things

1062

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:33:44,000 --> 00:33:48,999

that you are really passionate
about is mentoring

1063

00:33:49,000 --> 00:33:51,999

and helping the younger
generation

1064

00:33:52,000 --> 00:33:53,999

of computer scientists get
into the field

1065

00:33:54,000 --> 00:33:54,999

and to prosper.

1066

00:33:55,000 --> 00:33:56,999

So, tell us a little bit more
about that.

1067

00:33:57,000 --> 00:33:59,999

>>15 years ago, I spoke
at this girls'

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1068

00:34:00,000 --> 00:34:00,999

math and science camp.

1069

00:34:01,000 --> 00:34:01,999

And I talked to them about

how we made the films

1070

00:34:02,000 --> 00:34:05,999

at Pixar and all the math,

science, and code behind it.

1071

00:34:06,000 --> 00:34:06,999

And it was amazing to see

their eyes light up

1072

00:34:07,000 --> 00:34:07,999

when I told them about it.

1073

00:34:08,000 --> 00:34:10,999

It was kind of like when I was

sitting in that college class.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1074

00:34:11,000 --> 00:34:11,999

And so it's turned into
my passion thing.

1075

00:34:12,000 --> 00:34:13,999

I spend almost all of my free
time running around

1076

00:34:14,000 --> 00:34:16,999

giving talks, talking about the
STEM behind our movies

1077

00:34:17,000 --> 00:34:18,999

and trying to get kids
excited about that stuff.

1078

00:34:19,000 --> 00:34:19,999

>>Yeah. And I think
that's how

1079

00:34:20,000 --> 00:34:22,999

I first became aware of you.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1080

00:34:23,000 --> 00:34:24,999

I was watching one of
these documentary films.

1081

00:34:25,000 --> 00:34:26,999

And I'm, like, "Oh, who is
this enthusiastic person?"

1082

00:34:27,000 --> 00:34:28,999

(laughter)

1083

00:34:29,000 --> 00:34:30,999

And then we met at
Grace Hopper,

1084

00:34:31,000 --> 00:34:33,999

where you sat for a portrait
session for

1085

00:34:34,000 --> 00:34:34,999

Behind the Tech.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1086

00:34:35,000 --> 00:34:37,999

Yeah, I've been an enormous
fan ever since.

1087

00:34:38,000 --> 00:34:41,999

You are quite a role model
to many young

1088

00:34:42,000 --> 00:34:43,999

computer scientists.

1089

00:34:44,000 --> 00:34:45,999

And do you have particular
things that you're

1090

00:34:46,000 --> 00:34:49,999

actively pushing on
in education, other than VR,

1091

00:34:50,000 --> 00:34:51,999

that you think would be

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

super beneficial?

1092

00:34:52,000 --> 00:34:53,999

Because, you know, in a
sense, you almost

1093

00:34:54,000 --> 00:34:55,999

got an ideal path through
our educational system.

1094

00:34:56,000 --> 00:34:57,999

>>Yeah. Yeah.

1095

00:34:58,000 --> 00:34:58,999

>>And, like, my god,
what if we could

1096

00:34:59,000 --> 00:35:01,999

give that to every child who
had interest and potential?

1097

00:35:02,000 --> 00:35:02,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>That would be amazing.

1098

00:35:03,000 --> 00:35:03,999

>>Yeah.

1099

00:35:04,000 --> 00:35:04,999

>>Well, I do

have an agenda.

1100

00:35:05,000 --> 00:35:07,999

I want them to see

how exciting

1101

00:35:08,000 --> 00:35:08,999

computer science is.

1102

00:35:09,000 --> 00:35:09,999

And how exciting math

and science are.

1103

00:35:10,000 --> 00:35:13,999

So that, you know, when I

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

was in my classes in college,

1104

00:35:14,000 --> 00:35:16,999

I was one of a couple girls

studying in these huge

1105

00:35:17,000 --> 00:35:18,999

lecture halls.

1106

00:35:19,000 --> 00:35:21,999

And sort of knowing how

lonely that is,

1107

00:35:22,000 --> 00:35:24,999

and how much of a

detriment that is

1108

00:35:25,000 --> 00:35:25,999

to just learning something

that you're

1109

00:35:26,000 --> 00:35:26,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

interested in learning.

1110

00:35:27,000 --> 00:35:27,999

You have to get over this

hump of

1111

00:35:28,000 --> 00:35:29,999

every time you walk

in the room,

1112

00:35:30,000 --> 00:35:30,999

there aren't people that look

like you,

1113

00:35:31,000 --> 00:35:32,999

so everything around you is

telling you

1114

00:35:33,000 --> 00:35:33,999

you don't belong there.

1115

00:35:34,000 --> 00:35:36,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And when you have any

kind of struggles,

1116

00:35:37,000 --> 00:35:38,999

you start going, "Maybe I

don't belong here."

1117

00:35:39,000 --> 00:35:39,999

You know?

1118

00:35:40,000 --> 00:35:41,999

And so finding a way

to get girls

1119

00:35:42,000 --> 00:35:43,999

and underrepresented

minorities and stuff

1120

00:35:44,000 --> 00:35:47,999

excited about math,

science, code,

1121

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:35:48,000 --> 00:35:48,999

so that when they

hit those, they go,

1122

00:35:49,000 --> 00:35:51,999

"I don't care, this is too cool.

I'm going to keep on going."

1123

00:35:52,000 --> 00:35:53,999

That's really my agenda, is

so that we get

1124

00:35:54,000 --> 00:35:55,999

more and more diversity

in the classroom

1125

00:35:56,000 --> 00:35:57,999

so that just because you

want to study

1126

00:35:58,000 --> 00:35:58,999

computer science, you don't

have to go through

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1127

00:35:59,000 --> 00:36:01,999

this whole other extra thing

1128

00:36:02,000 --> 00:36:03,999

just to learn the thing

you want to learn.

1129

00:36:04,000 --> 00:36:04,999

>>Well, I also think

the thing that you were

1130

00:36:05,000 --> 00:36:08,999

talking about earlier around

this sort of notion of

1131

00:36:09,000 --> 00:36:11,999

imposter syndrome, and

holy crap, some of this stuff

1132

00:36:12,000 --> 00:36:12,999

is really hard.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1133

00:36:13,000 --> 00:36:15,999

Hearing somebody like you
saying that,

1134

00:36:16,000 --> 00:36:19,999

"This was hard for me,"
can give people inspiration

1135

00:36:20,000 --> 00:36:21,999

to push through.

1136

00:36:22,000 --> 00:36:26,999

It's like this weird thing with
math and computer science.

1137

00:36:27,000 --> 00:36:28,999

There are all these
apocryphal stories

1138

00:36:29,000 --> 00:36:33,999

about these great geniuses,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

people who have gone on

1139

00:36:34,000 --> 00:36:35,999

to accomplish these

incredibly difficult

1140

00:36:36,000 --> 00:36:38,999

intellectual feats.

1141

00:36:39,000 --> 00:36:40,999

And, you know, many of

them, when they write

1142

00:36:41,000 --> 00:36:43,999

their biographies, will sort of

describe these moments

1143

00:36:44,000 --> 00:36:45,999

where, oh my god, like,

I almost gave up here

1144

00:36:46,000 --> 00:36:46,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

because it was too hard or

1145

00:36:47,000 --> 00:36:48,999

nobody gave me

permission to struggle.

1146

00:36:49,000 --> 00:36:49,999

>>Yeah.

1147

00:36:50,000 --> 00:36:52,999

>>I thought that the struggle

was a sign that I was --

1148

00:36:53,000 --> 00:36:53,999

>>Not good at it.

1149

00:36:54,000 --> 00:36:55,999

>>Not good at it, and I

didn't belong because

1150

00:36:56,000 --> 00:36:57,999

all these other folks looked

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

like it's so easy.

1151

00:36:58,000 --> 00:37:00,999

I really love to hear

accomplished folks

1152

00:37:01,000 --> 00:37:04,999

sort of say that, "Man, this

really was hard."

1153

00:37:05,000 --> 00:37:07,999

Because you're just not doing

anybody any good

1154

00:37:08,000 --> 00:37:09,999

pretending that it was trivial.

1155

00:37:10,000 --> 00:37:11,999

>>No, in fact, you're getting

them out of it

1156

00:37:12,000 --> 00:37:12,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

because they go, "Well, this

isn't easy for me,

1157

00:37:13,000 --> 00:37:13,999

so, I clearly don't belong

here, right?"

1158

00:37:14,000 --> 00:37:16,999

The woman who is my

mentor at Pixar, Sharon,

1159

00:37:17,000 --> 00:37:18,999

one day, long, long ago,

she emailed me a quote.

1160

00:37:19,000 --> 00:37:21,999

And it was something along the lines of

1161

00:37:22,000 --> 00:37:23,999

"Confidence is a gift

for the creatively

1162

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:37:24,000 --> 00:37:25,999

less talented" or something

like that. (laugh)

1163

00:37:26,000 --> 00:37:27,999

And I was, like, "Oh, this

is amazing."

1164

00:37:28,000 --> 00:37:30,999

"This is like validating

all the days where I feel like

1165

00:37:31,000 --> 00:37:31,999

I don't know what I'm doing.

1166

00:37:32,000 --> 00:37:32,999

(laughter)

1167

00:37:33,000 --> 00:37:34,999

>>So, what are you most

excited about

1168

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:37:35,000 --> 00:37:36,999

on the horizon?

1169

00:37:37,000 --> 00:37:40,999

Either technologically or
inside of computer science?

1170

00:37:41,000 --> 00:37:41,999

>>Yeah.

1171

00:37:42,000 --> 00:37:43,999

If I'm going to answer that
completely honestly,

1172

00:37:44,000 --> 00:37:47,999

it really is the VR stuff
for education.

1173

00:37:48,000 --> 00:37:49,999

Just because, did you see the
Mars bus thing?

1174

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:37:50,000 --> 00:37:51,999

Where the students get on

the bus

1175

00:37:52,000 --> 00:37:52,999

and all of a sudden, they're

transported to Mars.

1176

00:37:53,000 --> 00:37:53,999

>>So cool.

1177

00:37:54,000 --> 00:37:54,999

>>And they're sitting next

to each other

1178

00:37:55,000 --> 00:37:55,999

and pointing out things

1179

00:37:56,000 --> 00:37:56,999

and yelling and screaming.

1180

00:37:57,000 --> 00:37:58,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And I was like,

"Oh, that is --"

1181

00:37:59,000 --> 00:37:59,999

And they're just driving
around.

1182

00:38:00,000 --> 00:38:01,999

It was like D.C.
or something.

1183

00:38:02,000 --> 00:38:02,999

And it's just -- it's a bus.

1184

00:38:03,000 --> 00:38:03,999

It's outfitted, and they're

1185

00:38:04,000 --> 00:38:05,999

suddenly transported
to Mars.

1186

00:38:06,000 --> 00:38:07,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And I was, like, when you
can do that kind of stuff,

1187

00:38:08,000 --> 00:38:09,999

man, that's life-transforming.

1188

00:38:10,000 --> 00:38:11,999

>>Yeah, that's awesome.

1189

00:38:12,000 --> 00:38:17,999

So, any advice that you
would give to folks

1190

00:38:18,000 --> 00:38:20,999

who are trying to enter
the field

1191

00:38:21,000 --> 00:38:21,999

either to become
programmers

1192

00:38:22,000 --> 00:38:23,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

or maybe they want to do

something like you did

1193

00:38:24,000 --> 00:38:24,999

that's more creative?

1194

00:38:25,000 --> 00:38:25,999

>>Yeah. You know,

it's funny.

1195

00:38:26,000 --> 00:38:27,999

I talk to students now,

and they come up

1196

00:38:28,000 --> 00:38:30,999

and they said, "Well, I

thought I had to choose

1197

00:38:31,000 --> 00:38:33,999

between art and STEM.

1198

00:38:34,000 --> 00:38:35,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And now I see that maybe

I don't have to do that."

1199

00:38:36,000 --> 00:38:37,999

And so that is always

really exciting to me

1200

00:38:38,000 --> 00:38:40,999

because my happiest place

is the combination

1201

00:38:41,000 --> 00:38:40,999

of those two things.

1202

00:38:41,000 --> 00:38:43,999

And now it isn't just making

animated films

1203

00:38:44,000 --> 00:38:44,999

is the only place you

can do that.

1204

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:38:45,000 --> 00:38:48,999

There's just billions of ways
you can combine those things.

1205

00:38:49,000 --> 00:38:49,999

And that's one of the exciting
things, I think, about

1206

00:38:50,000 --> 00:38:54,999

computer science period
is that you asking kids now

1207

00:38:55,000 --> 00:38:55,999

to specialize more and more.

1208

00:38:56,000 --> 00:38:56,999

And you have to decide
what you want to do.

1209

00:38:57,000 --> 00:38:58,999

I was talking to these girls,
and this 13-year-old girl says,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1210

00:38:59,000 --> 00:38:59,999

"I'm gonna be a lawyer."

1211

00:39:00,000 --> 00:39:02,999

And I was, like, "Why are
you deciding that at 13?"

1212

00:39:03,000 --> 00:39:03,999

That's insane.

1213

00:39:04,000 --> 00:39:05,999

And the thing that I'm
always saying

1214

00:39:06,000 --> 00:39:06,999

from my love of
computer science is

1215

00:39:07,000 --> 00:39:09,999

this actually opens up
the entire world to you.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1216

00:39:10,000 --> 00:39:12,999

This is the base for any job
in the world now.

1217

00:39:13,000 --> 00:39:13,999

There is an element
of computer science.

1218

00:39:14,000 --> 00:39:14,999

And so instead of shutting
things down,

1219

00:39:15,000 --> 00:39:16,999

you're actually opening
things up

1220

00:39:17,000 --> 00:39:18,999

in this really marvelous way.

1221

00:39:19,000 --> 00:39:21,999

So, I don't even remember
what the original question was.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1222

00:39:22,000 --> 00:39:22,999

But -- (laughs)

1223

00:39:23,000 --> 00:39:23,999

>>But that's a good answer.

1224

00:39:24,000 --> 00:39:26,999

And I will put an exclamation
point behind that.

1225

00:39:27,000 --> 00:39:30,999

So, like, parents and kids
who may be listening to this

1226

00:39:31,000 --> 00:39:35,999

should really understand that
we are rapidly becoming

1227

00:39:36,000 --> 00:39:39,999

a world where every
business needs technology.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1228

00:39:40,000 --> 00:39:42,999

It's not just that the
technology industry is

1229

00:39:43,000 --> 00:39:45,999

the place where technology
is being created.

1230

00:39:46,000 --> 00:39:47,999

So, we did a thing with
LinkedIn data

1231

00:39:48,000 --> 00:39:52,999

a few months back where
we showed that

1232

00:39:53,000 --> 00:39:55,999

the rate of hiring of software
engineers is growing

1233

00:39:56,000 --> 00:39:57,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

more quickly outside

of the technology industry

1234

00:39:58,000 --> 00:39:58,999

than it is within.

1235

00:39:59,000 --> 00:39:59,999

>>Really?

1236

00:40:00,000 --> 00:40:01,999

You have all sorts of things

like major automotive

1237

00:40:02,000 --> 00:40:03,999

companies hiring more

software engineers

1238

00:40:04,000 --> 00:40:04,999

than mechanical engineers.

1239

00:40:05,000 --> 00:40:08,999

And so the opportunity that's

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

going to be there

1240

00:40:09,000 --> 00:40:10,999

for these kids in the future

is absolutely incredible.

1241

00:40:11,000 --> 00:40:12,999

>>Yeah. Yeah.

1242

00:40:13,000 --> 00:40:14,999

>>I don't know about you,

but the thing that is

1243

00:40:15,000 --> 00:40:18,999

remarkable to me when

I sit down at the keyboard

1244

00:40:19,000 --> 00:40:20,999

and try to write anything

these days

1245

00:40:21,000 --> 00:40:25,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

is how rapidly our tools

are becoming more powerful.

1246

00:40:26,000 --> 00:40:28,999

So, like, what you can

accomplish with a given

1247

00:40:29,000 --> 00:40:31,999

amount of effort is becoming

more and more every day.

1248

00:40:32,000 --> 00:40:32,999

>>Absolutely.

1249

00:40:33,000 --> 00:40:34,999

>>It's just this

thing that you can do.

1250

00:40:35,000 --> 00:40:37,999

Whether you have a creative

bent or you're very analytic

1251

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:40:38,000 --> 00:40:38,999

or whatever.

1252

00:40:39,000 --> 00:40:40,999

If you master these skills,

1253

00:40:41,000 --> 00:40:42,999

you don't necessarily have to
be a computer scientist.

1254

00:40:43,000 --> 00:40:44,999

But it's going to be this tool
that you can use to --

1255

00:40:45,000 --> 00:40:45,999

>>You can use all over
the place.

1256

00:40:46,000 --> 00:40:46,999

Like, when people are saying,
"Well, you have to know

1257

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:40:47,000 --> 00:40:48,999

how to write. You have
to know how to do math."

1258

00:40:49,000 --> 00:40:51,999

And this is on par with
how important those things are

1259

00:40:52,000 --> 00:40:52,999

if not more.

1260

00:40:53,000 --> 00:40:55,999

>>Yes. And, again,
exclamation point.

1261

00:40:56,000 --> 00:40:56,999

You know, given the work
that I do,

1262

00:40:57,000 --> 00:41:00,999

it almost seems nonsensical
to have to emphasize that.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1263

00:41:01,000 --> 00:41:01,999

But you still sort of
have to.

1264

00:41:02,000 --> 00:41:03,999

It hasn't sunk in yet.

1265

00:41:04,000 --> 00:41:06,999

>>Talking about advice
for kids that want to

1266

00:41:07,000 --> 00:41:09,999

get out there and do
this stuff is that

1267

00:41:10,000 --> 00:41:11,999

as schools struggle
to keep up with

1268

00:41:12,000 --> 00:41:12,999

developing their computer
science curriculum,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1269

00:41:13,000 --> 00:41:15,999

finding teachers who

know computer science

1270

00:41:16,000 --> 00:41:16,999

who aren't like, "See you,

I'm going to go industry."

1271

00:41:17,000 --> 00:41:19,999

You know, different things

like that.

1272

00:41:20,000 --> 00:41:21,999

Sort of remembering that

if you're one of those kids,

1273

00:41:22,000 --> 00:41:24,999

that there's now all kinds of

stuff online

1274

00:41:25,000 --> 00:41:25,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

where you can teach

yourself.

1275

00:41:26,000 --> 00:41:27,999

And, also, you might

have a teacher,

1276

00:41:28,000 --> 00:41:29,999

but it doesn't make every

teacher a good teacher.

1277

00:41:30,000 --> 00:41:31,999

And so you might go

take a class,

1278

00:41:32,000 --> 00:41:33,999

and it doesn't make

any sense to you.

1279

00:41:34,000 --> 00:41:34,999

And that isn't necessarily

because you aren't

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1280

00:41:35,000 --> 00:41:36,999

any good at it, it might be
there's a teacher struggling

1281

00:41:37,000 --> 00:41:37,999

to figure out how to
teach it to you.

1282

00:41:38,000 --> 00:41:38,999

You know?

1283

00:41:39,000 --> 00:41:40,999

And so if the class
doesn't go well,

1284

00:41:41,000 --> 00:41:41,999

go find an online thing

1285

00:41:42,000 --> 00:41:43,999

and work at it a little bit.

1286

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:41:44,000 --> 00:41:45,999

Because we've all had the
bad math teacher

1287

00:41:46,000 --> 00:41:47,999

or the bad English teacher
or whatever

1288

00:41:48,000 --> 00:41:48,999

that made you feel
really crummy at it.

1289

00:41:49,000 --> 00:41:50,999

And it turned out,
it was just like

1290

00:41:51,000 --> 00:41:51,999

you needed a
different person.

1291

00:41:52,000 --> 00:41:55,999

>>Yeah. And if you can
invest in a foundation early

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1292

00:41:56,000 --> 00:41:58,999

of sort of practicing learning.

1293

00:41:59,000 --> 00:41:59,999

Of course, you want to learn
something that's valuable,

1294

00:42:00,000 --> 00:42:01,999

but just sort of the practice

1295

00:42:02,000 --> 00:42:02,999

of quickly getting information
in your head,

1296

00:42:03,000 --> 00:42:04,999

and figuring out how to
retain it

1297

00:42:05,000 --> 00:42:07,999

is, like, such a valuable tool --
especially when you have

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1298

00:42:08,000 --> 00:42:09,999

all of these online assets.

1299

00:42:10,000 --> 00:42:11,999

I'm just pathologically

curious. (laugh)

1300

00:42:12,000 --> 00:42:13,999

And so I'm just going around

teaching myself

1301

00:42:14,000 --> 00:42:14,999

all sorts of crap

on Coursera

1302

00:42:15,000 --> 00:42:16,999

or open courseware

or YouTube.

1303

00:42:17,000 --> 00:42:17,999

>>Awesome, yeah.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1304

00:42:18,000 --> 00:42:19,999

>>It's like the Matrix,
you can just download

1305

00:42:20,000 --> 00:42:20,999

this crap into
your head.

1306

00:42:21,000 --> 00:42:21,999

>>So much stuff, yeah.

1307

00:42:22,000 --> 00:42:22,999

>>I mean, it's just sort of
shocking what you can

1308

00:42:23,000 --> 00:42:23,999

teach yourself.

1309

00:42:24,000 --> 00:42:23,999

>>Yeah, totally.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1310

00:42:24,000 --> 00:42:25,999

>>Yeah, you want to go

become a blacksmith?

1311

00:42:26,000 --> 00:42:25,999

>>You can do it, yeah.

1312

00:42:26,000 --> 00:42:27,999

>>Reproduction swords.

(laughter)

1313

00:42:28,000 --> 00:42:28,999

>>Yeah, totally, you can

find anything out there.

1314

00:42:29,000 --> 00:42:29,999

>>Anything.

1315

00:42:30,000 --> 00:42:30,999

(laughter)

1316

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:42:31,000 --> 00:42:33,999

Which is really amazingly

different from

1317

00:42:34,000 --> 00:42:34,999

when you and I were kids.

1318

00:42:35,000 --> 00:42:35,999

>>Right. You had to break

into the cabinet

1319

00:42:36,000 --> 00:42:38,999

to get the textbook in the

class you were sitting in.

1320

00:42:39,000 --> 00:42:39,999

>>Yeah. Yeah.

1321

00:42:40,000 --> 00:42:40,999

The information is free now.

1322

00:42:41,000 --> 00:42:41,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>Yeah. Yeah.

1323

00:42:42,000 --> 00:42:42,999

>>Thank you so much
for coming.

1324

00:42:43,000 --> 00:42:43,999

This was amazing.

1325

00:42:44,000 --> 00:42:46,999

And I really appreciate the
opportunity to chat to you

1326

00:42:47,000 --> 00:42:48,999

about all the amazing stuff
that's happened

1327

00:42:49,000 --> 00:42:48,999

in your career.

1328

00:42:49,000 --> 00:42:49,999

>>Thank you, Kevin.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1329

00:42:50,000 --> 00:42:50,999

This is such a joy.

1330

00:42:51,000 --> 00:42:52,999

I always love our conversations

because it feels like

1331

00:42:53,000 --> 00:42:53,999

we're two peas in a pod.

1332

00:42:54,000 --> 00:42:55,999

So, it's super fun.

1333

00:42:56,000 --> 00:42:55,999

(laughter)

1334

00:42:56,000 --> 00:42:57,999

>>Awesome.

Thank you so much.

1335

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:42:58,000 --> 00:43:08,999

(music)

1336

00:43:09,000 --> 00:43:10,999

Well, thanks for joining us

for Behind the Tech.

1337

00:43:11,000 --> 00:43:12,999

So, Danielle Feinberg,

oh my god,

1338

00:43:13,000 --> 00:43:15,999

what an amazing

computer scientist.

1339

00:43:16,000 --> 00:43:18,999

And what a truly interesting

career she's had.

1340

00:43:19,000 --> 00:43:18,999

>>Yeah.

1341

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:43:19,000 --> 00:43:21,999

I really loved her advice

to the next generation

1342

00:43:22,000 --> 00:43:23,999

of telling girls or boys

or anybody else out there

1343

00:43:24,000 --> 00:43:24,999

that they don't have to

choose between

1344

00:43:25,000 --> 00:43:27,999

art and computer science.

1345

00:43:28,000 --> 00:43:28,999

>>Yes.

1346

00:43:29,000 --> 00:43:29,999

>>That the answer can just

be "Yes."

1347

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:43:30,000 --> 00:43:30,999

You know, you can do both.

1348

00:43:31,000 --> 00:43:33,999

But to something that

you said earlier is that

1349

00:43:34,000 --> 00:43:34,999

everything that we do is

1350

00:43:35,000 --> 00:43:35,999

going to be shaped

by technology.

1351

00:43:36,000 --> 00:43:39,999

>>And it will be yet another

really interesting tool

1352

00:43:40,000 --> 00:43:40,999

in everyone's arsenal.

1353

00:43:41,000 --> 00:43:43,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And great that we have folks

like Danielle

1354

00:43:44,000 --> 00:43:46,999

helping to inspire that

next generation.

1355

00:43:47,000 --> 00:43:49,999

I cannot stress enough

the importance of role models

1356

00:43:50,000 --> 00:43:54,999

in helping kids be able to

just imagine themselves

1357

00:43:55,000 --> 00:43:54,999

whether they actually are

going to choose

1358

00:43:55,000 --> 00:43:56,999

that particular career path

or not.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1359

00:43:57,000 --> 00:43:59,999

But just giving them
the material

1360

00:44:00,000 --> 00:44:01,999

where they can sort of
imagine the possibility

1361

00:44:02,000 --> 00:44:04,999

of them doing something
is so valuable.

1362

00:44:05,000 --> 00:44:06,999

Especially for younger kids.

1363

00:44:07,000 --> 00:44:08,999

>>You were talking about
how your kind of

1364

00:44:09,000 --> 00:44:10,999

initial interest in computers
came from gaming.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1365

00:44:11,000 --> 00:44:12,999

And you thought that you
were going to be

1366

00:44:13,000 --> 00:44:14,999

studying graphics.

1367

00:44:15,000 --> 00:44:15,999

You said you weren't
creative enough

1368

00:44:16,000 --> 00:44:16,999

to want to do that.

1369

00:44:17,000 --> 00:44:17,999

But you're still artistic.

1370

00:44:18,000 --> 00:44:19,999

You still do photography
and things like that.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1371

00:44:20,000 --> 00:44:23,999

Have you found that what
you do as an engineer

1372

00:44:24,000 --> 00:44:26,999

shapes the art that you do
and vice versa?

1373

00:44:27,000 --> 00:44:29,999

>>I think, not accidentally,
lots of computer programmers

1374

00:44:30,000 --> 00:44:32,999

tend to get involved
in photography.

1375

00:44:33,000 --> 00:44:35,999

And on the one hand,
a very technical thing.

1376

00:44:36,000 --> 00:44:37,999

You have to sort of understand

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

how your camera works

1377

00:44:38,000 --> 00:44:40,999

and apertures and

exposure times

1378

00:44:41,000 --> 00:44:42,999

and ISOs and all of this stuff.

1379

00:44:43,000 --> 00:44:44,999

But it's also a fairly

artistic thing

1380

00:44:45,000 --> 00:44:46,999

in that you have to be

thinking about

1381

00:44:47,000 --> 00:44:49,999

what it is that you're trying

to convey to someone

1382

00:44:50,000 --> 00:44:52,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

who's going to see

a photograph that you take.

1383

00:44:53,000 --> 00:44:56,999

And I just sort of love things

that blend those two

1384

00:44:57,000 --> 00:44:59,999

sides of your brain -- the

creative, human side

1385

00:45:00,000 --> 00:45:01,999

and the technical, nerdy side.

1386

00:45:02,000 --> 00:45:02,999

Not that nerds aren't humans.

1387

00:45:03,000 --> 00:45:03,999

(laughter)

1388

00:45:04,000 --> 00:45:04,999

>>Because there is kind of

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

this notion

1389

00:45:05,000 --> 00:45:07,999

that a lot of people have

where you don't need

1390

00:45:08,000 --> 00:45:09,999

the right brain, you don't

need creativity

1391

00:45:10,000 --> 00:45:10,999

when it comes to code.

1392

00:45:11,000 --> 00:45:12,999

I, personally, completely

disagree.

1393

00:45:13,000 --> 00:45:14,999

But I'd love to know

your perspective

1394

00:45:15,000 --> 00:45:16,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

and where you feel like

creativity, programming,

1395

00:45:17,000 --> 00:45:19,999

and engineering intersect.

1396

00:45:20,000 --> 00:45:20,999

>>Yeah, I think there's a

huge amount of overlap.

1397

00:45:21,000 --> 00:45:23,999

The good thing

about programming is

1398

00:45:24,000 --> 00:45:28,999

I think it offers a safe

haven for lots of different

1399

00:45:29,000 --> 00:45:33,999

types of folks to be able to

make really great contributions.

1400

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:45:34,000 --> 00:45:38,999

I've always thought of code
as a craft -- borderline art.

1401

00:45:39,000 --> 00:45:44,999

There's, certainly, deeply
technical parts about coding.

1402

00:45:45,000 --> 00:45:48,999

And in many cases in coding,
solving a problem is

1403

00:45:49,000 --> 00:45:52,999

more clear cut than putting
out a piece of art.

1404

00:45:53,000 --> 00:45:54,999

It either gets the bits
to the user

1405

00:45:55,000 --> 00:45:56,999

in less than a second or not.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1406

00:45:57,000 --> 00:46:00,999

It either solves a particular
algorithmic problem

1407

00:46:01,000 --> 00:46:01,999

inside of the constraints
of a problem

1408

00:46:02,000 --> 00:46:04,999

or it doesn't.

1409

00:46:05,000 --> 00:46:06,999

But in writing the code itself,
there's a lot

1410

00:46:07,000 --> 00:46:08,999

that can be fairly artistic.

1411

00:46:09,000 --> 00:46:10,999

So, for folks who have
never looked at code before,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1412

00:46:11,000 --> 00:46:13,999

it can be almost literary.

1413

00:46:14,000 --> 00:46:15,999

The difference between
elegantly written code

1414

00:46:16,000 --> 00:46:17,999

and sort of poorly
written code

1415

00:46:18,000 --> 00:46:21,999

is almost the difference between
Finnegans Wake

1416

00:46:22,000 --> 00:46:23,999

and the scribblings
of a five-year-old

1417

00:46:24,000 --> 00:46:28,999

trying to learn language
for the first time at all.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1418

00:46:29,000 --> 00:46:30,999

There's just an incredible
difference in like how

1419

00:46:31,000 --> 00:46:32,999

programmers choose to
express the solution

1420

00:46:33,000 --> 00:46:34,999

to a particular problem.

1421

00:46:35,000 --> 00:46:37,999

That's a great thing
that can be, in some cases,

1422

00:46:38,000 --> 00:46:43,999

the interesting part of the job
is the care to craft and detail

1423

00:46:44,000 --> 00:46:46,999

that you take with the thing

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

that you're doing.

1424

00:46:47,000 --> 00:46:48,999

For me, I attribute

a lot of that --

1425

00:46:49,000 --> 00:46:50,999

not that I will claim to

write the world's

1426

00:46:51,000 --> 00:46:54,999

most elegant code -- but my

grandfather and my father

1427

00:46:55,000 --> 00:46:56,999

were both in construction.

1428

00:46:57,000 --> 00:47:00,999

And, you know, my grandfather

was a great craftsman.

1429

00:47:01,000 --> 00:47:02,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

He cared about every

little detail of the things

1430

00:47:03,000 --> 00:47:05,999

that he was building.

1431

00:47:06,000 --> 00:47:07,999

And even though,

on the surface,

1432

00:47:08,000 --> 00:47:09,999

coding is very different from

building a house,

1433

00:47:10,000 --> 00:47:13,999

actually, when you look at it,

many, many, many more similarities

1434

00:47:14,000 --> 00:47:15,999

than there are differences.

1435

00:47:16,000 --> 00:47:17,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

>>Definitely, because things

need to be done

1436

00:47:18,000 --> 00:47:18,999

a certain way

to work together,

1437

00:47:19,000 --> 00:47:21,999

but you can also have a lot of

freedom to build that house

1438

00:47:22,000 --> 00:47:22,999

however you want.

1439

00:47:23,000 --> 00:47:23,999

>>Yes.

1440

00:47:24,000 --> 00:47:24,999

>>And you were

talking about

1441

00:47:25,000 --> 00:47:26,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

some of the constraints

that are in code before

1442

00:47:27,000 --> 00:47:29,999

that something's going to

work or it's not.

1443

00:47:30,000 --> 00:47:31,999

I think that kind of opens up

artistic possibilities, too.

1444

00:47:32,000 --> 00:47:33,999

When you're forced into

sometimes even

1445

00:47:34,000 --> 00:47:36,999

certain constraints that can

force people to become

1446

00:47:37,000 --> 00:47:38,999

more creative and

more artistic --

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1447

00:47:39,000 --> 00:47:39,999

>>Yeah.

1448

00:47:40,000 --> 00:47:40,999

>>in what they decide to build.

1449

00:47:41,000 --> 00:47:44,999

>>And, also, sometimes

when you're coding,

1450

00:47:45,000 --> 00:47:45,999

you're building a system,

1451

00:47:46,000 --> 00:47:50,999

you can put little

flourishes in there that are

1452

00:47:51,000 --> 00:47:51,999

incredibly satisfying.

1453

00:47:52,000 --> 00:47:52,999

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

And you may be the

only person

1454

00:47:53,000 --> 00:47:54,999

who knows that they're there.

1455

00:47:55,000 --> 00:47:57,999

You know, the same way that

a stonemason might

1456

00:47:58,000 --> 00:47:59,999

carve an extra little thing

into something.

1457

00:48:00,000 --> 00:48:01,999

And she may be the only

person in the world

1458

00:48:02,000 --> 00:48:02,999

who knows that that

thing is there,

1459

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

00:48:03,000 --> 00:48:04,999

but incredibly satisfying.

1460

00:48:05,000 --> 00:48:05,999

>>I love it.

1461

00:48:06,000 --> 00:48:07,999

>>So, once again,

it's been great chatting.

1462

00:48:08,000 --> 00:48:08,999

See you next time.

1463

00:48:09,000 --> 00:48:09,999

>>See ya!

1464

00:48:10,000 --> 00:48:10,999

(music)

1465

00:48:11,000 --> 00:48:11,999

>>Be sure to join us

next time

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1466

00:48:12,000 --> 00:48:12,999

on Behind the Tech.

1467

00:48:13,000 --> 00:48:14,999

We'll be chatting with

Reid Hoffman --

1468

00:48:15,000 --> 00:48:16,999

investor, author,

and entrepreneur.

1469

00:48:17,000 --> 00:48:18,999

Reid was co-founder

and executive chairman

1470

00:48:19,000 --> 00:48:19,999

of LinkedIn.

1471

00:48:20,000 --> 00:48:21,999

And is now partner at the

venture firm Greylock,

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1472

00:48:22,000 --> 00:48:23,999

host of the podcast

Masters of Scale,

1473

00:48:24,000 --> 00:48:26,999

and author of the upcoming

book, Blitzscaling.

1474

00:48:27,000 --> 00:48:28,999

Be sure to tell your friends

about our new podcast --

1475

00:48:29,000 --> 00:48:29,999

Behind the Tech --

1476

00:48:30,000 --> 00:48:30,999

and to subscribe.

1477

00:48:31,000 --> 00:48:31,999

See you next time.

Behind the Tech with Kevin Scott

EP 05 - Danielle Feinberg: Pixar's Academy-Award winning computer scientist

1478

00:48:32,000 --> 00:48:37,000

(music.)