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FILED
LOS ANGELES SUPERIOR COURT

DEC 01 2011

JOHN A. CLARKE, CLERK
BY *[Signature]* RACIL SANCHEZ, DEPUTY

8 **SUPERIOR COURT FOR THE STATE OF CALIFORNIA**
9 **FOR THE COUNTY OF LOS ANGELES – CENTRAL DISTRICT**

11 **DAVID COPPEDGE**, an individual;

12 Plaintiff,

13 vs.

14 **JET PROPULSION LABORATORY**, form
15 unknown; **CALIFORNIA INSTITUTE OF**
16 **TECHNOLOGY**, form unknown;
17 **GREGORY CHIN**, an Individual; **CLARK**
18 **A. BURGESS**, an Individual; **KEVIN**
KLENK, an Individual; and **Does 1** through
25, inclusive,

19 Defendants.

Case No. BC435600

DECLARATION OF WILLIAM J.
BECKER, JR.

HEARING DATE: September 16, 2011

HEARING TIME: 8:45 a.m.

DEPT: 54

BY FAX

Trial Date: October 19, 2011

20 I, William J. Becker, Jr., declare as follows:

21 1. I am an attorney admitted to practice before all the courts in the State of California
22 and counsel of record for David Coppedge, Plaintiff herein ("Plaintiff"). The following facts and
23 circumstances are personally known to me, and if called upon to do so, I could and would com-
24 petently testify as to them.
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1 2. This declaration is made in support of Plaintiff David Coppedge's ("Coppedge") Mo-
2 tion in Limine No. 1 for an order permitting the jurors to view two intelligent design DVDs,
3 "Unlocking the Mystery of Life" and "The Privileged Planet." Both DVDs were lodged with the
4 court on September 2, 2011, in connection with Coppedge's opposition to Defendant's Motion
5 for Summary Judgment. I respectfully request that the court review the DVDs, which each have
6 approximate running times of one hour.
7

8 3. Attached hereto and incorporated herein as Exhibit "1" is a true and correct copy of
9 testimony transcribed from the deposition of Margaret Weisenfelder taken on March 21, 2011.

10 4. Attached hereto and incorporated herein as Exhibit "2" is a true and correct copy of e-
11 mail from Chin to Employee Relations, erroneously dated 3/2/2009, sent on 3/3/2009.
12

13 5. Attached hereto and incorporated herein as Exhibit "3" is a true and correct copy of
14 testimony transcribed from the deposition of David Coppedge taken on October 2, 2010.

15 6. Attached hereto and incorporated herein as Exhibit "4" is a true and correct copy of
16 notes from the interview of Margaret Weisenfelder taken by Defendant's investigator on March
17 19, 2010.

18 7. Attached hereto and incorporated herein as Exhibit "5" is a true and correct copy of
19 the Written Warning issued to Coppedge on April 13, 2009.
20

21 8. Attached hereto and incorporated herein as Exhibit "6" is a true and correct copy of a
22 transcription I prepared on November 29, 2011, of the audio recorded by Coppedge at a meeting
23 with his supervisors at JPL on April 13, 2009.

24 9. Attached hereto and incorporated herein as Exhibit "7" is a true and correct copy of
25 notes from the interview of Greg Chin taken by Defendant's investigator on March 17, 2010.
26
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1 10. Attached hereto and incorporated herein as Exhibit "8" is a true and correct copy of
2 testimony transcribed from the deposition of Scott Edgington taken on February 22, 2011.

3 11. Attached hereto and incorporated herein as Exhibit "9" is a true and correct copy of
4 notes from the interview of David Coppedge taken by Defendant's investigator on March 5,
5 2010.
6

7 12. Attached hereto and incorporated herein as Exhibit "10" is a true and correct copy of
8 the transcript of the documentary DVD "Unlocking the Mystery of Life," which I acquired from
9 the film's producer and director on November 23, 2011.

10 13. Attached hereto and incorporated herein as Exhibit "11" is a true and correct copy of
11 the documentary DVD "The Privileged Planet," which I acquired from the film's producer and
12 director on November 23, 2011.
13

14 I declare under penalty of perjury, under the laws of the State of California, that the fore-
15 going is true and correct.

16 Executed this 29th day of November, 2011, at Los Angeles, California.

17 William J
18 Becker Jr, Esq
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Digitally signed by William J
Becker Jr, Esq
DN: cn=William J Becker Jr, Esq,
o=THE BECKER LAW FIRM, ou,
email=bbeckerlaw@gmail.com,
c=US
Date: 2011.11.30 11:34:36 -08'00'

William J. Becker, Jr., Declarant

EXHIBIT 1

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

DAVID COPPEDGE, AN INDIVIDUAL,)	
)	
PLAINTIFF,)	
)	
VS.)	CASE NO.
)	BC 435600
JET PROPULSION LABORATORY, FORM)	
UNKNOWN; CALIFORNIA INSTITUTE)	
OF TECHNOLOGY, FORM UNKNOWN;)	
GREGORY CHIN, AN INDIVIDUAL;)	
CLARK A. BURGESS, AN INDIVIDUAL;)	
KEVIN KLENK, AN INDIVIDUAL; AND)	
DOES 1 THROUGH 25, INCLUSIVE,)	
)	
DEFENDANTS.)	
)	

DEPOSITION OF MARGARET WEISENFELDER,
TAKEN ON MONDAY, FEBRUARY 28, 2011

REPORTED BY:
HEIDI SULLIVAN
CSR NO. 6600
FILE NO.: 11-120

ER 1

1 DVD.

2 Q. WAS THERE SOMETHING ABOUT THE CONTENT
3 THAT MADE YOU FEEL THAT YOU WERE BEING TARGETED TO
4 CHANGE AN OPINION YOU MIGHT HOLD?

5 A. IT WAS NOT THE CONTENT OF THE DVD THAT
6 MADE ME FEEL TARGETED; IT WAS THE STICKY NOTE ON THE
7 BACK OF THE COVER.

8 Q. OKAY. DO YOU HAVE A VIEW ABOUT
9 INTELLIGENT DESIGN?

10 [REDACTED]
11 THE WITNESS: AS FAR AS THE IDEA THAT THERE
12 IS A DIVINE BEING BEHIND THE CREATION OF EVERYTHING,
13 I HAVE NO PROBLEM WITH THAT. AND THAT'S WHAT I
14 UNDERSTAND INTELLIGENT DESIGN, THAT THERE'S AN
15 INTELLIGENCE BEHIND THE DESIGN OF CREATION
16 EFFECTIVELY.

17 BY MR. BECKER:

18 Q. DO YOU RECALL ANYTHING WITHIN THE
19 DOCUMENTARY THAT MENTIONED THAT THE INTELLIGENT AGENT
20 BEHIND THE DESIGN OF ANYTHING -- THE DESIGN OF LIFE,
21 FOR INSTANCE -- IS GOD OR A DIVINITY OR A DIVINE
22 BEING?

23 A. I DON'T REMEMBER SPECIFICALLY. I DID
24 FAST-FORWARD THROUGH LARGE CHUNKS OF IT.

25 Q. DO YOU BELIEVE THAT THIS WAS A RELIGIOUS

1 DOCUMENTARY?

2 [REDACTED] [REDACTED] [REDACTED]
3 [REDACTED]
4 THE WITNESS: MY IMPRESSION, AFTER I HAD
5 WATCHED IT, WAS THAT IT WAS PROPOUNDING A PARTICULAR
6 VIEWPOINT.

7 BY MR. BECKER:

8 Q. A RELIGIOUS VIEWPOINT?

9 [REDACTED] [REDACTED]
10 THE WITNESS: I BELIEVE SO.

11 BY MR. BECKER:

12 Q. A RELIGIOUS VIEWPOINT CONTRARY TO ANY
13 VIEWPOINT YOU HOLD?

14 [REDACTED] [REDACTED] [REDACTED]
15 DO YOU UNDERSTAND THE QUESTION?

16 THE WITNESS: NO, NOT REALLY.

17 BY MR. BECKER:

18 Q. DO YOU BELIEVE THAT THE DOCUMENTARY
19 PROPOUNDED A RELIGIOUS VIEWPOINT CONTRARY TO ANY
20 VIEWPOINT YOU HOLD?

21 [REDACTED] [REDACTED]
22 [REDACTED]
23 THE WITNESS: I BELIEVE THAT THERE IS A
24 DIVINE AGENT BEHIND THE CREATION OF EVERYTHING. I
25 DON'T KNOW THAT MY INTERPRETATION IS THE SAME AS WHAT

1 THE WITNESS: I DON'T REMEMBER SPECIFICALLY.
2 JUST GENERALLY MY IMPRESSION.

3 BY MR. BECKER:

4 Q. DO YOU REMEMBER ANY OF THE CONTENT OF
5 THE DVD APART FROM YOUR IMPRESSION?

6 A. NO.

7 Q. DO YOU REMEMBER ANY ANIMATION IN THE
8 DVD?

9 A. I REMEMBER SOME KIND OF A GENETIC --
10 LIKE GENES, SOME KIND OF MOVING ANIMATION.

11 Q. AND THAT'S ALL?

12 A. THAT'S THE ONLY THING I REMEMBER.

13 Q. YOU WENT TO GREG CHIN ON MARCH 2, 2009.
14 DO YOU RECALL THAT?

15 A. I REMEMBER GOING TO GREG CHIN. I DON'T
16 REMEMBER THE DATE.

17 Q. DO YOU RECALL HOW LONG AFTER YOU VIEWED
18 THE DVD THAT YOU WENT TO TALK TO GREG CHIN?

19 A. IT WAS THE NEXT WORKDAY. IT WAS EITHER
20 ONE OR TWO DAYS AFTER I HAD SEEN THE DVD.

21 Q. I'LL REPRESENT TO YOU THAT MARCH 2 WAS A
22 MONDAY.

23 DOES IT SOUND ABOUT RIGHT THAT YOU WOULD
24 HAVE BORROWED THE DVD ON FEBRUARY 27, A FRIDAY, AND
25 THEN GONE TO SEE GREG CHIN THE FOLLOWING MONDAY,

1 MARCH 2?

2 A. THAT SOUNDS REASONABLE.

3 Q. WHAT TIME DID YOU SEE GREG?

4 A. I DON'T REMEMBER.

5 Q. WAS IT THE MORNING, AFTERNOON, EVENING?

6 A. I THINK IT WAS IN THE MORNING. IT WAS
7 THE FIRST OPPORTUNITY I HAD.

8 Q. WHY DID YOU GO TO GREG CHIN?

9 A. BECAUSE I FELT UNCOMFORTABLE.

10 Q. DID YOU EXPECT GREG TO DO SOMETHING?

11 A. I EXPECTED GREG TO DO WHATEVER WAS
12 APPROPRIATE, AND I ALSO WENT TO HIM FOR ADVICE.

13 Q. DO YOU CONSIDER YOURSELF AN EXPERT IN --
14 BASED ON YOUR CERTIFICATION WITH TRUE COLORS, DO YOU
15 CONSIDER YOURSELF AN EXPERT IN PERSONAL
16 COMMUNICATION?

17 [REDACTED] [REDACTED] [REDACTED]
18 THE WITNESS: NO.

19 BY MR. BECKER:

20 Q. DO YOU CONSIDER YOURSELF EDUCATED IN
21 PERSONAL INTERCOMMUNICATION?

22 [REDACTED] [REDACTED] [REDACTED]
23 THE WITNESS: I'VE HAD TRAINING IN ONE
24 COMMUNICATION COURSE.

25 ///

EXHIBIT 2

Employee Relations

David Coppedge

3/2/09

- ⊙ approx 8 AM, employee MW came to my office to express a concern about being "harassed" by David -- his belief in Intelligent Design and Support for Prop. 8. I advised employee to tell Dave that they're not interested in hearing about his belief and leave it at that. However, if he continued, I would need to know...so that I can talk to him. The employee also said that Dave had a "list" of individuals with whom he desired to "talk" to...or follow-up with....
- ⊙ Approx 3:30 PM, I talked to Dave about his personal beliefs and advised him that he should be careful. He should not attempt to advocate his beliefs or question the beliefs of others. He responded that he felt that he was being singled out...and requested that I tell him the names of his "accusers." I refused...but told him that he needs to be careful and that this type of discussion is appropriate in certain setting (i.e., a JPL Bible Study group or where an individual requests an opinion).

I informed him that Intelligent Design (ID) is a personal belief that should be kept to himself unless invited by other to discuss. Dave also wanted to know why he was being singled out...and that another employee (VB) happens to have a Muslim quote on their e-mail...and why I did not discuss with them...about not pursuing their personal beliefs. I said that if you're offend...and complaining to me about the phrase, then I would go talk to the individual. I informed him that he was not being singled out...as I have a complaint alleging that he is harrassing people with his ideology.

He then want to know..."what is science?" And...what is SETI? He then felt that we were protecting "evolution" as a "protected religion" and cited that our press releases promoted evolution. I said that evolution is currently viewed as the scientific-basis of how things evolve...he then insisted that ID is consistent with that thought. I reminded him not to discuss this issue any further. He then challenged me to a debate on Intelligent Design off Lab. I told him no. I told him...this topic is not for further discussion. He objected. I then told him...that if pursues this line of thought (wanting to discuss ID with individuals...who have already said that they're not interesting in hearing), that his employment options here would be severely limited (my thinking...he's bordering insubordination). He then told me that he felt that I was threatening him...and creating a "hostile work environment". I informed him that if he felt that, please go ahead and file a complaint with his supervisor.

I then went to disclose this interaction with his current supervisor (Clark Burgess) and the Cassini Program's AA (Carmen Vetter). I have also left a phone message on the Employee Relations (x4-7506) phone line...requesting assistance and to document this exchange. I have also called (and left a message describing the above) with Whitney Haggins, Section 17x AA. I have since talked directly with Whitney who says that she is informing Kevin Klenk (Section 173 Manager) and her HR representative. I've also called my Line Management organization (Mario Mora) and left a message about the situation.

- ⊙ 5/15/09 -- Haven't written for a while.... David Coppedge was removed from his Lead SA position about a month ago...and Nick Patel has been re-assigned to do this function. Had a long talk with Dave regarding perceptions...and how we can improve.
- ⊙ 5/15/09 -- During today's staff meeting. Dave was using his cell phone camera to take pictures of the "cartoons" I used on the screen. See attached. Don't believe that any of these advocate one position or another....just making light of current politics. Generally, I try to weave a perspective of what's going on ... outside...with what goes on ...

inside.

EX 2

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EXHIBIT 3

SUPERIOR COURT OF THE STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

DAVID COPPEDGE, an Individual,)	
)	
Plaintiff,)	
)	
vs.)	No. BC435600
)	
JET PROPULSION LABORATORY, form)	
unknown; CALIFORNIA INSTITUTE OF)	
TECHNOLOGY, form unknown; GREGORY)	
CHIN, an Individual; CLARK A.)	
BURGESS, an Individual; KEVIN)	
KLENK, an Individual; and DOES 1)	
through 25, inclusive,)	
)	
Defendants.)	
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VIDEOTAPED DEPOSITION OF DAVID COPPEDGE

Los Angeles, California

Friday, October 1, 2010

Volume II

Reported by:
Deborah R. Meyers,
CSR No. 8569

EX 3

1 being rebuffed.

2 Q And at some point did Mr. Chin make any
3 statement to the effect that if you continued to
4 talk about intelligent design or other beliefs with
5 people who have already said they're not interested,
6 that that could have some limitation on your future
7 employment opportunities?

8 MR. BECKER: Assumes facts in evidence,
9 lacks foundation, argumentative.

10 THE WITNESS: I stated exactly what I
11 recalled he remembered, that he looked me in the eye
12 and said, "You are not to talk about religion or
13 politics with anyone in this office, or it will be
14 difficult for you to maintain employment in this .
15 organization."

16 Q BY MR. ZAPP: And did you ask him what he
17 meant by that?

18 A I said this --

19 Q No, did you ask him what he meant?

20 A I don't recall asking him that question at
21 that time.

22 Q What did you understand him to mean?

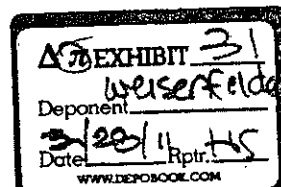
23 A I understand him -- understood him to mean
24 that I -- he was taking away my rights of free
25 speech and free expression.

EXHIBIT 4

3.19.2009 Mtg w/ Margaret Weisenfelder re: David Coppedge issue.

- Margaret stated that she is an ordained minister (Christian) but would never let David Coppedge know. She has worked w/ David about 5 yrs but has known him for 7 to 8 yrs.
- Margaret stated that she has experienced 2 uncomfortable incidents w/ David. The first occurred the day before the Presidential election/ Prop 8 vote. David approached Margaret and asked if he could talk to her about Prop 8. Margaret stated that she was thinking while being asked this question by David, that she ^{probably should} ~~should~~ not talk about political issues during work hrs. David proceeded to tell Margaret his viewpoint on the Prop 8 and then asked for her opinion. Margaret stated to David that she did not agree w/ his viewpoint & did not want to discuss the issue w/ him because he was so ^{pragmatic}. Margaret said that David's approach was, "Can I talk to you about Prop 8?" then had a Prop 8 paper in his hand. The second incident occurred about 2 wks ago (before the 4 day holiday wknd) after lunch. David approached Margaret and asked her if she wanted to borrow a DVD called "Unlocking the Mysteries of Life". She took it home and watched it and noticed a sticky on the back of the DVD w/ JPLC's names on it. The sticky note had the words "Try Again" by some of the names. The only name she recognized was Patel. Margaret did not want to get into a discussion w/ David about the DVD so she waited until he was not

EX 4



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in his work space to place it on his chair. David did not approach her to discuss the DVD after she returned it. Margaret went to Greg Chin to discuss the DVD issue and told him that she was feeling uncomfortable about David approaching her re: watching the Intelligent Design DVD and talking about her stance on Prop 8. She further expressed to Greg that she does not want to deal w/ him re: these type of issues. Greg responded to Margaret, stating that he would look into it and to let him know if ^(David's) his behavior continues to be a problem for her. Since that time Margaret has had no other encounters w/ David.

- Margaret further states that David is nice but she feels that he is stepping over the line by discussing religion & politics in the workplace. Margaret then reminds me that she is an ordained minister (Christian) and feels his behavior is inappropriate.

EXHIBIT 5

DATE: April ?, 2009
TO: David Coppedge
FROM: Clark Burgess
SUBJECT: Written Warning

The Employee Relations Office has completed an investigation concerning allegations that you approached various co-workers during JPL business hours to discuss your religious and political beliefs. Your actions were reported as harassing in nature. As part of this investigation, you met with Jhertane Huntley from Employee Relations and were given the opportunity to discuss the allegations and explain your perspective and answer questions.

I have received the results of this investigation and after careful review of all the issues and information obtained, I am in agreement with the following findings:

- You acknowledged that you approached various coworkers during work hours to inquire if they were interested in watching your DVDs which clearly express your personal views and you engaged various co-workers in conversations about your personal views. You failed to stop these activities when you were told they were unwelcome and disruptive.
- You violated the Unlawful Harassment policy which states:
 - Harassment is the creation of a hostile or intimidating environment in which verbal or physical conduct, because of its severity and/or persistence, is likely to interfere significantly with an individual's work. Harassment in any form, based on sex, race, color, age, national origin, disability, religion, gender identity, sexual orientation, or any other characteristic protected by state or federal laws, is prohibited, as are all forms of sexual intimidation and exploitation.
- You created disruption in the workplace by approaching a co-worker during work hours to engage in a political debate about a recent controversial issue. When you discovered your co-worker did not share your political views, you became upset and argumentative. Your co-worker had to request that you leave his office in order to cease the conversation.
- You violated JPL's Ethics and Business Conduct Policy which states:
 - JPL employee behaviors shall be consistent with the JPL and NASA Values and the Caltech's JPL honor codes. Specifically, "I will treat my fellow employees fairly, with dignity and respect."

ERB

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Based on the results of the investigation, it has become apparent that your behavior in the workplace is perceived as unwelcome and unprofessional. This type of behavior is inconsistent with a professional business environment and will not be tolerated in the future.

Due to the seriousness of violating the Unlawful Harassment policy, you are being given a Written Warning. Should another incident of this nature occur, you will be subject to further disciplinary action up to and including termination.

Effective immediately, you must refrain from discussions which are argumentative, disruptive and/or harassing to your co-workers. Today we have talked about what type of conduct is unwelcome or offensive. If you have questions about such conduct, please talk with me immediately. For example, co-workers found your requests to watch your DVDs that express your personal views to be unwelcome.

It is important that you understand that JPL policy prohibits retaliation against any employee who may have participated in this investigation. JPL is committed to a harassment and retaliation free workplace, to investigating complaints promptly, and to taking appropriate corrective action. All participants in this investigation have a right to expect appropriate treatment as a result of bringing this complaint forward. Should you take any actions which JPL believes are retaliatory against any of these individuals, you will be subject to further disciplinary action up to and including termination.

Clark Burgess

Date

This warning has been discussed with me, and I have received a copy. I have read it and understand the consequences of future violations of policy.

David Coppedge

Date

Attachments: Ethics and Business Conduct Policy (DocID# 58572), Unlawful Harassment Policy (DocID# 72112)

D000000208

EXHIBIT 6

1 Burgess: Jhertaune wanted to make sure you got copies of those... [unintelligible]
2 Coppedge: Am I supposed to read this? Now, or ...
3 Burgess: Let's go over it together.
4 Klenk: [unintelligible conversation with someone who stopped in with a question.]
5 Burgess: So as you know Jhertaune interviewed a number of people on considered your cus-
6 tomers with the flight-- with the Cassini project specifically, and this is kind of the
7 result of what she found, and I think it looks to me like there's two different areas
8 here she's trying to address at least. [unintelligible]
9 Burgess: That first bullet she talks about that you approached co-workers during work
10 hours. And she's found that a lot of people had been overly nice to you when
11 they—you know just to move on, and to, when you presented the ideas of whatev-
12 er it was, politics, religion [unintelligible] and they were just in agreement without
13 being rude or anything else, but she's found a lot of people who were concerned
14 about the discussions you were trying to get into with them. So... And then there's
15 this other instance where you met somebody in his office and he asked you to
16 leave. That was considered inappropriate.
17 Burgess: So she's found that where as she understands it, you've violated several business
18 rules and ethics here at JPL. It's not the nature of, it's not the subject matter so
19 much as it is interruption of quote-unquote "JPL work" that she's trying to focus
20 on. Whether pro or con on any particular issue it really doesn't matter. To her
21 was, whatever the discussions that were going on that you were attempting were
22 not JPL work. And that's -- that was a big concern on her part.
23 Klenk: And the other people were finding it unwelcome and disruptive; that's the major
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ERL

1 portion of it. So, they were feeling uncomfortable with the situation.

2 Coppedge: O.K., nobody has communicated this to me, and did you get a copy of the ...

3 Burgess: They were trying to be nice to you.

4 Coppedge: Did Jhertaune show you this?

5 Klenk: No, I didn't receive that, [unintelligible] it was a summary.

6 Coppedge: Alright, for the record, let me give you what I gave her. [unintelligible]

7 Burgess: So she and Nancy Aguilar, who's our 1X rep, Human Relations, both offered to be

8 here, but I thought we could discuss this without HR being in attendance, but if

9 you'd care to discuss it more with them later, you can. These are the two main

10 points that they had concern over.

11 Klenk: They do this regularly. ER, they go out, you know, we actually heard that you said

12 someone was creating a hostile work environment. So we immediately called ER,

13 that you were being, you felt you were in a hostile work environment, so we had

14 them immediately go over and say please check into it. Give us an impartial point

15 of view.

16 Coppedge: No.

17 Klenk: And then the response to us was, well, there was a hostile work environment and

18 we feel that David is the one creating it.

19 Coppedge: Did you receive the transcript of the meeting that Greg Chin had with me on

20 March 2nd?

21 Klenk: Transcript? No.

22 Burgess: Did you send that to, that was HR?

23 Coppedge: No that was ... I gave Jhertaune a copy; but I, immediately after Greg had a con-

24

25

1 conversation with me, I said this is kind of a sensitive subject, and it might be good
2 for both of us to document what was said.

3 Klenk: Uh-hm.

4 Coppedge: So I gave him my recollection of his conversation with me, and I had that here
5 with me; here it is, if you'd like to look at it.

6 Klenk: Partly on this, I see that the last line is where Greg decided to report it, that you
7 said he was creating a hostile work environment.

8 Coppedge: I didn't initiate anything...

9 Klenk: So his, that was the first time that he had been accused of that, so he reported it to
10 us, I believe it was; in which case we said, OK, we'll bring it ER and have them
11 investigate the situation. The...

12 Coppedge: OK, but I did not instigate a thing. Basically, I was trying to work it out with Greg,
13 and I documented it in an e-mail to him and him alone, OK. He took the step of
14 starting an investigation.

15 Klenk: No we did.

16 Coppedge: Well, he had to hear...

17 Klenk: We did.

18 Coppedge: You had to hear it from him, because I didn't contact...

19 Klenk: That's correct; he let us know that he was being accused of it, and since we are,
20 actually are your line managers, not Greg, he, Greg shouldn't have been involved
21 in this sort of discussion necessarily, so as your line managers, we immediately
22 called Employee Relations, which is the procedure we're supposed to go through.
23 OK; we go through that, said 'please investigate the situation, let us know what the

1 situation is, and provide us with a set of your recommendation for this sort of situ-
2 ation.'

3 Coppedge: Uh-hm, but...

4 Klenk: That's what the memo here is a result of. This is the feedback we received from
5 them after talking with the people in your area, and these things are, if you look
6 into the Ethics Policy, and the Harassment Policy, and things, they are considered
7 anonymous and confidential. Because we don't want people to have retaliation
8 against them for having reported it. But the people did say they felt it was an un-
9 comfortable work environment.

10 Burgess: Even though they didn't tell you about it.

11 Klenk: They were, Jhertaune came back and it was, she absolutely said, it was very un-
12 comfortable for the people there.

13 Coppedge: OK...

14 Klenk: So, so as your management, you know, we have to follow through. This is a writ-
15 ten warning of the situation, so we have it documented and put it in your file.

16 Coppedge: OK, you said at this meeting that I'd be supplied with all the information that I was
17 requesting.

18 Klenk: And this is, this is the summary we have; that's part of it; you received the thing on
19 the JPL Policy,

20 Burgess: Actually there's two copies.

21 Klenk: There are two copies of it, that's the Ethics Policy, and the...

22 Coppedge: Right, but those are policy documents. But I was asking for a procedure for in-
23 vestigating employees.

1 Klenk: That would be ER. They they regularly do this, and our our procedure is to call
2 them and have them go through their routine investigation.

3 Coppedge: OK, so there must be a routine investigation documented.

4 Klenk: That is something that we aren't part of.

5 Burgess: Well, Jhertaune called me this morning and said there is nothing written down as
6 far as procedure for them to follow other than investigating what's in these ...

7 Klenk: OK.

8 Burgess: ... rules here.

9 Klenk: Then, that's what it is. But in the past they've behaved with professionalism and I
10 don't expect them to do anything less than that.

11 Coppedge: Well, undoubtedly. But I find it hard to believe that an institution as you know
12 large as JPL does not have written procedures for investigating employees. And
13 that's what I've been requesting for a month now, and no one will give it to me.

14 Burgess: Well Jhertaune reminded me that she told you that they don't have anything.

15 Coppedge: She said that on Thursday. [April 9]

16 Burgess: Yeah, she reminded me today that they had nothing written on that as far as what
17 they go through as an organization.

18 Coppedge: OK, a couple of points here. I've never been accused of this in my entire profes-
19 sional career. Let the record state that.

20 Klenk: We understand that. We, Cab and I, were not aware of the situation.

21 Coppedge: And let the record state as I put in my document that this has been infrequent, on
22 the average once a month I might approach people. These are people who are not
23 total strangers but co-workers and friends that I know and they know me. And the
24
25

1 approach is "This is interesting, you know would you be interested in viewing it?"
2 It's usually at the end of a Friday when people are going home anyway--never
3 when they're actively busy with things. And so those 12 points I documented, I
4 have records to show that's the way it's been. I don't recall anybody telling me that
5 asking them this was unwelcome, and if they did, I backed off, and that was the
6 end of it. Now the fact that this came all of the sudden on March 2nd the first time
7 after working with Greg Chin for some 10 years -- out of the blue this accusation
8 comes. And I tried to work directly with Greg, to un.. come to understand, "What
9 are you talking about?" "What have I done?" and he says, "You're handing out
10 DVDs to co-workers and some people have complained that you're harassing
11 them." Harassing is a strong word, as you know.

12 Klenk: Uh-hm.

13 Coppedge: So I said, OK, here's what you're saying. Is this your recollection? This is a kind of
14 a sensitive conversation here. And he refused to respond to my e-mail. Instead,
15 from what I knew, he kicked off an investigation of me. Now I supplied Jhertaune
16 with ample documentation and records of what I actually had done, as as you can
17 see and I also requested, and never received whether JPL agrees with the Federal
18 Guidelines on Religious Expression in the workplace. Are you familiar with that
19 document?

20 Klenk: No. I'm ... I am.. that...

21 Coppedge: OK, let me show it to you, just just so you know. This is posted on the Glenn web-
22 site and and I would like an answer from somebody whether these federal guide-
23 lines which basically interpret existing law about what is permissible in terms of
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1 religious expression in the workplace, whether these guidelines are enforced here
2 at JPL. So I'm still waiting.

3 Burgess: Jhertaune takes the attitude that no matter what the discussions were -- religious,
4 political, whatever -- that is impertinent to what is going on. What's pertinent is the
5 interruption of the JPL workforce.

6 Klenk: And do people, are they feeling any intimidation or harassment or hostile intent or
7 anything along those lines. And at the minimum people felt it was unwelcome. If
8 you look into our Diversity Training that we have, it all, they go over to a painful
9 extent that it's really about, if it's not specifically work-related, if people think it's
10 unwelcome, then it's not permitted.

11 Coppedge: I understand that.

12 Klenk: That, that's basically the bottom line.

13 Coppedge: Right...

14 Klenk: And so in this situation, your ... the people on the 3rd floor felt it was unwelcome.
15 That's the real bottom line there. It's not the topic that's the problem.

16 Coppedge: OK, let me just read some samples of this. "Employees are permitted to engage in
17 religious expression directed at fellow employees and may even attempt to per-
18 suade fellow employees of the correctness of their religious views to the same ex-
19 tent as those employees may engage in comparable speech not involving religion.
20 Some religions encourage adherents to spread the faith at every opportunity, a duty
21 that can encompass the adherent's workplace. As a general matter, proselytizing is
22 as entitled to constitutional protection as any other form of speech as long as a rea-
23 sonable observer would not interpret the expression as government endorsement of

1 religion." OK, they give an example. "During a coffee break one employee engag-
2 es another in a polite discussion of why his faith should be embraced. The other
3 employee disagrees with the first employee's religious exhortations but does not
4 ask the conversation to stop. Under these circumstances, agencies should not re-
5 strict or interfere with such speech." Now I don't recall anybody asking me to
6 stop. Somebody may claim that, but that's hearsay.

7 Klenk: Right, now in your case, what the feedback we received was that multiple people
8 indicated that the behavior was unwelcome. That was what Jhertaune got from her
9 investigation. You know there was, this we documented one, I think there might
10 have been two people who said you were asked to leave their offices over this.
11 This is over an extended period of time, but they said, you know it was unwel-
12 come, and...

13 Coppedge: I cannot recall any, look -- let me tell you the one, the only one we can think of.
14 We got into a discussion about a particular proposition that was on the ballot. And
15 it was, it was a ... you know he disagreed with me, and I was trying to defend my
16 view; he was defending his. Went on for some time. I don't recall him asking me
17 to leave. It was clear that he was uncomfortable with my view, and at... you know
18 I think we got a little defensive. But I came back to him the next day and said, you
19 know, so-and-so, I think I was a little bit, you know, perhaps aggressive and not
20 showing the kind of, you know, friendliness I should have toward you, will you
21 forgive me? And he reached up and shook my hand and thanked me. OK? That is
22 my pattern if I, if somebody appears to be hostile to me. I don't want to have that
23 kind of relationship with anybody. Alright?

1 Burgess: But it sounds like when Jhertaune talked to this individual he gave her a different
2 slant on this, that he was uncomfortable with the whole situation, even though he
3 made appeasement.

4 Coppedge: Did he initiate a complaint against me?

5 Klenk: No, this is all based on a very short note that Greg sent saying that there was alle-
6 gations of a hostile work environment and Greg said, you know someone said this
7 to me, you know I think it should be investigated. Well, I don't know if he said in-
8 vestigated, but he said, basically here's the situation, you know you should you
9 know follow up with this. And so, based on that, that was just a very short note.
10 We tried to be completely above board in the section.

11 Coppedge: I try to be, too.

12 Klenk: We get the note, and say, OK, we call up our ER representative, they go out, they
13 do their investigation, and they report back. It took about 2 weeks, 2-3 weeks,
14 something like that?

15 Burgess: It drug on for a while.

16 Klenk: It drug on for awhile, and they came back and she said, here is my findings. And I
17 believe she met with Cab and she met with me. And it's laid out, and it was com-
18 pletely focused on the basically the coworker's feeling was unwelcome and disrupt-
19 tive in the workplace. Just one right after another, that was where the findings
20 were focused.

21 Coppedge: OK, I have documents to show that this, number one, was very occasional, on the
22 average once a month I would approach somebody. I also have documentation that
23 the vast majority were pleasant and cordial and even once thanked me and said,
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1 "That was great. How can I get that?" That has been the typical response. OK.

2 How do you feel also about the fact that Greg brought me in on March 2nd and
3 accused me to my face of pushing religion in the workplace? And as you can see
4 from my transcript of that conversation, when I tried to say, "What do you mean
5 by that?", you know, and he was argumentative -- even angry.

6 Klenk: Well, what we have done is we have talked to Greg and the idea is that
7 he should be working with us for those same kind of things. He should have been
8 working with us, and that would have should have been the more appropriate way
9 that been you handled.

10 Coppedge: I mean, he was nearly shouting at me. And I said, "You know, Greg, this gets into
11 issues of freedom of speech," and he blew me off. And I said, "Greg, this could be
12 construed as creating a hostile work environment." He stood up and said, "Go
13 ahead and file a complaint!" and stormed out the door. That is what happened. I
14 ask you: you know, whose rights are being violated here? I mean, who is creating
15 [a hostile work environment]; who is harassing?

16 Klenk: We are trying our best to remain impartial. We got a very thorough feedback from
17 Jhertaune about the situation, you know and we've written up, you know the mild-
18 er document than we could have written up over the whole thing. Now, we don't
19 we don't do it often. But we felt it's important write it down, document, here is
20 what the findings were.

21 Coppedge: OK, in my opinion, there is no way that this can be construed as harassment that I
22 have committed. And and that's why I think this document needs to be studied.
23 And I would like a statement somewhere from JPL whether this applies to this lab.

1 Because what I have done fits in with this. The only time a boss can tell an em-
2 ployee not to discuss this is with an individual who either tells the person doing it
3 to stop, or tells the boss, I don't want to hear about that anymore. Then the boss
4 can go to the employee and say don't talk to so-and-so. But Greg told me you are
5 not to discuss religion or politics with anyone in this office. That's what he told
6 me. How do you feel about that?

7 Klenk: No... We have no issue with people discussing religion and politics in the office
8 so long as it's not unwelcome or disruptive.

9 Coppedge: I understand. And I, my claim is that it wasn't. Now I went to the Chief Ethics
10 Officer right after Greg talked to me and I said, "Can a boss do this? Can a boss
11 you know give a blanket order that you're not to discuss this?" And he said,
12 "Well, you know no, that's overboard," and he you know gave me some sugges-
13 tions on how to handle these things. But in other words I was immediately seek-
14 ing, have I done something wrong here, or or is that proper?

15 Klenk: I think I think partly you should think through you know that, both of you seeking
16 out external sources on this, you must have felt that at some point that there was
17 some things done that caused tension in the workplace, on both sides. One sug-
18 gestion I would have is perhaps you weren't reading the body language of these
19 people well enough. You were looking for a 'Dave, I understand you refused, I
20 don't believe in this; please don't talk to me again about it' whereas they were try-
21 ing to be more polite, being that they felt uncomfortable, and were trying to say,
22 'Please don't talk about it, you know I'd rather do talk about something else,' and
23 you weren't reading the more subtle ...

1 Coppedge: Are these not mature adults that can say the words that I'd rather not talk about
2 that? Am I supposed to interpret 'I'm harassing somebody' by their body language,
3 is that what you're telling me?

4 Klenk: I think in some cases yes.

5 Coppedge: OK, is JPL offering a course in reading body language or something? Because
6 that's extremely subjective. And it seems to me that ...

7 Klenk: Most of the harassment things are subjective.

8 Burgess: Jhertaune said that when she interviewed these people, it was the majority of the
9 people had the same kind of understanding that they were trying to be nice to you,
10 to get by, so to speak, without causing any further ...

11 Klenk: ... disruption in the workplace.

12 Burgess: They just wanted it to go away. They either didn't tell you specifically so it was
13 clear. But a lot of people, she said, had this common position.

14 Coppedge: Again, nobody will give me any specifics or, or names, or-- I mean, I
15 understand the reason why you don't -- why you want to protect the confidentiali-
16 ty. But my recollection is, is totally different than that. And, you know, let me con-
17 tinue reading another paragraph here:

18 Burgess: Uh-hm.

19 Coppedge: "Federal law requires an agency to accommodate employee's exercise of their reli-
20 gion unless such an accommodation would impose an undue hardship on the con-
21 duct of the agency's operation. That cost or hardship, nevertheless, must be real,
22 rather than speculative or hypothetical. The accommodation should be made un-
23 less it would cause an actual cost to the agency or to the other employees, or an

1 actual disruption of work, or unless it is otherwise barred by law." So, ...

2 Burgess: Again, she's saying that you're trying to focus on religion and politics, and that's
3 not HR's discovery. Their discovery is that you've done something that's inter-
4 rupted the JPL workforce, from doing JPL work, no matter what the subject dis-
5 cussed was.

6 Coppedge: Again, no one has accused me of this until Greg had his outburst against me on
7 March 2nd. I have been working Cassini for 12 years.

8 Burgess: You must understand that he got challenged by several people that day that were
9 very upset over whatever happened between you and them prior to Greg getting
10 involved.

11 Coppedge: Let me tell you, you know maybe the most recent case before Greg's conversation
12 is instructive. There is a lady in the office, a coworker, a friend, somebody I've
13 worked with for years, who I approached on a on a Friday, on the end of the day,
14 "Would you like to watch this on the weekend?" She probably disagrees with the
15 content of it. But she took it, and sounded interested. On the Monday morning I
16 found it on my desk and never brought it up again. Never mentioned it. We
17 passed in the hallway, we would say, 'Hi; how are you.' Never was brought up
18 again. It's interesting that it was that very day, that it was that afternoon that Greg
19 called me ...

20 Klenk: I would warn you against trying to speculate who it was or anything. JPL does
21 have a policy against any sort of retaliation, or anything like that. You now so it
22 wouldn't be good, if the person was one of the people who was saying, 'I find this
23 uncomfortable,' to then confront the individual about, 'I hear you're uncomfortable

1 with this; let me talk to you.' It would be better just to try to work towards the in-
2 clusive, welcoming work environment.

3 Coppedge: This particular DVD was about science, it was not about religion. You are wel-
4 come to watch it if you would like. I'd be glad to give you a copy and you can see
5 exactly what it was about. There's no way it can be construed as pushing you know
6 religion. And in fact it's a subject that is of great interest to everyone. Alright? In
7 fact one of the most popular films I like to give out has four JPL scientists in it
8 who were interviewed on lab with the full NASA cooperation with the producer.
9 OK? This is the kind of material we're talking about. And there was not a hint of
10 body language or speech or anything by this person that what I was doing was un-
11 welcome. She thanked me. She said that looks very interesting. She took it, and
12 left it on my desk, and there was no follow-up at all. That was the day where in the
13 afternoon Greg accused me of this. So what I ask you Kevin is, what protections
14 are you giving me to hear that my side of the story is the correct one, rather than
15 the testimony of these people that Jhertaune is saying. Now if you go up to some-
16 body and say, 'We're investigating Dave for possible harassing people; has he ev-
17 er...' you know I don't know how she posed the question. But you can ask leading
18 questions that may draw out a response you're looking for.

19 Klenk: We can speculate on all sorts of things. But in my experience ER has always han-
20 dled these sorts of things with discretion. They've done it, you know being above
21 board, trying to be professional about it. You know at some point I trust that
22 they've done the right thing. They try to give the employee leeway. They try to un-
23 derstand you know how the other people are feeling, and they try to write up a re-

1 port that's accurate, that's appropriate, you know and give us recommendations on
2 what to do. So after listening to their recommendation, I don't think Cab and I had
3 any disagreement what the next step was.

4 Coppedge: OK, so so are there protections that that an employee has against an office manag-
5 er who angrily accuses him of things and gives him a blanket order that goes well
6 beyond what any perceived accusation was? Do I have any protection?

7 Klenk: No... If you feel that there's a hostile work environment we can investigate that as
8 well. If it doesn't rise to that immediately, we can talk with Dave, with Greg, Dave,
9 and say, 'here's how we'd like you to handle this.'

10 Coppedge: Is .. is it, let's say that I had DVDs on sports that I wanted to share and somebody
11 was not interested in sports, and yet I said, 'oh, this is really good; you would en-
12 joy that.' Am I harassing them?

13 Klenk: It certainly could become unwelcome or disruptive in the workplace. Absolutely.

14 Coppedge: OK, so you're not singling out content you're claiming?

15 Klenk: No.

16 Burgess: HR certainly isn't. They said, 'Forget all that. It's interruption of the JPL work-
17 force from doing JPL work.'

18 Coppedge: I would still like you to read the 12 points in the documentation that I'm leaving
19 you, and I'm still requesting a procedure that has been followed in this and a
20 statement whether JPL abides by these Federal Guidelines. I have asked for that
21 for a month now and nobody will give it to me.

22 Klenk: Well, we will pass it along to ER requesting that, you know and if we do not get a
23 response you know we can certainly have you you know forward it up the chain.

1 Coppedge: Well, this ... these Federal Guidelines allow for vigorous discussion on matters of
2 disagreement and it says that is not harassment. Now I cannot be expected to read
3 the body language of somebody who we're having a vigorous discussion with that
4 you know is supposed to be telling me nonverbally, 'get out of here,' see. And and
5 if they can go to the office manager and say 'I don't want Dave talking to me about
6 that anymore,' then the office manager certainly has the responsibility and the right
7 to tell me, 'Don't talk to that person.'

8 Burgess: Actually they should come talk to me.

9 Klenk: They should talk to Cab.

10 Coppedge: OK.

11 Burgess: They shouldn't be doing that at all.

12 Coppedge: OK.

13 Burgess: That's supposed to be me.

14 Coppedge: OK.

15 Klenk: Greg should come and talk to Cab if people report it to him.

16 Coppedge: Has anybody come to you, complaining of that to you? To you personally?

17 Burgess: Everybody including HR are trying to set the record straight that whenever these
18 kind of problems happen from this point forward they're going to be with me ra-
19 ther than Greg.

20 Coppedge: Right. Well, I'm asking...

21 Burgess: The intent of that letter, its interpretation, if another problem arises, is my decision
22 to go further with it or not, not Greg's.

23 Coppedge: OK. But I'm asking, has anybody ever come to you complaining?
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1 Burgess: They have not.

2 Coppedge: They have not. Can you also state for the record how my reviews have been?

3 Burgess: Oh they've been great. Your technically you're qualified. But now we're hearing
4 through this interview process that there's a lot of latent hostility out there with a
5 large number of people including the Project Manager.

6 Coppedge: OK. There is a lot of hostility in our culture against intelligent design. Perhaps
7 you're aware of that.

8 Klenk: Not particularly, but...

9 Coppedge: Believe me; there is. So, what I espouse is certainly a minority view among the
10 scientific community. I'm also aware that some of the scientific community are
11 aware of my beliefs, because on my own time I write things that some of them
12 have come across. And some of them at one point got upset about that. How do I
13 know that there is not some kind of pressure being brought on the Program Man-
14 ager, that this employee is undesirable and are there ways we can find... I mean,
15 how do I know that's not going on? And that this is not some kind of retaliatory
16 action by these individuals? I went to the Program ... the Project Scientist when
17 this came to my knowledge a couple years ago, and he was aware of it, but he said,
18 'Look, if anybody gives you any trouble over this, just talk to me and I'll take care
19 of it.' I had written permission from the Chief Ethics Officer prior to my writing
20 anything that was published that it was OK, you know what I was doing, to say
21 'Dave Coppedge works at Jet Propulsion Laboratory.' You know and I let this
22 group of scientists who were complaining know about that. But you know they're
23 aware of that, and it's a very unpopular view among the consensus. Now I'm let-

1 ting you know some of these--some of this background information that may be
2 brought to bear on why I am being singled out as the harasser here when Cab has
3 not had any personal knowledge of this heretofore, and the only one, the first one
4 and only one who had ever accused me of that was Greg Chin.

5 Klenk: Well, if you also look at who Cab interviewed interviewed traditionally for your
6 ECAP, it was coworkers, coworkers meaning people within 173 on the SA team,
7 the customers you're working for, Greg Chin, and the like. But he would not have
8 interviewed people nearby you on the 3rd floor. Now, so if you're working with
9 the chief scientists or any of the other science people or mission people they
10 wouldn't have been part of the interview process. They wouldn't be considered
11 necessarily a coworker. It'd be more of a person who was on the floor nearby you,
12 working the same ...

13 Coppedge: I understand. But I'm just saying that as another consideration that it is certainly a
14 possibility when you mention the Program Manager, you know. I have had noth-
15 ing but cordial and businesslike and pleasant relationships with the Program Man-
16 ager, but he may hear things from this group, you know about me that make me
17 persona non grata, and you know how do I know that pressure is not being brought
18 to bear on Greg?

19 Klenk: I'm not sure how but we have not heard of that pressure.

20 Coppedge: Well I wouldn't expect you

21 Klenk: And but but but but Cab say we're we're we're we're trying to clarify that the peo-
22 ple who are going to be looking at this is Cab, as your line manager he's going to
23 be looking at this situation, not the people on Cassini, if that if that clarifies things.

1 Burgess: Well I've found that the ECAP process, for example, when people respond to re-
2 quests for information tend not to be negative. They either give you something
3 that's positive or they don't say much at all.

4 Klenk: They don't say much at all, primarily focused on the work that you do. So even if
5 they are extraordinarily uncomfortable with you, it won't necessarily come out;
6 that is that is true.

7 Burgess: It's fine because you have that option when you respond, to either share it with the
8 individual or not, and even that doesn't bring out much negative on anybody.

9 Coppedge: So Cab has no personal evidence of anybody complaining about. I mean if this
10 were a pattern of behavior that characterized me, don't you think over a matter of
11 eleven years or so, that this would have come forward? Why did it come out all of
12 the sudden on March 2nd?

13 Klenk: I'd say in this case it's because we investigated it and we looked you up. I'm not
14 sure about, you know why Greg said, had the conversation with you on March 2nd
15 versus another day, but when we had ER look into it, they came back and said,
16 'Yes, this is a extended period of time this has been going on and this is unwel-
17 come in the environment.'

18 Coppedge: How do you feel about what Greg said to me on March 2nd? Is that justified?

19 Klenk: I think you should work through Cab on this sort of thing.

20 Coppedge: I think I have been.

21 Burgess: As far as that blowup, one on one it shouldn't have happened at all. It should have
22 with me in my office. But Greg' been, they've told him that, essentially he, Greg,
23 in his position does not deal with HR unless it's an issue with himself. Any man-
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1 ager on a project that is not line management has to take that view as far as dealing
2 with HR. It's up to the line people to deal with them, not the customer project.

3 Coppedge: Alright; well, that's not what happened. What happened was an angry outburst
4 with me on March 2nd out of the blue. I have told Greg on a couple of occasions
5 over the years, "Greg, if I am ever doing anything that offends somebody or is
6 wrong, please come to me, give me a chance to fix it." He did not do that. With-
7 out any warning he came at me for this matter of what he accused me of on that
8 day: pushing my religion in the workplace. He is the only one who has ever made
9 that accusation in my entire professional career. I want you to understand that.

10 Klenk: I understand that completely, Dave.

11 Coppedge: What rights do I have to defend myself against those kinds of charges when the
12 evidence and the documentation I have shows otherwise? And that I am standing
13 on Federal Guidelines which say approaching people on matters of controversial
14 subjects is protected speech even in the workplace.

15 Klenk: I think the key is it being to recognize when people feel it's unwelcome and disrupt-
16 tive in the workplace. I know you're saying it's a hard thing to do, but ...

17 Coppedge: Kevin, I think I do that. I think I do that.

18 Klenk: And what the investigation found is that you have not been doing that adequately,
19 obviously. People have felt it's unwelcome and disruptive.

20 Coppedge: OK, so ...

21 Klenk: But that that ... That's the bottom line on that, that the people they talked to came
22 back, one right after another, saying the same sorts of things. I know that that's
23 hard to hear.

1 Coppedge: Alright; well, it may be unwelcome, but it's only harassment if it's persistent, isn't
2 it? I mean you may not know if someone disagrees with something unless you first
3 have an opportunity to talk with them. They could go and say 'that was unwel-
4 come'...

5 Klenk: And if the people start trying to avoid you or to change their work habits because
6 of it ...

7 Coppedge: Has anybody done that? I have no way, I've never noticed people changing their
8 work habits because of me or trying to avoid me. You know where is the evidence
9 for these things that are being charged, other than subjective opinions?

10 Klenk: This is this is this is a subjective topic. When they talk about the whole idea of a
11 workplace being hostile, or you know the inclusion and all that, it's all subjective.

12 Coppedge: The record shows that loaning these DVDs was very infrequent. On average about
13 one per month. Offering someone a DVD normally took a minute or less. This
14 means that 99.99 percent of the workday the lender was on the job, not engaging in
15 this activity. OK? Do you agree with Greg's statement that I am not to talk about
16 religion or politics with anybody in the office from now on? Do you agree with
17 that?

18 Klenk: I agree that you have created an unwelcome disruptive situation in the workplace.
19 There is no policy against you talking about religion and politics in the office so
20 long as it's not unwelcome or disruptive.

21 Coppedge: But again, what you're saying that I'm just supposed to feel vibes or see body lan-
22 guage, even on a first time. And and my practice has been, if the person is not in-
23 terested, I back off. What may cause a conversation is if they start arguing with
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1 me and put me on the defensive and I and I offer a point, counterpoint. There's
2 been a couple of occasions of that. But they're not telling me you know this is un-
3 welcome. They're saying let's talk about this topic. I may have a point of view and
4 we're both ... That's protected speech. Now, if they later on tell an HR person,
5 'That was an unwelcome conversation' because they disagreed with me, that ... I
6 was not harassing them if they were vigorously stating a different point of view
7 but not telling me to stop. There have been a few occasions of that but they have
8 been rare and they have been the exception.

9 Klenk: Well, at least some of them have been remembered by the participants --

10 Coppedge: I'm sure they have.

11 Klenk: -- in a negative way. So that's what we're trying to preserve is the workplace that's
12 welcoming, that has no hostility. That's what we're trying to do.

13 Coppedge: OK, I certainly understand the right of an employer to ... to not give a false im-
14 pression of what the company is about, to not go to total strangers ... like that.
15 But again these are people that I know and know me. We are friends. We are co-
16 workers. We have been on this program for over 10 years in many cases. You now
17 for me to approach them on a subject that I think is interesting and worthwhile is
18 protected speech. And if they want to engage me with a vigorous discussion on
19 that, that is also protected speech. It only becomes what Greg called harassment if
20 it is persistent, if it is unwelcome, and if they are telling me, 'Stop, stop' or if
21 they're going to the manager and saying, 'I don't want to hear about that any more
22 from Dave Coppedge.' But they don't ... but they don't do that.

23 Klenk: No I think you're ... I think in many cases in a hostile work environment people
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1 do not do that. They sit there, and they are uncomfortable and they do not verbal-
2 ize it.

3 Coppedge: Even though these are adults, who certainly ...

4 Klenk: Even though they are adults.

5 Coppedge: OK, then how...

6 Klenk: For example, the more classic one is sexual harassment. People don't say anything
7 typically even when they are being harassed.

8 Coppedge: I understand. But I think what I'm doing is certainly not in the category of sexual
9 harassment – not even close.

10 Klenk: It's not, but: the example is people haven't said you know that this is verbalized to
11 you. I was trying to give you an example. People don't always and say something.
12 You say that's not the adult thing to do.

13 Coppedge: And yet I'm supposed to know somehow just through vibes, even though nobody
14 tells me that they're uncomfortable, and even though Greg Chin or Cab Burgess
15 doesn't tell me that. I'm just supposed to know.

16 Klenk: Now that we've heard we will try to hear and try to listen to people [unintelligible],
17 but the fact is that you have to focus on that. If you want to carry on these kinds of
18 conversations, at the same time you have to make sure it's welcome and not dis-
19 ruptive.

20 Coppedge: I believe that to be the case. I think I have, you know, on that occasion of that one
21 guy that got into kind of an argument, and then I went and apologized to him the
22 next day. You know, I think we were both getting a little bit heated because we
23 both had strong feelings.

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1 Klenk: But separately to, before it got to the point of a significant argument, to have rec-
2 ognized it.

3 Coppedge: OK, well does, does this cut both ways? In other words, if people come at me with
4 unwelcome topics. I mean, for instance, in meetings there are points of views ex-
5 pressed about the way we ought to do things and stuff that get quite heated.

6 Klenk: Is it work related?

7 Coppedge: I might ... well ...

8 Klenk: If it's work related, how are we going to maintain the system? JPL is well known
9 for having spirited discussions on that.

10 Coppedge: Sure.

11 Klenk: If it's not work related ...

12 Coppedge: It's not always.

13 Klenk: If it's not work related, then certainly you can bring it up to your management
14 chain or to their management chain.

15 Coppedge: Right, but there have been times when people have posed points of view quite stri-
16 dently about what they believe, politically, culturally, whatever. I don't feel that I
17 have some kind of constitutional right against being offended by that, you know?
18 I'm a man, I can take it. I've got my point of view, I'm willing to defend it and
19 have a discussion. Not always, but these were instigated by others sometimes.
20 Now I suppose if I had a gripe against such a person because I disagreed with their
21 political point of view or something, and if an HR person said 'Did this person of-
22 fend you?' or something, I suppose I could put in a jab against them by saying
23 'Yeah, I think that was an unwelcome comment.' Would that be fair for me to do
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25

1 that? And yet that's certainly a conceivable type of ...

2 Klenk: If it's unwelcome or disruptive, you're certainly allowed to do that.

3 Coppedge: OK, but again, where is there any... you know? And, my records show that these
4 were not unwelcome. First of all, they're very infrequent. Most of the time they're
5 on the weekend. People are getting up to go home, they're not, it's not disrupting
6 their work. I never go up to somebody who is busy on the job and approach them
7 like with an interesting thing to watch. And I don't have any records of anybody
8 telling me that this was unwelcome and 'No, I'm not interested.' And if they didn't
9 look interested, I usually read that body language pretty quick. Say 'OK, this per-
10 son's not interested.' But the vast majority of the time they say 'Yeah, that looks
11 interesting, OK sure.' And then they come back and say 'Wow, that was real inter-
12 esting, I've never thought about that before.' Or 'Yeah I didn't agree with that, but
13 here it is, I watched it.' Or they'll just leave it on my desk and that's the end of it.
14 That's my pattern, I'm telling you. So, ... and that's protected speech in the work-
15 place. I would like you to affirm that. I would like you read this document and
16 say 'Yes, JPL affirms these rights of employees in the workplace.' And I would
17 certainly agree with you that anything that constitutes harassment is wrong, and
18 can be forbidden. But harassment is a strong word.

19 Burgess: Did you ask the same questions of the HR people?

20 Coppedge: Yes.

21 Burgess: And what did they say?

22 Coppedge: They didn't give me ... She said she'd get back to me and she never did. I asked
23 her twice. And I have asked her on the day of the interview and I asked her again
24
25

1 last week, and she told me she doesn't want to put things in writing very often,
2 she'll just you know call me and leave a voice mail, and 'What was that third ques-
3 tion again?', and that was the basic thing. And to me, I feel like I'm getting the
4 runaround here. I'm asking for specific information...

5 Klenk: Uh-huh.

6 Coppedge: ... and I'm getting these vague 'You[ve] got to watch people's body language and
7 it's your fault if you don't interpret their body language.' I have documentation to
8 show what I've done. I'm being up front with you about exactly what I've done,
9 I'm giving you examples, and I'm telling you that on March 2nd, Greg launched
10 into me in an accusation that nobody has ever made against me before. And of
11 course, once that accusation is made, you can maybe find supporting evidence to
12 back it up because you've created this suspicion.

13 Klenk: I don't think that Jhertaune was reaching to support by the sounds of what she re-
14 ported to us.

15 Coppedge: Can we get a second opinion? Or, I mean ... This goes into my record as some-
16 thing quite serious -- a charge of harassing people. I've never had something like
17 that in my record before. How do you feel about this other document? I listed to-
18 gether a couple of pages of sample stories that are reported on JPL News. We
19 have had people like Michael Shermer here. We have had others who are ardent
20 skeptics and atheists and proud of it stand up in the Von Karman Auditorium and
21 present their point of view. Now, do I have the right to say I'm being harassed be-
22 cause I'm hearing something that offends me? No. I would never do that. I would
23 say, 'Hey, I'll take you on; let's have a discussion about that.' Why don't we have a
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1 fairness of points of view? So that if one side gets the pulpit to be able to say this
2 is supported by science, somebody else can counter that? Now I have an example
3 of a page and a half of ... these are published news stories with religious or philo-
4 sophical overtones, and you're welcome to look through these things. These make
5 claims that go way beyond the scientific evidence that talk about ultimate mean-
6 ings, ultimate destiny, ultimate origins, I mean ... these are what could be con-
7 strued as religious content. I showed this to Jhertaune and at the end I read three
8 observations about this: "Discussion of ultimate questions is acceptable at JPL,"
9 number 1. That's proved by these. Number two, "The philosophical or theological
10 implications of scientific findings are fair game for discussion." OK? And number
11 three, "Exposing employees to philosophical and theological positions, some of
12 which may differ markedly from their own strong, strongly held beliefs, does not
13 constitute harassment." Otherwise, they're harassing me almost every day.

14 Klenk: Again, what the memo, the written warning here is about is your on one- on-one
15 working relationships with your coworkers.

16 Coppedge: Am I allowed to get some character witnesses that would counter that impression?
17 Because I think I could find quite a few that would say, 'No, I don't think what
18 Dave's doing is unwelcome or harassing, or' ...

19 Klenk: Well, it does matter that there are some people who said the behavior was unwel-
20 come and disruptive.

21 Coppedge: What should have happened then was that they should have told Cab and he
22 should have told me, 'Don't talk to that person.'

23 Klenk: We should have done it; we should have done it earlier.

1 Coppedge: Because that has never happened. Up until, and even when I invited Greg Chin,
2 'Look, if I'm ever doing anything offensive or wrong, please tell me and give me a
3 chance to fix it,' he never did. And then all the sudden I'm investigated here as be-
4 ing this harassing person. I don't think that's fair.

5 Klenk: Well, it was a situation where it was both ways they investigated. Is Greg creating
6 a hostile work environment? And they looked into the whole situation. And this
7 is the result of the investigation. It wasn't, was Dave being investigated, it was the
8 situation as we were reported to them. Will you agree with that, Cab?

9 Burgess: Yeah.

10 Coppedge: Yeah, but again, I was not filing a grievance or making a claim.

11 Klenk: Once we were made aware of it, we're required to pursue ER and have them check
12 into it.

13 Coppedge: Cab's I think very familiar with my manner about loaning these things out. Have
14 you ever had a problem with me?

15 Burgess: Me personally? No, never ever.

16 Coppedge: No. OK, so I'd say where's the evidence other than maybe a few people that
17 Jhertaune was able to dig up.

18 Burgess: Don't say a few; HR said there's a lot out there, though.

19 Coppedge: OK, can I get a count? How many are we talking about?

20 Klenk: They said they don't want to do that in order to not have retaliation or anything that
21 would compromise the anonymity of the people who talked to them.

22 Coppedge: A number of people? I mean a digit number? I don't think that compromises any-
23 body's anonymity. I mean, a lot--is that three, is that twelve, is that 20?

1 Klenk: We could pursue having HR talk to you more about the situation.

2 Coppedge: Alright. Anyway, Kevin, I've laid out for you what I think is the documentation.
3 I'm up front and open about what I have been doing and what I have done. I don't
4 feel I have harassed anybody, and I'm sorry that some are giving that impression. I
5 think I go overboard to be accommodating to people and to hear them and recog-
6 nize ... But you know, having a spirited discussion on something, like, let's say,
7 on a Friday at 5:00, you know... People don't have a constitutional right to have
8 everybody agree with them on everything, obviously. And if anybody you know
9 says, 'This is unwelcome,' they can certainly let me know that.

10 Klenk: We would hope they would. But in this case it sounds like they are not able to
11 articulate that to you or unwilling to do that even though they're uncomfortable.

12 Coppedge: OK, Kevin will you do me a favor of at least reading my material?

13 Klenk: I I will read your material.

14 Coppedge: And hearing me out? You are hearing me out as far as, I mean, you
15 are obviously today, but ...

16 Klenk: I'm hearing you out now. And I will read through the documents that you've left
17 here.

18 Coppedge: Because, you know to the point that my constitutional rights are protected, I think I
19 always have strived to be very accommodating to what management or the boss
20 wants.

21 Klenk: We have; this is not infringement on your constitutional rights.

22 Coppedge: A blanket statement saying never to do this is.

23 Klenk: I don't believe there's anything in this that says that.
24
25

1 Coppedge: That's what Greg told me verbally. And I gave him this ...

2 Klenk: And that's where we said, you are to work with Cab. We've written up our under-
3 standing of the findings and in no place does it say that.

4 Coppedge: Alright. I ... I always... you know just I want to just affirm to you that I agree with
5 the JPL policies and the ethics and I strive to be an upright employee in every way
6 that I can. That is my commitment and my affirmation; it always has been. It's a
7 great shock to me to be accused of this. And I think the evidence is lacking, and I
8 think there could be elements of retaliation against people, certain people that dis-
9 agree with a point of view by claiming it's harassment, when they could have you
10 know simply ...

11 Klenk: I don't believe the harassment word was in the paper; I think we said you know do
12 you feel uncomfortable ...you know [unintelligible] hostile ...

13 Coppedge: Greg said it was.

14 Klenk: Look, I'm not debating what Greg said. I'm just talking about what our
15 ER rep Jhertaune told us.

16 Coppedge: Did she use the harassment word?

17 Klenk: No, she did not.

18 Coppedge: OK, well, is that in the statement then?

19 Klenk: She said, that's her summary of it. You violated the un ... [unintelligible] Unlawful
20 Harassment Policy.

21 Coppedge: OK, so she is claiming it's harassment.

22 Klenk: Um hm. Based on her understanding of what people reported. What I was hearing
23 when you said harassment, I didn't have anyone say, 'I am being harassed by Dave
24
25

1 Coppedge.'

2 Coppedge: That's right.

3 Klenk: OK, that word. But she found that the elements of people's responses on top that
4 did fall into that category.

5 Coppedge: This is highly subjective and I deny it. I deny I've harassed anybody. I certainly
6 will take great pains to read people's body language, but people need to step up
7 and say, 'This is unwelcome; I don't want to hear about it.' Or I need to be told
8 specific[s], or they need to tell Cab and he needs tell me and it can be against that
9 one person. But something is going into my record against my perception of what
10 has really happened. And I want your affirmation that you are protecting an em-
11 ployee's rights against unfair accusations.

12 Klenk: We are doing our best to have this done impartially by ER, you know with a ... to
13 the best of our understanding. OK, all points of view, this was the findings. These
14 findings are accurate.

15 Coppedge: I disagree with that statement: 'You failed to stop these activities when you were
16 told they were unwelcome and disruptive.' I think that's false. 'When you were
17 told.' Nobody ever told me this was unwelcome or disruptive. That is false. If
18 they gave me some kind of body language I'm supposed to read, OK well, I'm go-
19 ing to try to take better pains to read body language, but this says that I was told
20 they were unwelcome or disruptive. That's not true. As far as that Point Two , I
21 know who the individual was, and that's the one that I went to and apologized and
22 shook ... and he shook my hand. And I think I consider him a friend and I we nev-
23 er discussed that since, now that I know what is feelings are. And I've interacted
24
25

1 with this person multiple times over the life of the mission. I consider him a
2 friend. He's a scientist. I love talking about his his work on his instrument.
3 This was a very rare thing on a very controversial ballot initiative in the last elec-
4 tion. And I was just offering him some information to read. He chose to get angry
5 about it and start arguing about it. I ... I would have just left it right there except
6 that he wanted to talk about it and kind of put me on the defensive. He didn't say
7 this is unwelcome or disruptive. Yes, it got a little bit animated to the point where I
8 thought, you know, I want to affirm to him that he's a friend even if he doesn't
9 agree with me, and I went to him the next day and told him that. He spontaneously
10 stood up and shook my hand. OK? That's the facts. And yet this says I created a
11 disruption by you per ... you know ... This colors it totally different. Now, I don't
12 know what he said to the ER person but that was not what he expressed to me. So
13 what's next?

14 Klenk: This is a signature from both you and Cab. This is Cab presenting it to you.

15 Coppedge: Well I'm not going to sign anything without legal counsel. Because I
16 think this is ...

17 Klenk: By the way, what this is, your signature is just to warrant that this has been dis-
18 cussed with you and you received a copy. That's what you're signing.

19 Coppedge: I'm afraid it will give assent to the fact that this is truthful when I think it's not. I'd
20 like, before signing anything, I'm going to have to consult legal counsel.

21 Klenk: OK, we will be putting this in your file signed with in lieu of signature that we did
22 have the discussion with you and you have been informed of the policy.

23 Coppedge: I know the policy and I don't think I violated it.

1 Klenk: But we will be putting it in the file with the note in lieu of.

2 Coppedge: I would like there to be some kind of a statement in the record that the employee

3 disagrees with the facts that were ...

4 Klenk: You are welcome to provide that to us and we will include that.

5 Coppedge: OK. OK, so I'm going to be expecting from you some kind of a written procedure

6 on what was conducted.

7 Klenk: No, I said I would talk to ER about that. I wouldn't expect it from me to do an in-

8 vestigation of the procedures and policies of ER.

9 Coppedge: Well, this should be a JPL-wide policy.

10 Klenk: I will pass the note along about that.

11 Coppedge: If I get no response can I come back to you and say that I have got

12 no response?

13 Klenk: And I will certainly note that.

14 Coppedge: OK, can I also expect a statement whether JPL abides by the Federal Guidelines on

15 Religious Expression in the Workplace, as I've stated?

16 Klenk: You are welcome to pursue that.

17 Coppedge: No, I want you to ...

18 Klenk: I don't know if you are going to receive that policy. I am not authorized, nor is

19 Cab.

20 Coppedge: These should be open statements on JPL Rules. These ... It's a matter of not just a

21 policy that JPL can choose, these are federal guidelines for all government em-

22 ployees, that are ... the guidelines are an interpretation of current law.

23 Klenk: It's my interpretation we don't discriminate on the basis of religion. We certainly

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25

1 don't allow harassment based on it.

2 Coppedge: Certainly. But, OK, whether this is even called religion is I think a debatable
3 question because the films I was loaning out are about scientific subjects, no less
4 scientific than the things I listed that JPL News routinely publishes. OK? Alright,
5 thank you for this discussion.

6 Klenk: Thank you.

7 Burgess: We have some more to deal with now.

8 Coppedge: OK.

9
10 Burgess: I wanted to know myself what I could do to lessen the strife in your area, so I'm
11 going to remove you from the lead of the system admin team. I'm going to give
12 the lead to someone else. And you will remain on the team, and there's no need to
13 be discussing this or the letter with anybody in public. This is all private infor-
14 mation. I had a discussion with Greg on how to deal with that rearrangement and
15 he and even HR suggested that when it comes to any announcement that you are
16 taking on some other role other than that I should divorce myself from that so it's
17 not obvious to the people who are hearing this that it's part of anything else. So
18 I've asked Greg to bring this up at his next team meeting, and as of next Monday,
19 someone else will be leading the team and he's going to address your role as spe-
20 cifically focused on getting the servers that you're trying to bring up as your focal
21 point from now on and not running the team with minutes and task assignments.
22 and all that. That's going to pass to someone else. And the idea there is that you
23 won't have that interface to these people out there on the project that are complain-

1 ing that they're uncomfortable with your actions.

2 Coppedge: You're certainly within your rights to do that Cab, but again I deny that anybody
3 has, that I have harassed anybody. And nobody has told me ... nobody has told
4 me that anything I have done has been unwelcome or disruptive.

5 Burgess: Now I'm going on what HR says, they say this has gone on too long, they can't be-
6 lieve this is prevalent, this point of view out there, as much as it is. We're talking
7 about a lot of your customers.

8 Coppedge: I have no way of knowing what the questions were to these individuals. I think
9 that that could have a profound impact on the kind of answer they gave.

10 Burgess: Well, that's why we're relying on HR. They're supposed to be the trained individ-
11 uals that know how to deal with these kind of problems.

12 Coppedge: OK, you're claiming this is no kind of retaliation action that this is suddenly hap-
13 pening after Greg Chin's outburst then ... against me.

14 Burgess: It's not that specifically, no, it's not.

15 Coppedge: You were going to do this anyway?

16 Burgess: No, this is directly a result of all the interviews that HR conducted. To them, you
17 see, it looks to them like you've got a customer base out there that's very uncom-
18 fortable, and removing you from that to be focused on something else is going to
19 lessen the strife in the workplace.

20 Coppedge: Greg has, on occasion, accused me of being difficult to get along with certain indi-
21 viduals. And yet he has never offered specifics. It's always been vague allega-
22 tions, OK? And I have pleaded with him and begged with him, 'Greg, if he can
23 show me something that I have done that is wrong, I will crawl on my knees to
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1 that person and apologize to them. That is my commitment to you.' He never does
2 that. This is the latest outburst and he found a new lightning rod to use. What
3 guarantee do I have that ... that he doesn't some kind of personal vendetta that is
4 you know using tools to get back at me here?

5 Burgess: I don't think he has a personal vendetta. He has discussed with me in the past
6 about whether there is other work for you on the lab, on other projects.

7 Coppedge: Well that would certainly be convenient for him, but I ...

8 Burgess: And, we just don't have any big projects going. In the old days when we had a lot
9 of different customers, you could move the SA's around you know, and eliminate
10 those kinds of problems.

11 Coppedge: Kevin, you can look at my previous two office managers: Dave Childs, Pamela
12 Ray. Never had a problem with them. I was working on Cassini before Greg Chin
13 came in. I was there first. He came in as the office manager. Immediately I tried to
14 establish a good relationship with him, and I think for the most part we have one.
15 It's cordial, it's professional, but from time to time, he has initiated conversations
16 with me, saying, 'Dave, you are the problem.' That type of thing. Vague allega-
17 tions, never anything specific. And then one time the person who was apparently
18 having trouble with me gave the same trouble to him, and he became the target of
19 it. And I think he began to empathize with what I was feeling.

20 Klenk: Well, I think we need to work closely with Cab on coaching on how to handle sit-
21 uations better, improve the workplace, those sorts of things.

22 Coppedge: OK, I mean, you certainly have my commitment as far as being a gracious, per-
23 sonable person, OK? But we also have freedom of speech in this country, and we

1 have freedom of speech in the workplace, and to the extent that my rights of free-
2 dom of speech and religious expression are protected, I will do and I think I have
3 been doing all I can to maintain a professional, cordial relationship with all of my
4 co-workers. That has been my commitment; it remains so now. I cannot control
5 what other people think and what they say when I have documents that show oth-
6 erwise. Please read my materials.

7 Klenk: I said I will.

8 Coppedge: And give me the benefit of the doubt, you know because I think there may be more
9 going on here than just what one particular HR person found, and what ... I have
10 no idea what kind of questions she asked and how this was conducted. That's why
11 I think you know we need to be on something this sensitive, we'd better be follow-
12 ing established policy for your protection and for mine. OK?

13 Klenk: OK. Thank you for stopping by. [unintelligible]
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EXHIBIT 7



- 



Greg states that he is tired of all of the complaints re. David harassing people w/ his religious viewpoints during business hours.



EX 7

D000000096

EXHIBIT 8

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

DAVID COPPEDGE, AN INDIVIDUAL,)
)
 PLAINTIFF,)
)
 VS.) CASE NO.
) BC 435600
 JET PROPULSION LABORATORY, FORM)
 UNKNOWN; CALIFORNIA INSTITUTE)
 OF TECHNOLOGY, FORM UNKNOWN;)
 GREGORY CHIN, AN INDIVIDUAL;)
 CLARK A. BURGESS, AN INDIVIDUAL;)
 KEVIN KLENK, AN INDIVIDUAL; AND)
 DOES 1 THROUGH 25, INCLUSIVE,)
)
 DEFENDANTS.)
)

DEPOSITION OF SCOTT EDGINGTON,

TAKEN ON TUESDAY, FEBRUARY 22, 2011

REPORTED BY:
HEIDI SULLIVAN
CSR NO. 6600
FILE NO.: 10-117

EX 8

1 [REDACTED] [REDACTED] [REDACTED]
2 MR. BECKER: PEOPLE GETTING TOGETHER. I DO
3 SPEAK ENGLISH BUT --

4 THE WITNESS: NO, I DO NOT RECALL HAVING A
5 FURTHER CONVERSATION ABOUT IT.

6 BY MR. BECKER:

7 Q. OKAY. WHAT IS YOUR UNDERSTANDING OF WHAT
8 INTELLIGENT DESIGN IS?

9 A. MY UNDERSTANDING IS THAT IT IS AN ATTEMPT
10 TO FORM -- TO REFORM CREATIONISM INTO A SCIENCE, AND
11 YET IT DOES NOT MEET THE STANDARDS OF SCIENCE OR
12 CRITERIA FOR SOMETHING BEING A SCIENCE, AND IT DOES
13 NOT MEET THOSE CRITERIA.

14 Q. ON WHAT BASIS DID YOU FORM THAT OPINION?

15 A. WELL, I'M A SCIENTIST. I DEAL WITH
16 SCIENCE AS A LIVING. I'VE TAKEN MANY PHILOSOPHY
17 CLASSES AS AN UNDERGRAD WHERE -- ESPECIALLY PHILOSOPHY
18 OF SCIENCE CLASSES.

19 SO AS A PROFESSION, I DO NOT AGREE THAT
20 IT IS A SCIENCE AT ALL.

21 Q. HOW MUCH RESEARCH HAVE YOU DONE INTO
22 STUDYING THE THEORY OF INTELLIGENT DESIGN?

23 A. NONE. IT IS NOT A THEORY.

24 Q. IT'S WHAT?

25 A. IT IS NOT A THEORY.

1 Q. WHAT DO YOU BELIEVE IT TO BE?

2 A. IT'S A RELIGIOUS BELIEF.

3 Q. IF YOU'VE NEVER READ ANY BOOKS OR -- LET
4 ME ASK YOU THIS PRELIMINARILY.

5 HAVE YOU READ ANY LITERATURE FROM
6 PROPONENTS OF INTELLIGENT DESIGN?

7 A. NO, I HAVE NOT.

8 Q. HAVE YOU READ ANY PEER-REVIEWED ARTICLES
9 ABOUT INTELLIGENT DESIGN THAT SUPPORTS IT?

10 A. I HAVE NOT.

11 Q. ARE YOU AWARE OF THE FACT THAT THERE IS
12 PEER-REVIEWED LITERATURE SUPPORTING INTELLIGENT DESIGN
13 THEORIES?

14 A. IT DEPENDS ON WHO THOSE PEERS ARE OR WHAT
15 THOSE JOURNALS ARE.

16 Q. ARE YOU AWARE THAT DARWIN'S ORIGIN OF THE
17 SPECIES WAS NOT PEER REVIEWED?

18 A. YES.

19 Q. SO IT ALWAYS DEPENDS ON WHO IS SUPPORTING
20 THE PARTICULAR VIEWPOINT, DOESN'T IT?

21 [REDACTED]

22 THE WITNESS: NO, IT DOES NOT. SCIENCE IS
23 TESTABLE, AND YOU CAN MAKE PREDICTIONS FROM THAT. YOU
24 CANNOT DO THAT WITH INTELLIGENT DESIGN.

25 ///

1 CHURCH?

2 A. IT WOULD HAVE BEEN A WEDDING.

3 Q. A WEDDING?

4 A. IT WOULD HAVE BEEN A WEDDING A FEW YEARS
5 AGO.

6 Q. DID YOU EVER ATTEND CHURCH ON A REGULAR
7 BASIS?

8 A. YES, I USED TO.

9 Q. WHEN DID YOU CEASE DOING THAT?

10 A. WHEN I WENT TO GRADUATE SCHOOL.

11 Q. GRAD SCHOOL IS ALWAYS WHAT DOES IT.

12 DID DAVID EVER TALK TO YOU ABOUT HIS
13 RELIGIOUS FAITH?

14 A. NO.

15 Q. NEVER CAME UP AT ALL?

16 A. NO.

17 MR. BECKER: WHAT WAS THE LAST EXHIBIT? 26?

18 LET'S MARK EXHIBIT 27. THAT IS A
19 DOCUMENT WITH BATES STAMPED NO. DEFENDANT 93,
20 PURPORTING TO BE JHERTAUNE HUNTLEY'S NOTES TAKEN FROM
21 HER MEETING WITH YOU ON MARCH 20, 2009.

22 TAKE A MINUTE TO LOOK AT IT.

23 (THE ABOVE-MENTIONED DOCUMENT WAS MARKED
24 FOR IDENTIFICATION BY THE CERTIFIED SHORTHAND
25 REPORTER AND ATTACHED HERETO.)

1 THE WITNESS: I KNOW CERTAIN CHRISTIANS HAVE
2 PROBLEMS WITH THAT, AND THEY DO BASE THEIR ARGUMENTS
3 ON THE SCRIPTURE, THEIR INTERPRETATION OF THE
4 SCRIPTURE.

5 BY MR. BECKER:

6 Q. DID YOU KNOW AT THE TIME OF THIS MEETING
7 OR THIS ENCOUNTER WITH DAVID THAT DAVID HAD VERY
8 SINCERE CHRISTIAN BELIEFS?

9 [REDACTED]
10 [REDACTED]
11 THE WITNESS: I DID NOT KNOW OF ANY OF DAVE'S
12 PERSONAL OR RELIGIOUS BELIEFS AT ALL.

13 BY MR. BECKER:

14 Q. DO YOU BELIEVE THAT PEOPLE OPPOSED TO GAY
15 MARRIAGE WHO HAVE SINCERE RELIGIOUS BELIEFS HAVE A
16 RIGHT TO EXPRESS THOSE BELIEFS?

17 [REDACTED]
18 [REDACTED]
19 THE WITNESS: EVERYONE COULD HAVE A BELIEF,
20 AND THEY COULD STATE IT IF THEY WISH.

21 BY MR. BECKER:

22 Q. DO YOU BELIEVE CHRISTIANS HAVE CIVIL
23 RIGHTS?

24 [REDACTED]
25 THE WITNESS: EVERYONE HAS CIVIL RIGHTS.

EXHIBIT 9

Mtg w/ David Coppedge 3/5/09 re: Greg Chin Complaint

David stated that Greg Chin asked to see him in his office on 3/4/09 and accused him of pushing his religious views on people. Greg forbade him to discuss his religious or political views w/ anyone at the job in the future. Greg was very angry and refused to tell David who made the complaint. Greg further stated during their mtg that David was harassing people and that is what was going on for sometime and a number of people have complained.

David stated he would initiate giving his co-workers the DVD's (i.e., The Privileged Planet, Intelligent Design) He would ask if they would like to watch the DVD at the end of the day on Fridays or Thursdays (RDO week). Some of his co-workers would say yes and others would let him know they were not interested in viewing the DVD's.

* keeps a list of who he gives DVDs to & who refuses to take them

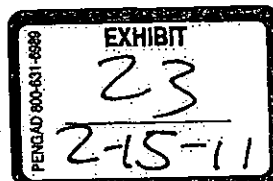
David gave Greg a DVD (The Case for Christ) as a Christmas gift. (Case for Christ is a historical documentary where scholars discuss their viewpoint if Christ lived or not)

David stated that he lent the DVD's out. They were not given as gifts (only Greg Chin). He never coerced or pressured anyone to take the DVDs. David stated that he takes less than 1 minute of his time to discuss pending out the DVDs.

David states that the DVD Intelligent Design is not religious and Greg Chin argued w/ him that it is.

David stated that he was very surprised by Greg's behavior during the 3/4 mtg. Did not know where it came from. He feels he deserves better treatment. He feels Greg has violated his civil rights, his freedom of speech and went over the line in making a blanket accusation about harassment. Greg also shouted at him and stated, "go ahead and file a complaint."

EX 9



(99-100)

0000000099

cont. of mtg w/ David Coppedge 3/5/09 re: Greg Chin Complaint
David stated that in terms of politics he would go on the internet and learn about judges for the local election, i.e., qualifications & stances on various issues. He would put together a half sheet of info for all judges and distribute it to his coworkers who were interested in that info. He only did it twice over the last 2 yrs.

During the 2008 Presidential election ^{David} ~~he~~ would ask various co-workers if they ~~would~~ wanted Prop 8 info sheet, which targeted one side. Some of his co-workers said, "yes" and some said, "no".

David stated he had a friendly conversation about Prop 8 w/ Bruce Elgin even though they did not share the same views. David further stated that he had a heated conversation w/ Scott Egington about Prop 8. They as well had opposing views as to what was right vs wrong re: David stated the conversation did not sit well w/ him so he apologized to Scott the next day.

EXHIBIT 10

UNLOCKING THE MYSTERY OF LIFE

Complete Script Draft—67 Minute Version (full length)

6/1/05

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EX 10

1. Sandpipers run on seashore.

2. Pajaro seascapes continue with inserts of scientists.

Narration

IN 1993, PROFESSOR PHILLIP JOHNSON, OF THE UNIVERSITY OF CALIFORNIA AT BERKELEY, INVITED A GROUP OF SCIENTISTS AND PHILOSOPHERS TO A SMALL BEACH TOWN ON THE CENTRAL COAST OF CALIFORNIA.

THEY CAME FROM MAJOR ACADEMIC CENTERS, INCLUDING CAMBRIDGE, MUNICH, AND THE UNIVERSITY OF CHICAGO TO QUESTION AN IDEA THAT HAD DOMINATED SCIENCE FOR 150 YEARS.

Pajaro scientists/ voice-overs.

Paul Nelson (voice over)

"I think Pajaro Dunes represented a turning point for many of us. Individually, we all had questions about evolutionary theory. But when we came together, each person brought something of their own to the table...and suddenly, we all had a glimpse of a new way of looking at life that none of us had individually seen before."

4. Dean Kenyon

Dean Kenyon (voice over)

"I would have to say that this was an intense period of time in my life. It just seemed that there was something here much more intellectually satisfying than the view that I had held up until this time."

5. Michael Behe

Michael Behe (voice over)

"Looking back on it now, I think that gave me the motivation to actually look at the evidence and just see where I thought it pointed."

6. Steve Meyer

Steve Meyer (voice over)

"I realized this was bigger than any one person or discipline. And this was the beginning of a community of scientists who were now willing to face the fundamental mystery of life's origin."

7. "Life" montage. Boxed images of eyes, fins, feet, plants, appear on the screen. This montage of different species builds at a frantic pace. It culminated with the single word:

LIFE

8. Voice over. As line is spoken, the rest of our title appears around the word, "LIFE."

UNLOCKING THE MYSTERY OF LIFE

9.Phil Johnson

Phil Johnson

"I sometimes wonder why anybody talks about anything else. Because this is the most interesting topic there is. Where did we come from? How did we get here? What brought us into existence? What is our relationship to reality as a whole?"

10.Montage of living organisms continues. Paul Nelson.

Paul Nelson

"You look at the incredible diversity and complexity of life, and inevitably the question arises—what brought all of this into existence? Was it simply chance and necessity, undirected natural forces? Or, is there something else going on? Is there a purpose, a plan...a design, a design due to an intelligent cause? I think that is the fundamental question."

11. Beach/ scientists

Narration

THE SCIENTISTS WHO CAME TO PAJARO DUNES SET OUT TO REEXAMINE THE MYSTERY OF LIFE'S ORIGIN, FOR EACH HAD SIGNIFICANT DOUBTS ABOUT WIDELY HELD EVOLUTIONARY IDEAS.

12.Michael Behe

AMONG THEM, BIOCHEMIST, MICHAEL BEHE, QUESTIONED HOW NATURAL PROCESS COULD HAVE ASSEMBLED THE INTRICATE STRUCTURES FOUND WITHIN LIVING CELLS.

13. Dean Kenyon

Narration

DEAN KENYON WAS AN EVOLUTIONARY BIOLOGIST WHO NO LONGER THOUGHT THAT CHEMISTRY, ALONE, COULD ACCOUNT FOR THE ORIGIN OF LIFE ON EARTH.

14. Meyer, Dembski, Nelson

Narration

AND, STEPHEN MEYER, PAUL NELSON AND WILLIAM DEMBSKI WERE SEEKING A NEW APPROACH. ONE THAT COULD EXPLAIN THE ORIGIN OF THE GENETIC INFORMATION ENCODED IN LIVING ORGANISMS.

15. Scientists/ beach/ Darwin

THESE SCIENTISTS AND PHILOSOPHERS BEGAN TO FORMULATE AN ALTERNATIVE TO THE CENTRAL THEORY OF MODERN BIOLOGY. A THEORY BORN IN THE MIND OF A BRITISH NATURALIST. HIS NAME WAS CHARLES DARWIN.

16. Stock footage—Beagle sets sail (animated map)

Narration

IN 1831, DARWIN (THEN, 22 YEARS OLD) SET SAIL ON A FIVE YEAR SURVEY EXPEDITION FOR THE BRITISH EMPIRE.

17. Map of route to Galapagos Islands

Narration

**HE JOURNEYED FROM ENGLAND ON THE HMS BEAGLE...
TRAVELING AROUND THE SOUTHERN TIP OF SOUTH
AMERICA...THEN NORTH TOWARD A CHAIN OF VOLCANIC
ISLANDS IN THE PACIFIC CALLED, THE GALAPAGOS.**

18. Galapagos animals and plants

Narration

**ON THIS DESOLATE ARCHIPELIGO, 600 MILES OFF THE
WESTERN COAST OF EQUADOR, CHARLES DARWIN
ENCOUNTERED AN EXTRAORDINARY ARRAY OF BIRDS,
REPTILES AND MAMMALS, THE LIKES OF WHICH HE HAD
NEVER SEEN BEFORE.**

19. Galapagos wildlife

Narration

**FOR MORE THAN A MONTH, DARWIN STUDIED PLANT AND
ANIMAL LIFE, TOOK EXTENSIVE NOTES AND COLLECTED
SPECIMENS. THEN HE LEFT, NEVER TO RETURN.**

20. Darwin/ book/ wildlife

Narration

**25 YEARS PASSED AS HE DEVELOPED A THEORY ABOUT
HOW THE DIVERSE FORMS OF LIFE ON EARTH HAD
ORIGINATED.**

21. "Origins" title page

Narration

IN 1859, DARWIN PUBLISHED A BOOK TITLED, "ON THE ORIGIN OF SPECIES." IT'S IMPACT ON SCIENCE--AND ULTIMATELY, ALL OF WESTERN CULTURE--WAS DRAMATIC.

DARWIN ARGUED THAT ALL LIFE WAS THE PRODUCT OF PURELY UNDIRECTED NATURAL FORCES—TIME, CHANCE, AND A PROCESS HE CALLED, "NATURAL SELECTION.

22. Interview—Paul Nelson

Paul Nelson

"For 2500 years before Darwin, most prominent scientists and philosophers—people such as Plato, or Newton, or Kepler—viewed the world as the product of some kind of design or plan.

But, a fundamental shift occurs with Darwin's idea of natural selection, and a real change in scientific philosophy is set into motion."

23. Galapagos Islands—Establishing shots of island/finches.

Narration

DARWIN WAS NOT THE FIRST SCIENTIST TO PROPOSE A THEORY OF EVOLUTION... BUT HE WAS THE FIRST TO OFFER A PLAUSIBLE NATURALISTIC MECHANISM THAT COULD PRODUCE BIOLOGICAL CHANGE OVER LONG PERIODS OF TIME.

TO UNDERSTAND HOW NATURAL SELECTION WORKS CONSIDER THE FINCH POPULATIONS DARWIN ENCOUNTERED ON THE GALAPAGOS ISLANDS,

24. Paul Nelson (record temp track)

Paul Nelson (VO)

"Thirteen species of finches inhabit the Galapagos Islands, and they vary subtly in terms of their body size and shape of their beak. Darwin returned to England with nine different species of these birds.

25. Multi-panel CU's birds beaks/ seed eating finch

Narration

ACCORDING TO CONTEMPORARY DARWINIAN THEORY, DIFFERENCES IN THE SIZES AND SHAPES OF BIRD'S BEAKS ARE THE DIRECT RESULT OF NATURAL SELECTION.

ONE EXAMPLE, OFTEN CITED, INVOLVES SPECIES OF SEED-EATING FINCHES.

26. Rainfall/ soft seeds/ seed eating finches

FOLLOWING SEASONS OF HEAVY RAIN, SMALL, SOFT SEEDS ARE PLENTIFUL THROUGHOUT THE ISLANDS. BIRDS WITH SHORT BEAKS CAN EASILY GATHER FOOD.

27. Pod eating finch/ dry island

HOWEVER, DURING PERIODS OF DROUGHT, THE ONLY SEEDS AVAILABLE ARE ENCASED IN HARD, TOUGH SHELLS THAT REMAIN ON THE GROUND FROM THE PREVIOUS YEAR.

IN THESE CIRCUMSTANCES, ONLY BIRDS WITH LONGER, SHARPER BEAKS CAN CRACK THE SHELLS AND EAT THE SEEDS.

28. Paul Nelson/ finches

Paul Nelson

“Those birds with the longer beaks survive because they can reach the food source, whereas other birds cannot. That long beak then confers what biologists now call a ‘functional advantage.’

The finches with smaller beaks, unfortunately, die out from starvation because they cannot reach that food source.

If the drought conditions continue, the environment causes a change in the features of the finch population as a whole. Over time, the long beaks are passed on to succeeding generations because those beaks enable those birds to survive.”

29. Galapagos Wildlife.

Narration

NATURAL SELECTION WAS A POWERFUL IDEA. PHYSICAL VARIATIONS THAT PROVED ADVANTAGEOUS WOULD BE INHERITED BY SUCCEEDING GENERATIONS. THROUGH THIS PROCESS, POPULATIONS WOULD BE ALTERED...AND, (OVER TIME), FUNDAMENTALLY DIFFERENT, ORGANISMS WOULD ARISE...WITHOUT ANY FORM OF INTELLIGENT GUIDANCE.

30. Jonathan Wells

Jonathan Wells

"Darwin wanted to explain everything in the history of life in terms of undesigned, unintelligent natural processes.

"...and when he looked for an explanation, what he found was that a process he could observe in domestic populations also operates in the wild."

"Now, Darwin, himself, was very familiar with domestic breeding. He himself, studied pigeon breeding, and he knew that—for centuries—human breeders had been able to make dramatic changes in populations by selecting only certain individuals to breed. Darwin really suggested that this same process operates in the wild....

31. Paul Nelson

Paul Nelson

"For Charles Darwin, natural selection explained the appearance of design without a designer. There was no longer any need to invoke an intelligent cause for the complexity of life. In effect, natural selection became a kind of designer substitute."

32. Beach

Narration

**TODAY, DARWINISM IS GENERALLY ASSUMED
THROUGHOUT SCIENCE AND THE ACADEMIC WORLD...**

33. Pajaro scientists/ beach

Narration

YET, DESPITE ITS WIDE ACCEPTANCE, A GROWING NUMBER OF SCIENTISTS AND SCHOLARS (INCLUDING THOSE WHO MET AT PAJARO DUNES) NOW CHALLENGE KEY ASPECTS OF DARWINIAN THEORY.

34. Pajaro scientists. Nelson.

Paul Nelson (VO)

"When we came together at Pajaro Dunes we certainly didn't agree on everything, but we did share a real dissatisfaction with the mechanism of natural selection and the role that it was playing in biological explanation."

35. Paul Nelson (on camera)

Paul Nelson

"Natural selection is a real process and it works well for explaining certain limited kinds of variations, small scale change. We have lots of examples of that, in fact. Where it doesn't work well is explaining what Darwin thought it could—namely, the real complexity of life."

36. Finches

Nelson (vo)

"We have a finch beak, and then you've got the finch, itself. A minor change in the structure of the beak versus the origin of the organism, itself. These are different scales of phenomena. These are different kinds of problems. And the important problem for biology is to understand where natural selection works, and where it doesn't. And why there's a difference."

37. Pajaro beach

Paul Nelson (vo)

"Evidence is a very powerful. And all of us had a sense that if we let that evidence speak for itself, that it would lead us in a very different direction—away from natural selection and towards a different conclusion about the origin and nature of life on earth."

38. Darwin Quote

Character voice— Charles Darwin

"Natural selection acts only by taking advantage of slight, successive variations. She can never take a great and sudden leap, but must advance by short and sure, though slow steps."

39. Behe walks down stairs

Michael Behe

"It's really interesting to notice that the more we know about life and the more we know about biology, the more problems Darwinism has, and the more design becomes apparent."

40. Behe walks down stairs, then outside building

Narration

SINCE 1988, DR. MICHAEL BEHE HAS INVESTIGATED COMPLEX BIOLOGICAL SYSTEMS THAT SEEM TO DEFY EXPLANATION BY NATURAL SELECTION.

41. Behe on camera

Michael Behe

"... for the longest time, I believed that Darwinian evolution explains what we saw in biology. Not because I saw how it could actually explain it, but because I was told that it did explain it. In schools I was taught Darwinian biology."

42. Behe types—silhouetted through door

Behe

"And through college and graduate school, I was in an atmosphere which just assumed that Darwinian evolution explained biology and, again, I didn't have any reason to doubt it."

43. Behe on camera

Mike Behe

"It wasn't until about ten years ago, that I read a book called, "Evolution, a Theory in Crisis," by a geneticist by the name of Michael Denton (an Australian). And he put forward a lot of scientific arguments against Darwinian theory that I had never heard before."

44. Behe in lab

Mike Behe

"...and the arguments, seemed pretty convincing. And, at that point, I started to get a bit angry because I thought I was being led down the primrose path. Here were a number of very good arguments...and I had gone through a doctoral program in biochemistry, became a faculty member... and I had never even heard of these things. And so, from that point on, I became very interested in the question of evolution and since have decided the Darwinian processes are not the whole the explanation for life."

45. Michael Behe in lab/ cell panels

Narration

MICHAEL BEHE'S SKEPTICISM DERIVED, IN LARGE MEASURE, FROM WHAT MODERN BIOLOGY HAS REVEALED ABOUT LIFE'S MOST FUNDAMENTAL UNIT—THE CELL.

46. Behe

Behe

"In the 19th Century, when Darwin was alive, scientists thought that the basis of life, the cell, was some simple glob of protoplasm, like a little piece of Jell-O or something that was not hard to explain at all..."

47. Paul Nelson

Nelson

"This perception didn't really change too much until the early 1950's. But, during the last half century our knowledge about the cell has just exploded."

48. Time lapse bacteria

Narration

TODAY, POWERFUL TECHNOLOGIES REVEAL ELABORATE MICROSCOPIC WORLDS.

WORLDS SO SMALL, THAT A THIMBLE FULL OF CULTURED LIQUID CAN CONTAIN MORE THAN FOUR BILLION SINGLE-CELLED BACTERIA...

...EACH PACKED WITH CIRCUITS, ASSEMBLY INSTRUCTIONS, AND MINIATURE MACHINES, THE COMPLEXITY OF WHICH, CHARLES DARWIN COULD NEVER HAVE IMAGINED.

49. Michael Behe

Behe (vo)

"At the very basis of life, where molecules and cells run the show, we've discovered machines. Literally, molecular machines."

50. Mike Behe

Behe

"...there are little molecular trucks that carry supplies from one end of the cell to the other. There are machines which capture the energy from sunlight and turn it into useable energy..."

51. Jed Macosko/ cells

Jed Macosko (VO)

"There are as many molecular machines in the human body as there are functions that the body has to do. So if you think about hearing, seeing, smelling, tasting, feeling...blood clotting, respiratory action, the immune response...all of those require a host of machines."

52. Behe

Behe

"...when we look at these machines, we ask ourselves—'where do they come from?' And, the standard answer—Darwinian evolution, is very inadequate in my view...."

53. Michael Behe speaks at SMU

Narration

DURING THE EARLY 1990'S (AT A SERIES OF ACADEMIC CONFERENCES) BEHE FIRST SHARED HIS DOUBTS ABOUT THE ABILITY OF NATURAL SELECTION TO CONSTRUCT COMPLEX MOLECULAR MACHINES.

54. Photomicro flagellum

Narration

ONE MACHINE, PARTICULARILY, ATTRACTED HIS ATTENTION.

55. Michael Behe/ illustration of Bacterial flagellum

Michael Behe

"I remember the first time I looked in a biochemistry textbook and I saw a drawing of something called the bacterial flagellum, with all, all of its parts in all of its glory. It had a propeller and hook region and the, the drive shaft and the motor and so I looked at that and I said, that's an outboard motor. That, that's designed. That's no chance assemblage of parts."

56. Photomicro flagellum

Narration

BEHE'S REACTION WAS NOT SURPRISING, FOR THE MOLECULAR MOTORS THAT DRIVE BACTERIA THROUGH LIQUID EACH DEPEND UPON A SYSTEM OF INTRICATELY ARRANGED MECHANICAL PARTS.

THESE PARTS COME INTO FOCUS WHEN PORTIONS OF A CELL ARE MAGNIFIED 50,000 TIMES...

02/25/01

57. Animation of flagellum grows out of photomicro image.

Narration

BIOCHEMISTS HAVE USED ELECTRON MICROGRAPH'S LIKE THIS ONE, TO IDENTIFY THE PARTS AND THREE DIMENSIONAL STRUCTURE OF THE FLAGELLAR MOTOR.

IN THE PROCESS, THEY HAVE REVEALED A MARVEL OF ENGINEERING ON A MINIATURIZED SCALE.

58. Animation/ Scott Minnich insert

Scott Minnich

"Howard Berg at Harvard has labeled it the most efficient machine in the universe. These machines, some of them, are running at 100,000 rpms. And are hard-wired into a signal transduction or sensory mechanism so that it's getting feedback from the environment."

59. Jed Macosko/ animation

Jed Macosko

"...and even though they are spinning that fast, they can stop on a dime. It only takes a quarter turn for them to stop and shift directions, and start spinning 100,000 rpm in the other direction."

60. Animation/ Behe insert/ animation

Mike Behe

"...and just like outboard motors on motorboats, it has a large number of parts which are necessary for the motor to work."

61. Scott Minnich/ animation

Scott Minnich

"The bacterial flagellum—two gears forward and reverse, water-cooled, proton motive force. It has a stator, it has a rotor, it has a U-joint, it has a drive shaft, it has a propeller. And they function as these parts of machines..."

62. Scott Minnich on camera

Scott Minnich

"It's not convenient that we give them these names. It's truly their function."

63. Scientists at work in lab

Narration

SINCE ITS DISCOVERY, SCIENTISTS HAVE TRIED TO UNDERSTAND HOW A ROTARY MOTOR COULD HAVE ARISEN THROUGH NATURAL SELECTION.

AS YET, THEY HAVE FAILED TO OFFER ANY DETAILED DARWINIAN EXPLANATION.

64. Super "Irreducible complexity"

TO SEE, WHY WE MUST UNDERSTAND A FEATURE OF MOLECULAR MACHINES KNOWN AS "IRREDUCIBLE COMPLEXITY."

65. Scott Minnich

Scott Minnich

“Irreducible complexity was coined by Mike Behe in describing these molecular machines. Basically, what it says, is that you have multi-component parts to any given organelle or system in a cell...all of which are necessary for function. That is, if you remove one part, you lose function of that system.”

66. Mousetrap animation

THE IDEA OF IRREDUCIBLE COMPLEXITY CAN BE ILLUSTRATED BY A FAMILIAR, NON-BIOLOGICAL MACHINE—A MOUSETRAP.

67. Mousetrap CU's

THE TRAP IS COMPOSED OF FIVE BASIC PIECES—A CATCH TO HOLD THE BAIT ...A STRONG SPRING... A THIN BENT ROD CALLED THE “HAMMER”...A HOLDING BAR TO SECURE THE HAMMER IN PLACE...AND A PLATFORM UPON WHICH THE ENTIRE SYSTEM IS MOUNTED.

IF ANY ONE OF THESE PARTS IS MISSING OR DEFECTIVE, THE MECHANISM WILL NOT WORK. ALL COMPONENTS OF THIS “IRREDUCIBLY COMPLEX” SYSTEM MUST BE PRESENT, SIMULTANEOUSLY, FOR THE MACHINE TO PERFORM ITS FUNCTION—CATCHING MICE.

68. Bacterium animation

IRREDUCIBLE COMPLEXITY ALSO APPLIES TO BIOLOGICAL MACHINES INCLUDING THE BACTERIAL FLAGELLAR MOTOR.

69. Michael Behe (over animation)

Michael Behe

"... all told they're about 40 different protein parts which are necessary for this machine to work...and, if any of those parts are missing, then either you get a flagellum that doesn't work because it's missing the hook or it's missing the drive shaft ..or whatever, or it doesn't even get built within the cell."

70. Scott Minnich

Scott Minnich

"In evolutionary terms, you have to be able to explain how you can build this system gradually when there's no function until you have all those parts in place."

71. Galapagos

Narration

**THE "IRREDUCIBLE COMPLEXITY" OF MOLECULAR MACHINES
POSES A SEVERE CHALLENGE TO THE POWER OF NATURAL
SELECTION.**

72. Galapagos wildlife

Narration

**ACCORDING TO DARWIN'S THEORY, EVEN VERY COMPLEX
BIOLOGICAL STRUCTURES (LIKE AN EYE, AN EAR, OR A HEART)
CAN BE BUILT GRADUALLY, OVER TIME, IN SMALL
INCREMENTAL STEPS.**

**YET, AS DARWIN MADE CLEAR, NATURAL SELECTION CAN ONLY
SUCCEED IF THESE RANDOM GENETIC CHANGES PROVIDE SOME
ADVANTAGE TO THE EVOLVING ORGANISM IN ITS STRUGGLE
FOR SURVIVAL.**

73. Darwin treatment. Portrait. Book excerpt.

Voice of Darwin

“As I have attempted to show, it is not necessary to suppose that the modifications were all simultaneous, if they were extremely slight and gradual.

“Natural Selection is scrutinizing the slightest variations...rejecting those that are bad, preserving and adding up all that are good.”

74. Bacteria animation

Narration

BUT COULD DARWIN’S “SMALL, FAVORABLE VARIATIONS” HAVE PRODUCED A BACTERIAL FLAGELLUM? SOME SCIENTISTS DOUBT THE POSSIBILITY.

75. Jed Macosko

Jed Macosko

“How could something new like a bacteria flagellar motor and all of the components that go with it...how could it develop out of a population of bacteria that don’t have that system? When each change, according to Darwin’s theory, has to provide some kind of advantage.

76. Animation. Bacteria—limp tail

Narration

IMAGINE SUCH A SCENARIO, EARLY IN THE EARTH'S HISTORY.

AN EVOLVING BACTERIUM SOMEHOW DEVELOPES A TAIL (AND, PERHAPS EVEN THE PIECES NECESSARY TO ATTACH IT TO THE CELL WALL).

YET, WITHOUT A COMPLETE MOTOR ASSEMBLY, THIS INNOVATION WOULD PROVIDE NO ADVANTAGE TO THE CELL.

INSTEAD, THE TAIL WOULD LIE IMMOBILE AND USELESS—INVISIBLE TO NATURAL SELECTION WHICH, BY DEFINITION, CAN ONLY FAVOR CHANGES THAT AID SURVIVAL.

77. Paul Nelson

Paul Nelson (overlaps dead flagellum)

“The logic of natural selection is very demanding. Unless the flagellum mechanism is completely assembled, and actually works, natural selection simply cannot preserve it. It cannot be passed on to the next generation.”

78. Jonathan Wells/ animation

Jonathan Wells

“The important thing to realize about natural selection is that it selects only for a functional advantage.

“In most cases, natural selection actually eliminates things...things that have no function, or have a function that harms the organism. So if you had a bacterium with a tail that didn't function as a flagellum, chances are natural selection would eliminate it.”

79. Wells (cont.)

Jonathan Wells

"The only way you can select for a flagellum is if you have a flagellum that works and that means you have to have all the pieces of the motor in place to begin with.

So, natural selection can't get you the bacterial flagellum. It can only work after the flagellum is there and operating."

80. Flagellum background. Book cover

Narration

IN 1996, MICHAEL BEHE PUBLISHED A BOOK TITLED, "DARWIN'S BLACK BOX." IN IT, HE ARGUED THAT NATURAL SELECTION (DARWIN'S "DESIGNER SUBSTITUTE"), COULD NOT EXPLAIN THE ORIGIN OF THE BACTERIAL FLAGELLUM OR ANY OTHER IRREDUCIBLY COMPLEX BIOLOGICAL SYSTEM.

81. "Chapter 9" title—"Intelligent Design"

Narration

INSTEAD, BEHE CONCLUDED THAT THE INTEGRATED COMPLEXITY OF THESE SYSTEMS POINTED TO INTELLIGENT DESIGN.

82. Newspaper headings/ Science—Nature—NY Times

"DARWIN'S BLACK BOX" CREATED IMMEDIATE CONTROVERSY. OVER SEVENTY-FIVE PUBLICATIONS (INCLUDING SOME OF THE WORLD'S LEADING NEWSPAPERS AND SCIENTIFIC JOURNALS REVIEWED THE BOOK.

83. Review excerpts

Narration

**SOME SCIENTISTS PRAISED BEHE'S WORK. WHILE OTHERS
DISMISSED IT AS UNSCIENTIFIC AND RELIGIOUSLY MOTIVATED.**

84. Flagellum parts float on black field. Pump

Narration

**BEHE'S CRITICS ALSO INSISTED THAT HE HAD
UNDERESTIMATED THE POWER OF NATURAL SELECTION. THEY
ARGUED THAT THE FLAGELLAR MOTOR COULD HAVE BEEN
CONSTRUCTED FROM PARTS USED TO BUILD SIMPLER
MOLECULAR MACHINES--LIKE THIS NEEDLE-NOSED CELLULAR
PUMP.**

85. New machine

**IF THE COMPONENTS OF THE PUMP ALREADY EXISTED,
THEY COULD HAVE BEEN PRESERVED BY NATURAL SELECTION
EVEN BEFORE THE BACTERIAL MOTOR AROSE.**

THIS THEORY IS CALLED, "CO-OPTION."

86. Scott Minnich/ flagellum parts

Scott Minnich

**"...it's essentially saying that evolution or natural selection, at some point,
was able to borrow components of one molecular machine and build a new
machine with some of these components."**

87. Minnich walks

Narration

SCOTT MINNICH HAS STUDIED THE FLAGELLAR MOTOR FOR NEARLY 20 YEARS. HIS RESEARCH HAS LED HIM TO CHALLENGE THE CO-OPTION ARGUMENT.

88. Scott Minnich

Scott Minnich

"With a bacterial flagellum, you're talking about a machine that's got 40 structural parts. Yes, we find 10 of them are involved in another molecular machine, but the other 30 are unique, So where are you going to borrow them from?

Eventually you're going to have to account for the function of every single part is of originally having some other purpose. I mean, you can only follow that argument so far until you run into the problem that you're borrowing from nothing...

89. Parts/ instructions

Scott Minnich

"...but, even if you concede that you have all the parts necessary to build one of these machines, that's only part of the problem. Maybe even more complex ...I think more complex ... is the assembly instructions. That is never addressed by opponents of the irreducible complexity argument.

90. Animation

Narration

STUDIES OF THE BACTERIAL MOTOR HAVE, INDEED, REVEALED AN EVEN DEEPER LEVEL OF COMPLEXITY—FOR ITS CONSTRUCTION NOT ONLY REQUIRES SPECIFIC PARTS, BUT ALSO A PRECISE SEQUENCE OF ASSEMBLY.

91. Minnich

Scott Minnich (144612)

You've got to make things at the right time. You've got to make the right number of components. You've got to assemble them in a sequential manner. You've got to be able to tell if you've assembled it properly so that you don't waste energy building a structure that's not going to be functional

92. Animation—House builds over blueprint

Narration

BUILDING A MOLECULAR MACHINE HAS BEEN COMPARED TO THE CONSTRUCTION OF A HOUSE—WHERE WORKERS FOLLOW A DETAILED BLUEPRINT AND PLAN FOR ASSEMBLY.

THE FOUNDATION OF A HOUSE IS POURED BEFORE THE WALLS ARE ERECTED.

PLUMBING AND ELECTRICAL FIXTURES ARE INSTALLED PRIOR TO ENCLOSING THE WALLS OF THE STRUCTURE.

WINDOWS MUST BE HUNG BEFORE SIDING IS APPLIED. AND SHINGLES ARE ATTACHED ONLY AFTER PLYWOOD SHEETS ARE NAILED TO THE RAFTERS. SO IT IS WITH THE CONSTRUCTION OF A FLAGELLAR MOTOR.

.....

93. Scott Minnich/ animation

Scott Minnich

"You build this structure from the inside out. You are counting the number of components in a ring structure of the stator, and once that's assembled, there's feedback that says, "okay, no more of that component. " Now, a rod is added. A ring is added. Another rod is added. The U-joints added. Once the U-joints are at a certain size, and certain degree of, of bend (about a quarter turn), that's shut off...and then you start adding components for a propeller. These are all made in a precise sequence, just like you would build a building."

94.

Narration

TO BUILD THE MOTOR CORRECTLY REQUIRES A COMPLEX SYSTEM OF MACHINES THAT COORDINATE THE TIMING OF THE ASSEMBLY INSTRUCTIONS. BUT HOW COULD NATURAL SELECTION CONSTRUCT SUCH A SYSTEM?

95. Paul Nelson

Paul Nelson

The co-option argument doesn't explain this. You see, in order to construct that flagellar mechanism—or the tens of thousands of other such mechanisms in the cell—you require other machines to regulate the assembly in these structures. And those machines themselves, require machines for their assembly."

96. Jonathan Wells

Jonathan Wells

"If even one of these pieces is missing or put in the wrong place, your motor isn't going to work. So this apparatus to assemble the flagellar motor is, itself, irreducibly complex. In fact, what we have here, is irreducible complexity all the way down."

97. Scott Minnich

Scott Minnich

"We know a lot about the bacterial flagellum. We still have a lot to learn, but we know a lot about it and there's no explanation for how this complex molecular machine was ever produced by a Darwinian mechanism."

98. Origin of Species/ Darwin/ Quote crawl

Narration

150 YEARS AGO, SCIENTISTS DID NOT KNOW ABOUT IRREDUCIBLY COMPLEX MOLECULAR MACHINES. YET, CHARLES DARWIN ANTICIPATED THE DIFFICULTY THAT SYSTEMS SUCH AS THESE COULD POSE TO HIS THEORY.

99. Darwin quote

Darwin (vo)

"If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down."

Fade to black

100. Galapagos wildlife. Interview—Steve Meyer

Steve Meyer (vo)

“There are really two big questions in biology. How do you get new living forms-- with new structures like wings and eyes—from life that already exists? And, secondly, how did life originate on earth in the first place?”

Steve Meyer (on camera)

101. “Now, of course we know that Darwin spent most of his life formulating an answer to the first of these two questions.”

102. Tree of Life. Animation/ diagram

Narration

CHARLES DARWIN COMPARED THE HISTORY OF LIFE ON EARTH TO A GREAT BRANCHING TREE.

THE BASE OF THE TREE REPRESENTED THE VERY FIRST LIVING CELL... AND THE BRANCHES WERE NEW AND MORE COMPLEX LIFE FORMS THAT HAD EVOLVED, OVER TIME, FROM THE FIRST PRIMITIVE ORGANISM.

103. Close-ups of tree. Representations of life on branches

Steve Meyer (VO)

“Darwin was trying to explain how the branches on the tree of life originated. He was trying to show how natural selection could have modified existing organisms to produce the great diversity of plant and animal life that fills the earth, today.”

104. Trunk of tree/ simple cells/ volume "Origen of Species"

Steve Meyer

"But, when it came to the base of the tree (which represented the origin of the first life—the first living cell), Darwin had very little to say. In fact, in "Origin of Species," he didn't even address the question of how life might have originated from non-living matter."

105. Darwin's Letter

Narration

THE ONLY GLIMPSES WE HAVE OF DARWIN'S OPINIONS ON THE SUBJECT, APPEAR IN A LETTER HE WROTE TO A COLLEAGUE NAMED, JOSPEH HOOKER.

106. Primordial earth

Charles Darwin (Character Voice)

"Regarding the first production of a living organism...

... if (and oh what a big if), we could conceive, in some warm little pond (with all sorts of ammonia and phosphoric salts, light, heat, and electricity present), that a protein compound was chemically formed, ready to undergo still more complex changes...

At the present, such matter would be instantly devoured ...but this may not have been the case before living creatures were formed."

107. Old Darwin portrait supered over primordial waters

Narration

DURING THE FINAL YEARS OF HIS LIFE, DARWIN DID LITTLE TO DEVELOP HIS IDEA THAT A PRIMITIVE CELL MIGHT HAVE EMERGED FROM SIMPLE CHEMICALS IN THE PRIMORDIAL WATERS OF THE EARLY EARTH....

108. Alexander Oparin portrait

...BUT, LATER (IN THE 1920'S AND 30'S), A RUSSIAN SCIENTIST NAMED, ALEXANDER OPARIN, FORMULATED A DETAILED THEORY ABOUT HOW THIS COULD HAVE HAPPENED. IT WAS CALLED, "CHEMICAL EVOLUTION."

109. Steve Meyer—interview

Steve Meyer

"Oparin thought that he could explain the origin of the first life using Darwinian principles. He envisioned simple chemicals combining and recombining to form larger molecules. And then these larger molecules organizing themselves (with the help of chance variations and natural selection) into the first primitive living cell."

110. CFG Sunset surf

Narration

OVER THE NEXT THREE DECADES, MANY SCIENTISTS WORKED TO DEVELOP AND REFINE THESE IDEAS, AS THEY PONDERED THE QUESTIONS BOTH OPARIN AND DARWIN HAD RAISED. HOW COULD LIFE HAVE EVOLVED FROM SIMPLE CHEMICALS?

111. Kenyon walks through glass door

ONE MAN THOUGHT HE KNEW.

112. Dean Kenyon

Dean Kenyon

"The problem of biological origins (for a very long time I would say), has been a real deep interest to me just because of the scale of the problem. The importance of it. Where did we come from? Why are we here? All that kind of questions, probed from the point of view of natural science."

113. Steve Meyer—

Steve Meyer

"During the late 1960's and throughout the 70's and early 80's, Dean Kenyon was one of the leading chemical evolutionary theorists in the world. Like others in his field, he was trying to explain how life on earth began through a purely natural process."

114. Book cover

Narration

IN 1969, KENYON CO-AUTHORED AN IMPORTANT BOOK ON THE ORIGIN OF LIFE.

115. Dean Kenyon

Kenyon

"Gary Steinman and myself thought that if we were to pull together all of the lines of empirical evidence that had accumulated, by the mid to late 60's, into one continuous argument, we were very enthusiastic about the possibilities for explaining the origin of the main life-building elements."

116. Kenyon/Protein animations

Narration

DESPITE HIS OPTIMISM, KENYON FACED A SIGNIFICANT PROBLEM.

TO EXPLAIN HOW LIFE BEGAN, HE FIRST HAD TO ACCOUNT FOR THE ORIGIN OF THE ESSENTIAL BUILDING BLOCKS OF EVERY CELL THAT HAS EXISTED ON EARTH. LARGE, COMPLEX MOLECULES CALLED PROTEINS.

117. Scott Minnich

Scott Minnich

“Proteins have a wide range of functions in the cell. Everything from structural requirements, in terms of scaffolding of the cell... the cytoskeleton to enzymes where they’re actually processing molecules to harvest energy or to build components of the cell.”

118. Jed Macosko

Jed Macosko

“Proteins do pretty much all of the jobs inside of the cell, except for storing genetic information (that’s left to the DNA and RNA)...but all the day-to-day jobs, cleaning up the cell, making energy, it’s all proteins.

119.

Narration

KENYON KNEW THAT PROTEINS WOULD HAVE BEEN AS IMPORTANT TO THE FIRST LIFE, AS THEY ARE TO LIVING CELLS, TODAY.

HE ALSO RECOGNIZED THE COMPLEXITY OF THEIR CONSTRUCTION.

120. Steve Meyer

Steve Meyer

"By the 1960's, scientists had determined that even simple cells are made of thousands of different types of proteins...and the function of these molecules derives from their highly complex three dimensional shapes."

121. Animation—proteins fit together

Steve Meyer (voice over)

"The irregular shapes of some proteins allow them to catalyze, or trigger chemical reactions, because of the hand in glove fit they have with other molecules in the cell..."

122. Protein animation

Meyer (voice over)

"...while other protein molecules form interlocking structural components."

123. Animation. Flagellum U-joint to protein to amino acid chain

Narration

THE INDIVIDUAL PARTS OF A BACTERIAL MOTOR LIKE THIS RING STRUCTURE, ARE EACH MADE OF EITHER A SINGLE PROTEIN MOLECULE...OR, AN ASSEMBLY OF PROTEINS FITTED TOGETHER INTO A SPECIFIC SHAPE.

124. *Protein begins to unravel into amino acid chain*

Narration

THESE PROTEINS ARE, IN TURN, MADE OF SMALLER CHEMICAL UNITS CALLED, "AMINO ACIDS," THAT ARE LINKED TOGETHER IN LONG CHAINS.

125. Dean Kenyon (vo)

Dean Kenyon (vo)

"There is a very great degree of intricacy of architecture down in these cell units...in these protein forming amino acids.

126. Amino acids/ different chain folds

Narration

IN NATURE, TWENTY DIFFERENT TYPES OF AMINO ACIDS ARE USED TO CONSTRUCT PROTEIN CHAINS.

BIOLOGISTS HAVE COMPARED THEM TO THE 26 LETTERS OF THE ENGLISH ALPHABET.

127. Steve Meyer—Alphabet letters

Steve Meyer

“Alphabetic letters can be arranged in a huge number of possible combinations...and it’s the sequential arrangement of the letters that determines whether you have meaningful words and sentences.”

128. “How Did Life Begin?” treatment

Steve Meyer

“If the letters are arranged correctly, you’ll get meaningful text. But if they’re not arranged correctly, you’ll get gibberish.”

And the same principle applies for amino acids and proteins.”

129. Animation—amino acids assemble into chain, then fold

Narration

THERE ARE AT LEAST 100,000 DISTINCT TYPES OF PROTEINS, EACH MADE OF A DIFFERENT COMBINATION OF THE SAME 20 AMINO ACIDS. THEY ARE ARRANGED—LIKE LETTERS—TO FORM CHAINS OFTEN HUNDREDS OF UNITS LONG.

IF THE AMINO ACIDS ARE SEQUENCED CORRECTLY, THEN THE CHAIN WILL FOLD INTO A FUNCTIONING PROTEIN.

130. Jed Macosko/ folding chains

Jed Macosko

"Proteins are arranged with their amino acids in such a way that the amino acids collapse on each other into an architecture that is pre-programmed by the order of the amino acids. It folds into a certain structure and that structure can do a certain function.

So all proteins in the cell have a certain three-dimensional pattern that's based on the arrangement of amino acids in the chain."

131. Animation--Bad chain

Narration

THIS ARRANGEMENT IS CRITICAL. FOR, IF THE AMINO ACIDS ARE INCORRECTLY SEQUENCED, A USELESS CHAIN FORMS...AND, INSTEAD OF FOLDING INTO A PROTEIN; IT WILL BE DESTROYED IN THE CELL.

132. Steve Meyer

Steve Meyer (on camera)

"Proteins-- like written languages or computer codes—have a high degree of specificity. The function of the whole depends upon the precise arrangement of the individual parts."

133. Animation. Chain swirls into "donut-shaped" flagellum part.

Narration

BUT, WHAT PRODUCES THE PRECISE SEQUENCING OF AMINO ACIDS THAT GIVES RISE TO THE SPECIFIC SHAPES AND FUNCTIONS OF PROTEINS?

134.

Narration

DURING THE 1950'S AND 60'S, DISCOVERIES ABOUT PROTEIN STRUCTURE FORCED BIOLOGISTS TO CONFRONT THIS MYSTERY.

DEAN KENYON BELIEVED HE COULD SOLVE IT.

135.

IN HIS BOOK, "BIOCHEMICAL PREDESTINATION," KENYON AND HIS CO-AUTHOR, GARY STEINMAN, PROPOSED AN INTRIGUING THEORY.

136. **Kenyon text**

KENYON WROTE:

"LIFE MIGHT HAVE BEEN 'BIOCHEMICALLY PREDESTINED BY THE PROPERTIES OF ATTRACTION THAT EXIST BETWEEN ITS CHEMICAL PARTS—PARTICULARLY BETWEEN AMINO ACIDS IN PROTEINS."

137. **Dean Kenyon**

Dean Kenyon

"At the time Biochemical Predestination came out, I and my co-author were totally convinced we had the scientific explanation for origins."

138. Steve Meyer/ animation insert of amino acids building chain

Steve Meyer

“Kenyon proposed that the chemical properties of the amino acids caused them to be attracted to each other forming the long chains that became the first proteins—the most important components in the living cell. And, this meant that life was, effectively, inevitable. Predestined by nothing more than chemistry.”

139.

Narration

MANY SCIENTISTS EMBRACED KENYON’S IDEAS...AND, OVER THE NEXT 20 YEARS, “BIOCHEMICAL PREDESTINATION” BECAME A BEST-SELLING TEXT ON THE THEORY OF CHEMICAL EVOLUTION.

140. Book cover

Narration

YET, FIVE YEARS AFTER THE BOOK’S PUBLICATION, KENYON QUIETLY BEGAN TO DOUBT THE PLAUSIBILITY OF HIS OWN THEORY.

141.

Kenyon

“It was during that whole period of time period that my doubts about certain aspects of the evolutionary camp became apparent....

Kenyon

“...when coming into contact with a powerful counter-argument, given to me by one of my students. And I could not refute that counter-argument.”

142. Cell/ animations

Narration

KENYON WAS CHALLENGED TO EXPLAIN HOW THE FIRST PROTEINS COULD HAVE BEEN ASSEMBLED WITHOUT THE HELP OF GENETIC INSTRUCTIONS.

IN LIVING CELLS TODAY, CHAINS OF AMINO ACIDS ARE NOT FORMED DIRECTLY BY FORCES OF ATTRACTION BETWEEN THEIR PARTS (THE SCENARIO KENYON ENVISIONED ON THE EARLY EARTH)

INSTEAD, ANOTHER LARGE MOLECULE WITHIN THE CELL STORES INSTRUCTIONS FOR SEQUENCING THE AMINO ACIDS IN PROTEINS. IT IS CALLED "DNA."

143. Steve Meyer/ DNA

Steve Meyer

"Initially, Kenyon believed that proteins could have formed directly from amino acids, without any DNA assembly instructions...and that's why so many scientists were excited about his theory.

144. Animation—protein chain

Steve Meyer

But, the more he and others learned about the properties of amino acids and proteins, the more he began to doubt that proteins could self-assemble without DNA."

145. DNA animation

Narration

IN DNA, KENYON ENCOUNTERED A MOLECULE WITH A PROPERTY, HE COULD NOT EXPLAIN THROUGH NATURAL PROCESSES...

146. DNA animation

Narration

FOR, LOCKED SECURELY WITHIN ITS DOUBLE HELIX STRUCTURE IS A WEALTH OF INFORMATION-- IN THE FORM OF PRECISELY SEQUENCED CHEMICALS THAT SCIENTISTS REPRESENT WITH THE LETTERS, "A...C...T...AND G.

IN A WRITTEN LANGUAGE, INFORMATION IS COMMUNICATED BY A PRECISE ARRANGEMENT OF LETTERS. IN THE SAME WAY, THE INSTRUCTIONS NECESSARY TO ASSEMBLE AMINO ACIDS INTO PROTEINS ARE CONVEYED BY THE SEQUENCES OF CHEMICALS ARRANGED ALONG THE SPINE OF THE DNA.

THIS CHEMICAL CODE HAS BEEN CALLED THE "LANGUAGE OF LIFE"...AND IT IS THE MOST DENSELY PACKED AND ELABORATELY DETAILED ASSEMBLY OF INFORMATION IN THE KNOWN UNIVERSE.

147. Steve Meyer

Steve Meyer

"Like other scientists working on the origin of life, Kenyon realized he had two choices. Either he had to explain where these genetic assembly instructions came from...or, he had to explain how proteins could have arisen—directly from amino acids—without DNA, in the primordial oceans. And in the end he realized, he could do neither."

148. Kenyon/ Primordial ocean

Dean Kenyon

"It's an enormous problem how you could get together, in one tiny submicroscopic volume of the primitive ocean, all of the hundreds of different molecular components you would need in order for a self-replicating cycle to be established..."

Kenyon (vo)

"...and so my doubts about whether amino acids could order themselves into meaningful biological sequences on their own, without pre-existing genetic material being present, just reached, I guess, for me the intellectual breaking point sometime near the end of the decade of the 70's."

149. Kenyon

Narration

AS KENYON RE-EVALUATED HIS THEORY, NEW BIOCHEMICAL DISCOVERIES FURTHER WEAKENED HIS CONVICTION THAT AMINO ACIDS COULD HAVE ORGANIZED THEMSELVES INTO PROTEINS.

150.

Dean Kenyon

"The more I conducted my own studies (including a period of time at the NASA-Ames Research Center), the more it became apparent that there were multiple difficulties with the chemical evolution account.

"And, further experimental work showed that amino acids do not have the ability to order themselves into any biologically meaningful sequences."

151.

Narration

FACED WITH MOUNTING DIFFICULTIES IN HIS OWN THEORY—AND A GROWING BODY OF SCIENTIFIC DATA ABOUT THE IMPORTANCE OF DNA—KENYON WAS FORCED TO CONFRONT THE ABSOLUTE NECESSITY OF GENETIC INFORMATION.

152. **Dean Kenyon**

Dean Kenyon

“...the more I thought about the alternative that was being presented in the criticism...and the enormous problem that all of us who work in this field had neglected to address (the problem of the origin of genetic information, itself)...then I really had to reassess my whole position regarding origins.”

153.

Narration

FOR DEAN KENYON, A NEW QUESTION BECAME THE FOCUS OF HIS SEARCH FOR LIFE'S ORIGIN.

WHAT WAS THE SOURCE OF THE BIOLOGICAL INFORMATION IN DNA?

154. **Kenyon**

Dean Kenyon

“...if one could get at the origin of the messages, the encoded messages within the living machinery then you would really be onto something far more intellectually satisfying than this chemical evolution theory.”

155. Kenyon walks

Narration

YET, KENYON REALIZED THAT HE FACED A NARROWING SET OF OPTIONS. BY THE 1970'S, MOST RESEARCHERS HAD REJECTED THE IDEA THAT THE INFORMATION NECESSARY TO BUILD THE FIRST CELL ORIGINATED BY CHANCE, ALONE.

156. Scabble letters fall to table top

Narration

TO UNDERSTAND WHY, CONSIDER THE DIFFICULTY OF GENERATING JUST TWO LINES OF SHAKESPEARE'S PLAY, "HAMLET," BY DROPPING SCRABBLE LETTERS ON TO A TABLE TOP.

157. DNA/ printed text

THEN CONSIDER THAT THE SPECIFIC GENETIC INSTRUCTIONS REQUIRED TO BUILD THE PROTEINS IN EVEN THE SIMPLEST ONE-CELLED ORGANISM WOULD FILL HUNDREDS OF PAGES OF PRINTED TEXT.

158. Steve Meyer

Steve Meyer

"Of course, serious origin of life biologists didn't believe that life had arisen by chance, alone. Instead, they envisioned natural selection acting upon random variations among chemicals to produce the first life. But there was a problem with this proposal."

159. Primordial earth/ cell division

Narration

BY DEFINITION, NATURAL SELECTION COULD NOT HAVE FUNCTIONED BEFORE THE EXISTENCE OF THE FIRST LIVING CELL....

FOR IT CAN ONLY ACT UPON ORGANISMS CAPABLE OF REPLICATING THEMSELVES. CELLS EQUIPPED WITH DNA THAT PASS ON THEIR GENETIC CHANGES TO FUTURE GENERATIONS.

160.

Steve Meyer

“Without DNA, there is no self replication. But without self-replication, there is no natural selection. So you can’t use natural selection to explain the origin of DNA without assuming the existence of the very thing you’re trying to explain.”

161.

Narration

CHANCE, NATURAL SELECTION, AND HIS OWN THEORY OF SELF-ORGANIZATION, HAD ALL FAILED TO EXPLAIN THE ORIGIN OF GENETIC INFORMATION...

NOW, KENYON SAW ONLY ONE ALTERNATIVE.

162.

Dean Kenyon

"We have not the slightest chance of a chemical evolutionary origin for even the simplest of cells...so, the concept of the intelligent design of life was immensely attractive to me and made a great deal of sense, as it very closely matched the multiple discoveries of molecular biology."

163. Zoom in to interior of cell

Narration

IN THE YEARS SINCE KENYON'S REJECTION OF CHEMICAL EVOLUTION, SCIENCE HAS REVEALED THE DETAILS OF AN ENTIRE SYSTEM OF INFORMATION PROCESSING THAT BEARS THE HALLMARKS OF INTELLIGENT DESIGN.

164. Animation

Narration

WITH COMPUTER ANIMATION, WE CAN ENTER THE CELL TO VIEW THIS REMARKABLE SYSTEM AT WORK.

165. Animation—approach and enter nucleus

AFTER ENTERING THE HEART OF THE CELL, WE SEE THE TIGHTLY WOUND STRANDS OF DNA—STOREHOUSES FOR THE INSTRUCTIONS NECESSARY TO BUILD EVERY PROTEIN IN AN ORGANISM.

166. Helix is unwound

Narration

IN A PROCESS KNOWN AS, "TRANSCRIPTION," A MOLECULAR MACHINE FIRST UNWINDS A SECTION OF THE DNA HELIX TO EXPOSE THE GENETIC INSTRUCTIONS NEEDED TO ASSEMBLE A SPECIFIC PROTEIN MOLECULE.

167. Transcription

ANOTHER MACHINE THEN COPIES THESE INSTRUCTIONS TO FORM A MOLECULE KNOWN AS "MESSENGER RNA."

WHEN TRANSCRIPTION IS COMPLETE, THE SLENDER RNA STRAND CARRIES THE GENETIC INFORMATION THOUGH THE "NUCLEAR PORE COMPLEX"—THE GATEKEEPER FOR TRAFFIC IN AND OUT OF THE CELL NUCLEUS.

168. Chain is formed

THE MESSENGER RNA STRAND IS DIRECTED TO A TWO-PART MOLECULAR FACTORY CALLED A RIBOSOME. AFTER ATTACHING ITSELF SECURELY, THE PROCESS OF TRANSLATION BEGINS.

169. Ribosomal action

INSIDE THE RIBOSOME, A MOLECULAR ASSEMBLY LINE BUILDS A SPECIFICALLY SEQUENCED CHAIN OF AMINO ACIDS.

THESE AMINO ACIDS ARE TRANSPORTED FROM OTHER PARTS OF THE CELL...AND, THEN LINKED INTO CHAINS OFTEN

HUNDREDS OF UNITS LONG. THEIR SEQUENTIAL ARRANGEMENT DETERMINES THE TYPE OF PROTEIN MANUFACTURED.

170.

Narration

WHEN THE CHAIN IS FINISHED, IT IS MOVED FROM THE RIBOSOME TO A BARREL-SHAPED MACHINE THAT HELPS FOLD IT INTO THE PRECISE SHAPE CRITICAL TO ITS FUNCTION.

171. Protein escorted out of cell

AFTER THE CHAIN IS FOLDED INTO A PROTEIN, IT IS THEN RELEASED AND SHEPERDED BY ANOTHER MOLECULAR MACHINE TO THE EXACT LOCATION WHERE IT IS NEEDED.

172. Recap of animation

Dean Kenyon

"This is absolutely mind boggling to perceive at this scale of size such a finely tuned apparatus, a device, that bears the marks of intelligent design and manufacture."

173. Kenyon

Dean Kenyon

"And, we have the details of an immensely complex molecular realm of genetic information processing. And it's exactly this new realm of molecular genetics where we see the most compelling evidence of design on the earth"

Fade to black

174. Francis Crick quote over abstract defocused cell

"Biologists must constantly keep in mind that what they see was not designed, but evolved."

Francis Crick

175. Background racks focus to reveal a cluster of complex cells

Paul Nelson (vo)

"When I look at molecular machines, or the incredibly complex process by which cells divide, I want to ask, 'is it possible that these things had an intelligence behind them? That there was a plan or a purpose to this structure?'"

176. Paul Nelson on camera/ title page

Paul Nelson

"Science ought to be a search for the truth about the world. Now, we shouldn't prejudge what might be true. We shouldn't say, 'I don't like that explanation, so I'm going to put it to one side.'"

Rather, when we come to a puzzle in nature, we ought to bring to that puzzle every possible cause that might explain it. One of the problems I have with evolutionary theory is that it artificially rules out a kind of cause even before the evidence has a chance to speak. And the cause that's ruled out is intelligence."

177. Darwin/ Steve Meyer

Steve Meyer

“...since the late 19th century, since the time of Darwin in fact ... (in part, because of the writing of Darwin in the Origin of Species) ... scientists came to accept a different convention, a definition of science that excluded the possibility of design as a scientific explanation. And that convention has a name—it’s called, ‘methodological naturalism’—and it just means that if you’re going to be scientific, you must limit yourself to explanations that invoke only natural causes. You can’t invoke intelligence as a cause.

And, yet, curiously, we make inferences to intelligence all the time. It’s part of our ordinary reasoning...to recognize the effects of intelligence.”

178. Egyptian excavation sequence

Narration

**CONSIDER, FOR EXAMPLE, THESE HEIROGLYPHIC MESSAGES
CARVED UPON THE RUINS OF EGYPTIAN MONUMENTS.**

**NO ONE WOULD ATTRIBUTE THE SHAPES AND ARRANGEMENTS OF
THESE SYMBOLS TO NATURAL CAUSES LIKE SAND STORMS OR
EROSION.**

**INSTEAD, WE RECOGNIZE THEM AS THE WORK OF ANCIENT
SCRIBES—INTELLIGENT HUMAN AGENTS.**

179. Easter Island

Narration

**SIMILAR REASONING LEADS US TO CONCLUDE THAT THE
MYSTERIOUS STONE FIGURES ON THE SHORES OF EASTER
ISLAND WERE NOT FORMED BY THE ACTIONS OF WIND AND
WATER OVER GREAT PERIODS OF TIME.**

180. Topiary hedges in shapes of animals

NOR, DO WE PRESUME THAT PLANTS COULD GROW INTO THESE FAMILIAR SHAPES WITHOUT SOME MANNER OF INTELLIGENT GUIDANCE.

181. Steve Meyer

Steve Meyer

“Of course, we make these inferences all the time. And we know they’re correct. But the question is, ‘on what basis do we make these inferences?’ What are the features that enable us to recognize intelligence?”

182. Dembski book cover

Narration

RECENTLY, IN A BOOK TITLED, “*THE DESIGN INFERENCE*,” MATHEMATICIAN, WILLIAM DEMBSKI, HAS MADE AN IMPORTANT BREAKTHROUGH IN UNDERSTANDING DESIGN REASONING.

DEMBSKI HAS IDENTIFIED THE SPECIFIC FEATURES OF ARTIFACTS THAT CAUSE US TO RECOGNIZE PRIOR INTELLIGENT ACTIVITY.

183. Bill Dembski

Bill Dembski

"I came to this by trying to look at how do we reason about design. What are the logical moves that we have to go through in order to come to a conclusion of design?"

So, what I am trying to do...is to establish reliable, empirical, scientifically rigorous criteria for deciding whether something is, in fact, designed."

"So, I was looking at the logic of it, and what I found was that you need improbability and you need specification, the right sort of pattern...these objective patterns."

184. Mt. Rushmore entrance/ heads of presidents

Narration

ACCORDING TO DEMBSKI, HUMAN BEINGS CORRECTLY DETECT THE ACTIVITY OF INTELLIGENCE WHENEVER THEY OBSERVE A HIGHLY IMPROBABLE OBJECT OR EVENT THAT ALSO MATCHES A RECOGNIZABLE PATTERN.

JUST SUCH A PATTERN IS FOUND IN THE BLACK HILLS OF SOUTH DAKOTA.

185. Paul Nelson/ Rushmore

Paul Nelson

"If you travel through the west, you'll see lots of different shapes on the mountainsides, most of which mean nothing at all. They're just rocks strewn in various patterns. But, what you don't see are the faces of Lincoln, Jefferson, Teddy Roosevelt, and George Washington on the mountainsides. The only place you see that is in South Dakota. And the reason it's there is because a sculptor--an eccentric sculptor--decided that he wanted to honor these Presidents by spending the larger part of his life chiseling their faces in the side of that mountain.

That pattern is improbable. A random hillside is also improbable. But a random hillside doesn't specify anything. We do know though, that there were four guys who were presidents of the United States, who had particular patterns in their faces...and those patterns on the mountainside in south Dakota match faces elsewhere."

186. Steve Meyer/ Rushmore detail

Steve Meyer

"If I look at the faces, I immediately recognize that they match the faces of the four presidents that are known from money or portraits in the National Gallery...or from paintings in books. And so, I realize that when I look at Mt. Rushmore, we not only have a highly improbable configuration of rock...but one which matches an independently given pattern that reliably indicates intelligence.

187. Paul Nelson

Paul Nelson

"...so we have a small probability, specification. It's design..."

188. Message in sand

Narration

ON A SEASHORE, ANOTHER IMPROBABLE PATTERN ETCHED INTO THE EARTH, ILLUSTRATES HOW WE DETECT DESIGN.

189. Message in sand

NO ONE WOULD INFER THAT THIS MESSAGE WAS WRITTEN BY THE MOVEMENT OF THE TIDES. INSTEAD, BECAUSE OF THE CHARACTERISTICS OF THIS PATTERN, WE IDENTIFY THE WORDS AS THE PRODUCTS OF INTELLIGENCE.

190. Steve Meyer

Steve Meyer

"That improbable arrangement also conforms to an independently given pattern...namely the shapes of the letters that we recognize from the English alphabet, and the words that that we know from English vocabulary. And so it's the improbability of the arrangement plus the fact that it conforms to an independently given pattern that triggers the awareness of design."

191. Beach

Narration

THIS ILLUSTRATION SUGGESTS THAT WILLIAM DEMBSKI'S CRITERIA FOR DESIGN DETECTION—SMALL PROBABILITY AND SPECIFICATION—ARE ESSENTIALLY EQUIVILENT TO INFORMATION...

192. Information montage

Narration

... THE TYPE OF INFORMATION PRESENT NOT ONLY IN PICTURES, WRITTEN TEXTS AND NUMERIC SEQUENCES, BUT ALSO ENCODED IN SOFTWARE AND RADIO SIGNALS.

193. SETI telescopes

Narration

THE ABILITY TO DETECT INFORMATION IN ELECTROMAGNETIC TRANSMISSIONS, HAS MADE POSSIBLE A UNIQUE SEARCH FOR INTELLIGENCE.

194. Telescopes/ galaxies

FOR MORE THAN THREE DECADES, ASTRONOMERS INVOLVED IN "SETI" (THE SEARCH OF EXTRATERESTRIAL INTELLIGENCE) HAVE MONITORED RADIO SIGNALS FROM OUTER SPACE IN AN ATTEMPT TO FIND INFORMATION-RICH PATTERNS.

195. SETI telescope

TYPICALLY, RADIO TELESCOPES RECEIVE EITHER RANDOM NOISE OR SIMPLE REPETITIVE SIGNALS...PRODUCED NATURALLY BY STARS, GALAXIES, AND OTHER CELESTIAL OBJECTS.

196. Telescopes/ galaxies/ prime numbers

Narration

BUT ASTRONOMERS RECOGNIZE THAT IF THEY EVER IDENTIFIED AN INFORMATION-BEARING SIGNAL, IT WOULD CONFIRM THE EXISTENCE OF INTELLIGENT LIFE BEYOND THE EARTH

SOME HAVE SPECULATED, THAT AN EXTRATERRESTRIAL CIVILIZATION MIGHT HAVE ATTEMPTED TO COMMUNICATE BY TRANSMITTING MESSAGES IN THE UNIVERSAL LANGUAGE OF MATHEMATICS—PERHAPS, THROUGH A RECOGNIZABLE PATTERN LIKE A SERIES OF PRIME NUMBERS.

197. Bill Dembski

Bill Dembski

“You’re not going to get that by chance. So you need complexity or improbability, lots of prime numbers...and you also need a pattern. And it has to be the right sort of pattern. It’s not a pattern that you’re imposing. It’s a pattern that’s there objectively.”

198. Telescopes/ galaxies

Narration

TO DATE, SETI RESEARCH HAS FAILED TO DETECT ANY PATTERN OR INFORMATION THAT WOULD INDICATE INTELLIGENCE IN A DISTANT GALAXY...

199. Cell interiors

Narration

...BUT IN ANOTHER UNIVERSE, MUCH CLOSER TO HOME, SCIENTISTS HAVE DISCOVERED A WEALTH OF INFORMATION WITHIN THE NUCLEUS OF THE LIVING CELL.

200. Paul Nelson

Paul Nelson

"DNA has a structure that is ideal for carrying information. In the A's, C's, T's and G's—the bases of the double helix of DNA—is the potential for storing a tremendous amount of information."

201.

Narration

THERE IS, IN FACT, NO ENTITY IN THE KNOWN UNIVERSE THAT STORES AND PROCESSES MORE INFORMATION MORE EFFICIENTLY THAN THE DNA MOLECULE.

202. DNA strand

A FULL COMPLEMENT OF HUMAN DNA HAS THREE BILLION INDIVIDUAL CHARACTERS.

203. Genome printout/ DNA animation

Narration

ANALYSIS OF THE DNA MOLECULE'S CODING REGIONS SHOW THAT THE ITS CHEMICAL CHARACTERS HAVE A SPECIFIC ARRANGEMENT THAT ALLOWS THEM TO CONVEY DETAILED INSTRUCTIONS OR INFORMATION...MUCH LIKE LETTERS IN A MEANINGFUL SENTENCE OR BINARY DIGITS IN A COMPUTER CODE.

204. Steve Meyer

Steve Meyer

“Bill Gates has said that DNA is like a computer program only much more complex than any we’ve been able to devise. And if you reflect on that, for even a minute, it’s a highly suggestive observation. Because we know that Bill Gates does not employ wind and erosion and random number generators to generate software. Instead, he employs intelligent engineers. Software engineers. So, everything we know in our experience suggests that information-rich systems arise from intelligent design—

205.

Steve Meyer

“But, what do we make of the fact that there is information in life? In every living cell of every living organism? That’s the fundamental mystery. Where does that information come from?”

206. Steve Meyer in classroom

Narration

FOR THE PAST 15 YEARS, PHILOSOPHER AND SCIENTIST, STEPHEN MEYER HAS WORKED TO ANSWER THIS QUESTION.

MEYER HAS DEVELOPED AN ARGUMENT TO DEMONSTRATE THAT INTELLIGENT DESIGN PROVIDES THE BEST EXPLANATION FOR THE ORIGIN OF INFORMATION NECESSARY TO BUILD THE FIRST LIVING CELL.

207. Steve Meyer

Steve Meyer

"It's part of our knowledge base that intelligent agents can produce information-rich systems... so the argument is not based on what we don't know, but its based on what we do know about the cause and effect structure of the world."

208.

Steve Meyer

"We know, at present, there is no materialistic explanation, no natural cause that produces information. Not natural selection, not self- organizational processes, not pure chance. But we do know of a cause which is capable of producing information and that is intelligence. So when people infer design from the presence of information in DNA, they're effectively making what's called (in the historical sciences) an inference to the best explanation."

209. Steve Meyer on camera

Steve Meyer

"So when we find an information-rich system in the cell, in the DNA molecule specifically, we can infer that an intelligence played a role in the origin of that system, even if we weren't there to observe the system coming into existence."

210. Pajaro Dunes

Narration

MEYER'S WORK ON THE ORIGIN OF GENETIC INFORMATION, IS NOW PART OF A COMPREHENSIVE SCIENTIFIC CASE FOR DESIGN THAT GREW OUT OF A MEETING OF SCIENTISTS AND PHILOSOPHERS ON THE CENTRAL COAST OF CALIFORNIA, IN 1993.

211. Scientists

THEIR OBJECTIVE WAS TO REASSESS AN IDEA THAT HAD DOMINATED BIOLOGY FOR MORE THAN A CENTURY. IN THE PROCESS, THEY GAVE BIRTH TO A THEORY THAT HAS BECOME KNOWN AS "INTELLIGENT DESIGN."

212. Paul Nelson/ wildlife

Paul Nelson

"To me, the great promise of design is that it gives us a new tool and explanation that belongs in the tool kit of science. Intelligent causes are real. They leave evidence of their existence. And a healthy science is a science that seeks the truth and lets the evidence speak for itself."

213. Phil Johnson

Phil Johnson

"The argument for intelligent design is based upon observation of the facts. Now that's my definition of good science. It's observation of the facts. And when you observe the facts, as Michael Behe has done, what do you observe? You observe this incredible pattern of interrelated complexity..."

214. Mile Behe

Mike Behe

And the way we conclude intelligent design for the bacterial flagellum is the same way we conclude intelligent design for an outboard motor. When we see an outboard motor, we see the way the parts interact, and so on, we know that somebody made that. The reasoning is the same for biological machines, so the idea of intelligent design is a completely scientific one. Certainly, it might have religious implications, but it does not depend on religious premises."

215. Jonathan Wells

Jonathan Wells

"When I look at the evidence objectively, without ruling out the possibility of design...design just leaps up as the most likely explanation. And that's why I believe that it's true."

216. Scott Minnich

Scott Minnich

"...I think design is back on the table. We can't explain these systems by natural law and if we're searching for truth and they are in fact designed if we have to be design engineers to understand them, then I say, "What's the problem?" You know you go where the data leads you and the implications, yeah, they have profound metaphysical implications, but so be it."

217. Paul Nelson/ wildlife

Paul Nelson

"So, It's a powerful idea that the universe is rational and comprehensible, underwritten by a supreme intelligence that meant for this world to be understood, is something that underwrites, then, the program of science because then you can go out and look at the world and the world will make sense."

Paul Nelson (Continued)

If it's all just a chaotic assemblage then there's no reason to expect any rationality out there. But, if it in fact, it's the product of a mind ...then you can go out and science becomes this enormous, wonderful puzzle solving project in which you can expect to find rationality and beauty and comprehensibility, right at the foundation of things."

218.

Narration

150 YEARS AGO, CHARLES DARWIN TRANSFORMED SCIENCE WITH HIS THEORY OF NATURAL SELECTION. TODAY, THAT THEORY FACES A FORMIDABLE CHALLENGE.

INTELLIGENT DESIGN HAS SPARKED BOTH DISCOVERY AND INTENSE DEBATE OVER THE ORIGIN OF LIFE ON EARTH.

219. Recap montage of scientists

AND, FOR A GROWING NUMBER OF SCIENTISTS, IT REPRESENTS A PARADIGM. AN IDEA WITH THE POWER TO —ONCE AGAIN— REDEFINE THE FOUNDATIONS OF SCIENTIFIC THOUGHT.

218. Steve Meyer

Steve Meyer

"During the 19th century, scientists believed that there were two fundamental entities—matter and energy. But as we enter the 21st century, there's a third fundamental entity that science has had to recognize, and that is information.

219. DNA animation

Steve Meyer

“And, so as we encounter the biology of the information age, the suspicion is growing that what we’re seeing in the DNA molecule is actually an artifact of mind. An artifact of intelligence. Something that can only be explained by intelligent design.”

220. DNA animation/ “Unlocking the Mystery of Life”

221. Credit roll

Rechecked for accuracy 1/22/09.

(Faint vertical text, likely bleed-through from the reverse side)

EXHIBIT 11

Final Grand Master Script

THE PRIVILEGED PLANET

For International Translations

04/26/05

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58 Minutes

EX 11

1. **Lift off at Cape Kennedy. Rocket transporting Voyager spacecraft blasts off. Supers:**

*We will not cease from exploration.
And the end of all our exploring will be to arrive at where we started.
And know the place for the first time.*

T.S. Elliot

Narration

**LATE IN THE SUMMER OF 1977, AN HISTORIC MISSION OF
EXPLORATION WAS LAUNCHED.**

2. **Voyager flight animation**

**TWIN SPACECRAFT, CHRISTENED—"VOYAGER" 1 AND 2—BROKE
FREE FROM THE EARTH'S GRAVITY, ON JOURNEYS TO THE
OUTER REACHES OF THE SOLAR SYSTEM.**

3. **Voyager at Jupiter and Saturn**

**THEIR PRIMARY DESTINATIONS WERE THE FOUR GIANT OUTER
PLANETS—JUPITER, SATURN, URANUS, AND NEPTUNE.**

4. **Voyager at Neptune and Saturn**

Narration

**FOR 13 YEARS, THE VOYAGERS PROBED THESE MYSTERIOUS
WORLDS AT CLOSE RANGE, WHILE COLLECTING DATA AND
TRANSMITTING STUNNING IMAGES BACK TO EARTH.**

5. Voyager turns. Layer insert pix of planets into frame

AMONG THOUSANDS OF PICTURES OF PLANETS AND MOONS, PERHAPS THE MOST MEMORABLE WAS RECORDED ON FEBRUARY 14, 1990, WHEN VOYAGER 1 APPROACHED THE EDGE OF THE SOLAR SYSTEM...THEN TURNED BACK TOWARD THE SUN.

6. Voyager picture. Wide sun to earth (compress move into two shots)

WITH ITS WIDE AND NARROW ANGLE CAMERAS, THE SPACECRAFT CAPTURED UNPRECEDENTED VIEWS OF OUR HOME STAR AND SIX OF ITS ORBITING PLANETS.

7. Voyager picture (CU earth in ray of sunlight. Start full wide and zoom in).

ONE OF THEM APPEARED AS A SMALL PALE DOT ENGULFED BY A RAY OF SUNLIGHT. IT WAS THE EARTH ... FROM NEARLY FOUR BILLION MILES AWAY.

8. CU Voyager (No Narration)

9. Zoom in toward pale blue dot

WHILE THE WORLD GAZED INTENTLY AT THIS PINPOINT OF LIGHT, TIMELESS QUESTIONS ABOUT ITS MEANING, PURPOSE, AND SIGNIFICANCE SUDDENLY TOOK ON NEW RELEVANCE...

10. Transition to Earth model for titles

...AND, ONCE AGAIN--AS IN AGES PAST--WE PAUSED TO CONSIDER OUR PLANET'S ROLE WITHIN THE GRAND SCHEME OF THE UNIVERSE.

11. Start to rotate earth. Move camera. Reveal moon as titles play.

Illustra Media Presents

The Privileged Planet

The Search for Purpose in the Universe

12. Dusk over Greek pillars. TL stars on horizon

**THE MYSTERY OF THE EARTH'S SIGNIFICANCE IN THE UNIVERSE
HAS CHALLENGED PHILOSOPHY AND SCIENCE FOR MORE THAN
2000 YEARS.**

13. Old astronomical charts and pictures. Ptolemy, Aristotle, etc.

**EARLY PERCEPTIONS WERE SHAPED BY THE WORK OF THE
GREEK SCHOLARS ARISTOTLE AND PTOLEMY.**

**THEY TAUGHT THAT THE EARTH SAT MOTIONLESS (IN THE
CENTER OF THE HEAVENS) WHILE THE MOON, SUN AND OTHER
STARS AND PLANETS REVOLVED AROUND IT.**

**THIS GEOCENTRIC VIEW WAS THE FOUNDATION OF WESTERN
COSMOLOGY FOR 18 CENTURIES.**

14. Copernicus portrait

**THEN, IN 1543, THE POLISH ASTRONOMER, NICHOLAS
COPERNICUS, IGNITED A REVOLUTION.**

- 15.

**IN HIS BOOK, "ON THE REVOLUTIONS OF THE HEAVENLY
SPHERES," COPERNICUS ARGUED THAT THE EARTH WAS NOT
STATIONARY ... BUT, INSTEAD, ORBITED WITH THE OTHER
PLANETS AROUND THE SUN.**

16. Sun centered solar system

FOR THE FIRST TIME A CORRECT UNDERSTANDING OF THE MECHANICS AND STRUCTURE OF THE SOLAR SYSTEM WAS IN SIGHT.

17. Dennis Danielson

Dennis Danielson

“The idea of the moving earth... seemed to violate some fundamental principle. But Copernicus somehow had the mental power to imagine what, even to him, seemed absurd.”

"So he thought the impossible—the earth moves. And once you imagine the earth moving (instead of the sun), the mathematics of that cosmic machine started to make sense. It was the key that unlocked one of the great mysteries of the universe."

18. Pan from ancient astronomer to globe, then to earth

Narration

COPERNICUS HAD LAID THE CORNERSTONE FOR MODERN ASTRONOMY.

19. Variation of solar system model. Start with CU of orbiting earth and pull back to reveal solar system/moving planets. Super “Copernican Principle.”

YET, 400 YEARS AFTER HIS DISCOVERY, THE EMPIRICAL FACT THAT OUR PLANET WAS NOT THE CENTER OF THE SOLAR SYSTEM HAD EVOLVED INTO WHAT IS NOW KNOWN AS “THE COPERNICAN PRINCIPLE”—THE IDEA THAT THE EARTH OCCUPIES NO PREFERRED PLACE IN THE UNIVERSE.

20. Interview—Jay Richards

Jay Richards

Copernicus had a theoretical way of explaining the apparent motion of the planets across the sky. That's all it was. It wasn't a theory that told us whether or not the earth was special. Or whether we played some importance in the scheme of things. Or, whether every place in the universe was the same as every other place.

21. JPL Earth fly-over or space shuttle over Earth

Jay Richards (cont)

"Nevertheless, this reinterpretation of Copernicus became prominent in the 20th century. It's often called the 'principle of mediocrity.' This principle says that our location and our status are mediocre. They're unexceptional.

As a result, we should not assume that we are in any way privileged...or that the universe was designed with us, or beings like us, in mind."

22. Carl Sagan portrait

Narration

THE COPERNICAN PRINCIPLE—AND THE CONCEPT OF THE EARTH'S INSIGNIFICANCE—WAS POPULARIZED DURING THE 1970S AND '80S BY THE LATE ASTRONOMER, CARL SAGAN.

IN HIS BEST-SELLING BOOK, *PALE BLUE DOT*, SAGAN WROTE:

23. Voyager photo—slow pull back

Narration (Alt. Voice)

“Because of the reflection of sunlight...the Earth seems to be sitting in a beam of light, as if there were some special significance to this small world. But, it’s just an accident of geometry and optics.

Look again at that dot. That’s here. That’s home. That’s us....Our posturing, our imagined self-importance, the delusion that we have some privileged position in the universe, are challenged by this point of pale light. Our planet is a lonely speck in the great enveloping cosmic dark.”

24. TL night sky/ Mt. Wilson

Narration

ONE REASON FOR THE WIDESPREAD ACCEPTANCE OF THE COPERNICAN PRINCIPLE CAN BE TRACED TO A DISCOVERY MADE ON THIS MOUNTAINTOP OVER LOOKING LOS ANGELES.

25. Telescope CU’s

BETWEEN 1921 AND 1926, THE ASTRONOMER, EDWIN HUBBLE, USED THIS TELESCOPE TO MAKE SOME OF THE MOST IMPORTANT DISCOVERIES IN THE HISTORY OF SCIENCE .

26. Hubble archive

THROUGH THE WINDOW OF THE MT. WILSON OBSERVATORY, HUBBLE UNVEILED THE TRUE MAGNITUDE OF THE UNIVERSE.

27. Interview—Robert Jastrow/ telescope shots

Robert Jastrow

“At the time Hubble was doing his work, many astronomers believed that the galaxy—our galaxy—marked the edge of the universe, and there was nothing beyond it.”

28. Telescope shot/ BW space photo

Narration

EDWIN HUBBLE ALTERED THIS PERCEPTION OF THE UNIVERSE WHEN HE USED THE MOST POWERFUL TELESCOPE OF HIS DAY TO PHOTOGRAPH INDISTINCT OBJECTS IN SPACE, LONG THOUGHT TO BE NEARBY CLOUDS OF GAS AND DUST.

HUBBLE DETERMINED THAT THESE PATCHES OF LIGHT WERE ACTUALLY INDIVIDUAL GALAXIES—MANY AS LARGE, OR LARGER, THAN OUR OWN MILKY WAY.

29. Jastrow on camera/ HST million galaxies

Robert Jastrow

“The implication of what he found was that the universe consists of, indeed, billions of galaxies, each with many billions of stars and planets...and it was a universe with a wealth of numbers and variety that transcended the imagination of both laymen and astronomer. He, in effect, enlarged the boundaries of the universe.”

30.

Narration

EDWIN HUBBLE REVEALED THAT THE MILKY WAY GALAXY (ENCOMPASSING MORE THAN 100 BILLION STARS INCLUDING OUR SUN) WAS A MERE PINPOINT OF LIGHT IN THE UNIVERSE.

31. Telescope/archive photos

Robert Jastrow

“...When Hubble found that there were many galaxies, we saw that our galaxy was nothing distinguished at all—just one ordinary galaxy among billions ...and that’s the ultimate extension of the Copernican Principle.”

32.

Narration

MORE THAN 80 YEARS HAVE PASSED SINCE EDWIN HUBBLE’S DISCOVERY, YET TODAY, ITS PROFOUND IMPLICATIONS STILL EVOKE A FUNDAMENTAL QUESTION.

**DOES CONTEMPORARY SCIENTIFIC KNOWLEDGE ACTUALLY
CONFIRM THE COPERNICAN PRINCIPLE'S PRIMARY CLAIM...**

**THAT THE EARTH AND THE LIFE IT SUSTAINS EXIST WITHOUT
PURPOSE OR SIGNIFICANCE IN THE UNIVERSE?**

33. Super quote over deep space image

"The universe is populated by innumerable Earths and, perhaps, innumerable forms of life."

Robert Jastrow

34. Deep space scenes/ radio telescopes

Narration

**AN OUTGROWTH OF THE COPERNICAN PRINCIPLE IS THE BELIEF
THAT HABITABLE PLANETS AND COMPLEX LIFE ARE ABUNDANT
THROUGHOUT OUR GALAXY AND THE REST OF THE COSMOS.**

35. Radio telescopes

**PERHAPS NO SCIENTIFIC ENDEAVOR HAS BEEN INFLUENCED MORE
DEEPLY BY THIS IDEA, THAN THE RESEARCH PROGRAM CALLED,
"SETI."**

36. Seth Shostak

Seth Shostak

"Well, SETI (which is, of course, the search for extraterrestrial intelligence) is trying to do exactly that. We're searching for extra terrestrial intelligence, in other words we are looking for aliens that are at least as clever as we are. Now, we try and do that—not by trying to go there (as they do in the movies), or waiting for them to come here...we try to find these aliens, if you will, at home on the basis of eavesdropping on signals they might be sending our way..."

37. Radio telescope. Reversed Goldstone sequence

Seth Shostak

“...so we use large telescopes, pointed at other star systems to try and find these tell-tale signs that there’s some cosmic company out there.”

38. Radio telescopes

Narration

SINCE 1960, SETI RESEARCHERS HAVE UTILIZED RADIO TELESCOPES, THROUGHOUT THE WORLD, TO MONITOR TRANSMISSIONS FROM DISTANT REGIONS OF THE MILKY WAY.

WHILE NO DEFINITIVE SIGNS OF INTELLIGENT LIFE HAVE EVER BEEN DETECTED, THESE INVESTIGATIONS HAVE TRIGGERED MUCH SPECULATION ABOUT THE POSSIBILITY OF EXTRATERRESTRIAL CIVILIZATIONS.

39. Seth Shostak/deep space

Seth Shostak

“...Estimates vary all over the place. Carl Sagan ...thought there might be millions of civilizations that are kind of contemporaries of ours.

40. Milky Way animation

Seth Shostak

“I can imagine that ...within the Milky Way galaxy, the number of contemporary intelligent civilizations, I think is, probably, in the thousands, maybe hundreds of thousands ...

“...But the bottom line, actually, when people ask, ‘why do you think that they’re out there,’ is that the universe is extraordinarily rich and extraordinarily vast...the number of stars that we can see is on the order of 10 thousand billion billion star systems...so, unless there’s something very

special, miraculous, if you will, about our solar system, about our planet Earth...unless there is something extraordinarily unusual about it, then what happened here must have happened many times in the history of the universe.”

41. Mars rover

Narration

THE ASSUMPTION THAT HABITABLE PLANETS AND EXTRA TERRESTRIAL LIFE ARE ABUNDANT, HAS INSPIRED NOT ONLY THE SETI PROGRAM, BUT ALSO THE NEW SCIENCE OF ASTROBIOLOGY... AND THE SEARCH FOR BIOLOGICAL EVIDENCE OF LIVING ORGANISMS, PAST AND PRESENT.

42. ESA search for planets

SINCE 1995, THIS SEARCH HAS EXTENDED BEYOND OUR SOLAR SYSTEM AS ASTROBIOLOGISTS HAVE IDENTIFIED MORE THAN 100 PLANETS ORBITING NEARBY STARS.

43. Last scene—reveal earth from behind moon. (as per JR)

EACH OF THEM IS A GAS GIANT...MUCH LIKE JUPITER

WHILE FEW SCIENTISTS BELIEVE THAT THESE ALIEN WORLDS CAN SUSTAIN EVEN SIMPLE LIFE, THEIR DISCOVERIES REPRESENT IMPORTANT STEPS TOWARD ANSWERING A QUESTION THAT WILL SHAPE ASTRONOMY IN THE 21ST CENTURY:

ARE HABITABLE PLANETS RARE OR COMMON IN THE UNIVERSE?

44. Interview

Guillermo Gonzalez (voice over)

I'm an astrobiologist, and the area that I've done the most work in is, lately is in the field of extra solar planets.

45. GG on camera

Guillermo Gonzalez

"...What motivates me is just to examine the conditions necessary for life and look elsewhere in the universe and see if those conditions are met anywhere else. And the answer could be 'yes' and the answer could be 'no.' And either answer is interesting...."

46.

Narration

GUILLERMO GONZALEZ WORKS AS A RESEARCH SCIENTIST IN NASA'S ASTROBIOLOGY PROGRAM.

HIS INTEREST IN THIS FIELD IS TIED TO HIS EARLY FASCINATION WITH THE PROSPECT OF LIFE BEYOND THE EARTH.

47. GG intro/ Apollo footage

Guillermo Gonzalez (on camera)

"I grew up in the 1960s and like most other people of my generation, I was really amazed by the Apollo lunar landings and that really inspired me and had something to do with my getting interested in astronomy.

48. Gonzalez B-roll. Young man looks through telescope/ different Milky Way picture.

Guillermo Gonzalez

"In my early years, I came to believe, very strongly, that there must be other civilizations out there, that the galaxy was teeming with life. So I was a strong supporter of the search for extra-terrestrial intelligence ...

My belief wasn't based on any real hard-core scientific arguments. It was just the impression that I had, that the galaxy was such a big place.

49. Guillermo on camera

Guillermo Gonzalez

"And I didn't give the other side of the equation much thought. In other words, there's two sides of the equation. There's the number of stars, the number of trials, if you will. But, the other side is the factors ...it takes a lot of factors to have a habitable planet in a planetary system."

50. Factors montage

Narration

FOR GONZALEZ AND OTHER ASTROBIOLOGISTS, THESE FACTORS—REQUIRED FOR THE EARTH'S HABITABILITY—BECAME THE FOCUS OF EXTENSIVE RESEARCH.

51. Charles Beichman/ Nasa "Origins" program. End with Shot of galaxy

Charles Beichman

"We've demonstrated in dozens of different ways, that the laws of physics and chemistry that pertain in a laboratory anywhere on Earth, apply anywhere in the solar system, apply anywhere in the galaxy, and, in many cases, to the most distant galaxies that we can see."

52. Bijan Nemati interview

Bijan Nemati

“There are, indeed, unchanging physical laws in the universe that apply to the entirety of the universe. They are not localized to one place.”

53. Big surf

Narration

THIS CONSISTENCY IN THE LAWS OF PHYSICS AND CHEMISTRY HAS LED MANY RESEARCHERS TO CONCLUDE THAT THE FACTORS NECESSARY FOR COMPLEX LIFE ON EARTH, ARE ALSO THE BEST PARAMETERS IN THE SEARCH FOR HABITABLE PLANETS ELSEWHERE IN THE UNIVERSE.

54. Rushing water

MOST SERIOUS DISCUSSIONS ABOUT THESE FACTORS BEGIN WITH THE SAME PREREQUISITE—LIQUID WATER.

55. Bijan Nemati/ JPL scientist

Bijan Nemati

“All the searches that are being done for life elsewhere...their starting position is a terrestrial class planet, with water.”

56. Find something that will cut with NC lake material

Narration

IT IS NOW WIDELY RECOGNIZED THAT THE CHEMICAL PROPERTIES OF WATER ARE EXQUISITELY SUITED FOR CARBON-BASED LIFE.

57. Lake/water drops

**THESE PROPERTIES INCLUDE WATER'S ABILITY TO DISSOLVE
AND TRANSPORT THE CHEMICAL NUTRIENTS VITAL TO ALL
LIVING ORGANISMS ...**

58. Lake

**... AND ITS UNMATCHED CAPACITY TO ABSORB HEAT FROM THE
SUN—A PROCESS CRITICAL FOR REGULATING THE EARTH'S
SURFACE TEMPERATURE.**

59. CU water drop falls to pond. Concentric circles dissolve to CHZ animation

**IN LIQUID FORM, WATER IS AN EXTRAORDINARY SUBSTANCE
...AND ITS EXISTENCE HINGES UPON ANOTHER FACTOR
ESSENTIAL TO COMPLEX LIFE—A PLANET'S DISTANCE FROM ITS
HOME STAR.**

60. JPL scientist, Kevin Grazier

Kevin Grazier

"It's like what they say in real estate, 'location...location...location.'

(on-camera)

**A habitable planet lives in what we call the 'Goldilocks Zone.' It's not too
hot. It's not too cold. It's just right. And when I say, 'just right,' I mean,
just right for water."**

61. Chas Beichman

Charles Beichman

**"Liquid water really helps define the habitable zone. If it's too hot, the water
just boils away, you can't get condensed water. If it's too cold (as it is on
Mars, today), it freezes out."**

62. Animation. Define CHZ

Narration

WITHIN OUR SOLAR SYSTEM, THE HABITABLE ZONE IS RELATIVELY NARROW—BEGINNING WELL OUTSIDE THE ORBIT OF VENUS AND ENDING SHORT OF THE ORBIT OF MARS.

63. Animation—moves us closer to sun. Follow with Venus footage.

IF THE EARTH WERE JUST 5% CLOSER TO THE SUN, IT WOULD BE SUBJECT TO THE SAME FATE AS VENUS—A RUNAWAY GREENHOUSE EFFECT, WITH TEMPERATURES RISING TO NEARLY 900 DEGREES FAHRENHEIT.

64. Animation—earth surface turns into Mars.

CONVERSELY, IF THE EARTH WERE ABOUT 20% FARTHER FROM ITS HOME STAR, CARBON DIOXIDE CLOUDS WOULD FORM IN ITS UPPER ATMOSPHERE—INITIATING THE CYCLE OF ICE AND COLD THAT HAS STERILIZED MARS.

65. Jay Richards

Jay Richards

"The presence of liquid water is a necessary condition for life. But it is not a sufficient condition.

After all, there may be liquid water under the frozen surfaces of Mars and Jupiter's moon, Europa ...but there's very little chance that complex life exists in either of these places.

"You see, contrary to what the Copernican Principle might suggest, the recipe for life is much more complex than "just add water."

66. Morph—dead planet to Earth

Narration

IF A RECIPE FOR A PLANET CAPABLE OF SUPPORTING COMPLEX LIFE REALLY DID EXIST...THEN WHAT INGREDIENTS—BEYOND LIQUID WATER—MIGHT BE REQUIRED?

THE LIST OF NECESSARY FACTORS CONTINUES TO GROW.

67. Efx followed by aerals over the Earth/ graphic-- “terrestrial planet.”

Guillermo Gonzalez

“We live on this paper-thin crust ...if the Earth’s crust were significantly thicker, then, plate tectonic recycling could not take place.”

68. Aerials over Earth/ Burkhart footage

Narration

THE EARTH’S CRUST VARIES IN THICKNESS FROM ABOUT FOUR TO THIRTY MILES. IT CONSISTS OF MORE THAN A DOZEN TECTONIC PLATES THAT ARE IN CONSTANT MOTION.

THIS DYNAMIC GEOLOGY REGULATES THE PLANET’S INTERIOR TEMPERATURE, RECYCLES CARBON, MIXES CHEMICAL ELEMENTS ESSENTIAL TO LIVING ORGANISMS...AND SHAPES THE CONTINENTS.

69. Animation—Start with swift move in toward the Earth. Dissolve to molten lava/ sun’s radiation/ magnetic field animation (as per GG)

DEEP WITHIN THE EARTH’S INTERIOR THE MOVEMENT OF LIQUID IRON GENERATES A PROTECTIVE MAGNETIC FIELD ESSENTIAL TO COMPLEX LIFE.

70.

IF OUR PLANET WERE SMALLER, ITS MAGNETIC FIELD WOULD BE WEAKER, ALLOWING THE SOLAR WIND TO STRIP AWAY OUR ATMOSPHERE ...SLOWLY TRANSFORMING THE EARTH INTO A DEAD, BARREN WORLD MUCH LIKE MARS.

71. Transition.

Bijan Nemati

“We need an oxygen atmosphere...and the oxygen/nitrogen atmosphere that the Earth has is necessary for complex life.”

72. Atmosphere from space

Narration

AS SEEN FROM SPACE, THE EARTH’S ATMOSPHERE GLOWS AS A THIN BLUE RIBBON OF LIGHT.

73. Nitrogen 78%, 21% Oxygen 21%, 1% CO2, and Other Gases 1%

MEASURING LESS THAN 1% OF THE PLANET’S DIAMETER, IT IS COMPOSED OF A MIXTURE OF NITROGEN, OXYGEN, AND CARBON DIOXIDE.

74 . TL clouds

AS A RESULT, OUR ATMOSPHERE ENSURES A TEMPERATE CLIMATE, PROTECTION FROM THE SUN’S RADIATION, AND THE CORRECT COMBINATION OF GASES NECESSARY FOR LIQUID WATER AND COMPLEX LIFE.

75. Transition/ moon

Kevin Grazier

“For the size of a planet like Earth, our moon is big. The current thinking is that if our moon didn’t exist, neither would we.”

76. Moon orbits Earth/ axis designation

Narration

ONE-FOURTH THE SIZE OF THE EARTH, THE MOON'S POWERFUL GRAVITATIONAL PULL STABILIZES THE ANGLE OF ITS AXIS AT A NEARLY CONSTANT 23 AND A-HALF DEGREES.

THIS ENSURES RELATIVELY TEMPERATE SEASONAL CHANGES ... AND THE ONLY CLIMATE IN THE SOLAR SYSTEM MILD ENOUGH TO SUSTAIN COMPLEX LIVING ORGANISMS.

77. Transition—sun

Kevin Grazier

“If we find life out there—especially complex or even, intelligent life—it will be around a star similar to our own.”

78.

Narration

WE ORBIT WHAT IS KNOWN AS A “SPECTRAL TYPE G2, DWARF MAIN SEQUENCE” STAR. IT IS WELL SUITED FOR OUR NEEDS.

79. Animation

IF THE SUN WERE LESS MASSIVE (LIKE 90% OF THE STARS IN THE GALAXY), THE HABITABLE ZONE WOULD BE SMALLER.

TO REMAIN WITHIN ITS BOUNDRIES, THE EARTH WOULD HAVE TO BE POSITIONED CLOSER TO ITS STAR. HERE, INCREASED GRAVITY WOULD LOCK OUR PLANET'S ROTATION INTO SYNCHRONIZATION WITH ITS ORBIT.

80. Animation

WHILE, ONE SIDE OF THE EARTH CONTINUALLY FACED THE SUN AND INCREASED RADIATION FROM SOLAR FLARES... THE DARK SIDE OF THE PLANET WOULD LAY SHROUDED IN PERPETUAL COLD AND ICE.

IT IS UNLIKELY COMPLEX LIFE COULD TOLERATE THESE DRASTIC EXTREMES IN TEMPERATURE.

81. Kevin Grazier

Kevin Grazier

“A lot of things went right on Earth to have yielded complex life. Absolutely.”

82. Bijan Nemati

Bijan Nemati

“The number of factors that have been postulated has grown. Currently the typical number you’ll see in a typical list would have something like 20.”

83. Guillermo Gonzalez . Corresponding B-roll

Guillermo Gonzalez

“We find that we need to be in the right location in the galaxy...that we’re inside the Circumstellar Habitable Zone of a star...that we’re in a planetary system with giant planets that can shield the other planets from too many comet impacts...that we’re orbiting the right kind of star that’s not too cool or not too hot... that we’re on a planet that has a moon that can stabilize the tilt of its axis...that we’re on a planet that’s a terrestrial planet...a planet that has a crust that’s just thick enough to maintain plate tectonic activity...that has enough heat in its interior that its still circulating its liquid iron core so it can generate a magnetic field...that has an atmosphere that has enough oxygen to allow for complex organisms to survive...that has enough water and enough continents that allow for the diversity of life and an active biodiversity that you need to support complex creatures such as ourselves...”

84.

Guillermo Gonzalez

“All these factors have to be met at one place and time in the galaxy if you’re going to have a planet as habitable as the Earth, which you need for complex and even technological life.”

85. NASA Earth at night/ super equation

Narration

IN AN ATTEMPT TO ESTIMATE THE PROBABILITY OF ATTAINING THIS COMBINATION OF FACTORS, SIMULTANEOUSLY, SOME RESEARCHERS HAVE DEVELOPED EQUATIONS—ASSIGNING A CONSERVATIVE “ONE-IN-TEN” VALUE TO EACH FACTOR DEEMED NECESSARY FOR ADVANCED LIFE.

86. Replace factors in the equation with 1/10’s. Fix equation 1/1,000,000,000,000,000

Bijan Nemati

“...if every element has to be there at the same time. You have to multiply the probabilities ... And that’s what makes the probability at the end so small. You’ve got 10% of this and 10% of that. And these things rapidly multiply to exceedingly small numbers.

“... numbers on the order of 10⁽⁻¹⁵⁾, which is one one-thousandth of one, one trillionth.

“... and it’s a number like that, that you have to compare to the 100 billion stars that are in the galaxy. 100 billion is a very large number, but a thousandth of a trillionth is much, much smaller.

“On their face value, these probabilities are speaking. What they are telling us that is ‘this can’t happen, or this is very unlikely to happen in the galaxy.’ And that’s where the evidence is pushing us.”

87. Puzzle pieces

Guillermo Gonzalez

“There are many probabilistic resources in the galaxy. But, on the other side of the coin, are all of these factors that you need. You have to get just right in order to have just one habitable planet like the Earth ...and that leads me to conclude that yes, we’re rare in the galaxy.”

88. Brownlee in lab

WHILE A GROWING BODY OF SCIENTIFIC EVIDENCE MAY SUPPORT THIS HYPOTHESIS, DOES THE POSSIBILITY THAT OUR PLANET IS RARE WITHIN THE GALAXY IMPLY ANYTHING ABOUT ITS SIGNIFICANCE?

89. Brownlee in lab/ book cover

RECENTLY, ASTRONOMER, DONALD BROWNLEE CONSIDERED THIS QUESTION IN THE BEST SELLING BOOK, “*RARE EARTH: WHY COMPLEX LIFE IS UNCOMMON IN THE UNIVERSE.*”

90. Don Brownlee

Don Brownlee

“There’s a general feeling that nature wants to make earth-like planets and that, naturally, life will evolve on them...and, naturally, evolve into something like us, and yet...

“...the conditions, the environmental conditions on a planet that would allow more complex creatures similar to people or plants and animals is very rare.”

“...and so, we wrote the book, *Rare Earth*, to point out that the Earth is, actually, a rather special place...”

91. Microbes/ complex life

Narration

BROWNLEE CONTENDS THAT, WHILE RELATIVELY SIMPLE MICROBIAL LIFE MAY THRIVE ON PLANETS THROUGHOUT THE UNIVERSE...PLANETS CAPABLE OF SUSTAINING COMPLEX LIFE ARE EXCEEDINGLY UNCOMMON.

92.

Don Brownlee

“The entire universe is highly hostile to life. If you compare all the known places in the universe, none of them compare to Earth.”

93. Plant life on earth

Don Brownlee

“We live in a very special environment, that provides what we need. Air, food, stable conditions...so the Earth is almost like a giant organism where systems are interacting in a way that allows animals to survive.”

94.

Don Brownlee (on camera)

“The real question is, ‘why did this happen?’ Was it just a matter of luck or not?

(vo)

If you look at thousands of planets, only a small fraction of them, a very small fraction, will be truly Earth-like.”

95. Cosmic slot machine

“So if we are very rare, we did win the cosmic lottery. So, we’re a lucky planet. We’re just in a very fortunate place.”

96.

Jay Richards

"When you consider "chance" as an explanation for a planet like Earth, you have to look at it in the context of the universe, as a whole.

97.

Jay Richards

While the odds appear astonishingly small that you'd get all the right ingredients to support complex life at this one place in the galaxy, you have to keep in mind that our galaxy is just one of perhaps a hundred billion galaxies in the observable universe.

98.

Jay Richards

"... still, logically, I think you have to ask yourself, 'What if this convergence of factors didn't come about as the result of simply a cosmic lottery...or a mere fluke or luck? But, what if it's the result of some larger underlying purpose or design?"

99. Earth from space. Start Eclipse shadow after Jay finishes line.

"And if the Earth does exist for a purpose, is there any way that we could tell?"

100. Eclipse shadow moves over Earth.

ON OCTOBER 24th, 1995, A RARE NATURAL PHENOMENON UNEXPECTEDLY TRIGGERED A UNIQUE SEARCH FOR AN ANSWER.

- 101. India eclipse footage. Location. Scientists setting up equipment. Introduce GG in box.**

Guillermo Gonzalez

“It started with an experience I had in 1995. I went to observe a total eclipse of the Sun in India. It was my first and still only total eclipse of the sun. It was a spectacular event. It’s just an experience for all the emotions. ...”

- 102. People watch eclipse/ filtered eclipse**

Guillermo Gonzalez

“Either astronomers who can understand the whole phenomenon...who can predict it to within a second of time anywhere on the Earth, or a local native are equally in awe, in reacting in the same way to this incredible phenomenon.

“...It really left a big impression on me.”

- 103. Real time eclipse.**

Narration

FOR 51 UNFORGETTABLE SECONDS, GUILLERMO GONZALEZ (AND THOUSANDS OF OTHERS) LOOKED ON IN WONDER AT THIS RARE ASTRONOMICAL EVENT

- 104.**

GONZALEZ WOULD LATER REFLECT UPON BOTH THE MYSTERIOUS BEAUTY HE HAD WITNESSED IN THE NORTH INDIAN SKIES...AND THE FACTORS THAT HAD MADE IT POSSIBLE.

- 105.**

Guillermo Gonzalez

“The requirements for producing a total eclipse of the sun are a luminous body, in our case the sun...”

106. Positional animation

Guillermo Gonzalez (vo)

“...an eclipsing body (in our case, the moon)...and an observer platform (in our case the surface of the Earth). And they all have to be in a straight line in space.”

107. Interview

Guillermo Gonzalez (on camera)

“The apparent size of the moon in the sky has to be almost exactly the same as the apparent size of the sun of the sky. They’re both about half a degree.”

108. Animation

Guillermo Gonzalez (vo)

“The sun is four hundred times bigger than the moon, but it’s four hundred times further away.

“So, there’s this coincidence people have noted for centuries...but they just said, ‘oh well, it’s a coincidence’...and shrugged their shoulders...”

109. Move in slowly on animation toward moon

Narration

AS GONZALEZ EXAMINED THIS RARE ALIGNMENT OF SUN, MOON, AND EARTH, HE RECOGNIZED THE IMPORTANCE OF THESE CELESTIAL BODIES TO THE EXISTENCE OF COMPLEX LIFE ON OUR PLANET.

110. Move over moon to reveal Earth

THE GRAVITATIONAL PULL EXERTED BY OUR MOON, FOR EXAMPLE, IS STRONG ENOUGH TO REGULATE THE EARTH’S CLIMATE BY STABILIZING ITS TILT AND HELPING TO CIRCULATE THE WARM AND COLD WATERS OF ITS OCEANS.

111. Sun/ ocean

WHILE OUR PLANET'S DISTANCE FROM THE SUN PERMITS BOTH LIQUID WATER AND AN OXYGEN-RICH ATMOSPHERE.

112. Sunset/ocean (cont.)

Guillermo Gonzalez (vo)

"You have to have the right distance of the observer's home planet from its host star and you have to have a large moon.

113. GG on camera

Guillermo Gonzalez (oc)

"And so there's this very strong overlap between the requirements for producing eclipses and the requirements for habitability, for having a planet that can support life."

114. Magazine/ article

IN 1999, GONZALEZ DESCRIBED THIS RELATIONSHIP BETWEEN OUR SURVIVAL AND OUR ABILITY TO OBSERVE SOLAR ECLIPSES IN THE JOURNAL, *ASTRONOMY AND GEOPHYSICS*.

HIS IDEAS INTRIGUED PHILOSOPHER, JAY RICHARDS.

115. Jay Richards

Jay Richards

"I had been focusing my research in cosmology, and in particular on applying probability theory to the fine tuning of the laws of physics. I had a strong sense this evidence pointed toward some sort of wider purpose to the universe.

116. Article/ JR

Jay Richards

“Then I read Gonzalez’s work and I had the same feeling that he did. That perfect solar eclipses were sort of the tip of the iceberg...the first instance of an entire class of evidence that provides a way for judging if the universe is the result of a fluke or some impersonal process, or the result of purpose or design.”

117. Research papers

Narration

IN THE SUMMER OF 1999, GONZALEZ AND RICHARDS INITIATED A PROGRAM OF JOINT RESEARCH.

118. Eclipse photos

THEY BEGAN THEIR STUDY BY CONSIDERING A CHARACTERISTIC OF SOLAR ECLIPSES LITTLE KNOWN OUTSIDE THE SCIENTIFIC COMMUNITY:

THESE STRIKING EVENTS ARE NOT ONLY COMPELLING TO OBSERVE...THEY ALSO OPEN A PORTAL ONTO THE PHYSICS AND CHEMISTRY OF THE ENTIRE UNIVERSE.

119. Interview

Guillermo Gonzalez

“Really, you can think of eclipses as a giant natural experiment, a set up that allows us to observe a part of the sun...

.... that’s critical towards understanding how its light is produced in its atmosphere.”

120. Interview

Bijan Nemati

“The fact that the Earth is going around the sun and the moon is around the Earth, and the sizes and the distances between the Earth and the moon and the sun are just so to give you a perfect solar eclipse is a wondrous thing...

121. Corona

....because it allows us to measure the constituents of the upper layer of the sun's atmosphere."

122. Scientist looks at eclipse through glass filter/ TL wide eclipse

DURING A SOLAR ECLIPSE, THE MOON FITS SO PERFECTLY OVER THE SUN THAT IT SHIELDS ITS BLINDING LIGHT, PROVIDING ASTRONOMERS WITH A VIEW OF THE STAR'S ATMOSPHERE, OTHERWISE IMPOSSIBLE TO EXPERIENCE.

123. Chromosphere CU/ Flash spectrum

AT THE MOMENT OF TOTALITY, THE PINKISH ARC OF THE CHROMOSPHERE (THE ATMOSPHERE'S INNERMOST LAYER) BECOMES VISIBLE—AND WITH IT, A RAINBOW-LIKE BAND CALLED THE "FLASH" SPECTRUM APPEARS WHEN THE SUN IS VIEWED THROUGH A PRISM.

124. CU flash spectrum with calibration grid/ super over sun or GG book picture

THE ECLIPSE OF 1870 LED TO AN UNDERSTANDING OF THE STRUCTURE OF THE SUN'S CHROMOSPHERE AND THE DISCOVERY OF HELIUM—THE SECOND MOST ABUNDANT ELEMENT IN THE UNIVERSE.

125. Old spectrum photo (use photo BW from book)

Guillermo Gonzalez

The spectrum is probably the single greatest source of information about a star.

Guillermo Gonzalez

“And it was during a couple of historic eclipses in the nineteenth century that astronomers figured out how the spectrum of the sun is produced. And they were only able to figure it out because of the particular circumstances during a total eclipse.”

126. Eclipse photo—full sun and chromosphere

Narration

THESE CIRCUMSTANCES ARE BOTH PRECISE AND CRUCIAL

127. Animate larger moon blocking out chromosphere, spectrum disappears

IF OUR MOON WERE SLIGHTLY LARGER, IT WOULD PARTIALLY BLOCK OUR VIEW OF THE CHROMOSPHERE AND DIMINISH ITS SPECTRAL LIGHT.

128. Animate smaller moon/ sun and impact upon chromosphere and spectrum

A SMALLER MOON WOULD ALLOW TOO MUCH LIGHT FROM THE SUN—DESTROYING OUR VIEW OF THE SOLAR ATMOSPHERE AND FLASH SPECTRUM.

129. Distant stars

Guillermo Gonzalez

“And so you have to have a nearly perfect match between the sun and the moon so you don’t hide the chromosphere.

And that insight, afforded by eclipses in the nineteenth century, is what finally what permitted astronomers to figure out how the spectra of distant stars are produced.

“...That, really, opened up stellar astrophysics. And allowed us to understand how other stars work...because distant stars, after all, are other suns.”

130. Camera fx/ sepia plates

Narration

**THE RELATIONSHIP BETWEEN ECLIPSES AND SCIENTIFIC
DISCOVERY WAS ALSO REVEALED IN THE SPRING OF 1919.**

131. Eddington/ Eclipse photo (as per JR)

**ON MAY THE 29th, RESEARCH TEAMS, HEADED BY BRITISH
ASTRONOMER, ARTHUR EDDINGTON, PHOTOGRAPHED THE SUN
AND ADJACENT STARS IN THE HYADES STAR CLUSTER, DURING
THE DARKNESS OF TOTALITY.**

132. Eddington reversed eclipse/ Einstein portrait/ light bending diagram

**LATER ANALYSIS OF THE PICTURES VERIFIED THAT THE SUN'S
GRAVITY BENT LIGHT FROM DISTANT STARS TRAVELING
TOWARD THE EARTH AT THE ANGLE ALBERT EINSTEIN HAD
PREDICTED.**

133. Old Eclipse/ $E=MC^2$ formula

**EINSTEIN'S THEORY OF RELATIVITY (AN IDEA THAT
REVOLUTIONIZED OUR UNDERSTANDING OF THE UNIVERSE),
HAD BEEN CONFIRMED DURING A TOTAL SOLAR ECLIPSE.**

134. GG

Guillermo Gonzalez

**"That experiment was only possible during eclipses because the stars become
visible during a total eclipse.**

135.

"They are very important to the history of science, and...the best place in the entire solar system to view solar eclipses is from the surface of the Earth. I've actually calculated the circumstances for eclipses from all the other planets and all the other moons (about sixty five of them), the major moons.

136. People watching an eclipse

Guillermo Gonzalez

“...And, its an amazing coincidence the one place that has observers, is the one place that has the best eclipses.”

137. People watching NASA eclipse

Narration

WITHIN THE GOSSAMER LIGHT OF A SOLAR ECLIPSE, GONZALEZ AND RICHARDS RECOGNIZED A FASCINATING CONNECTION BETWEEN THE FACTORS NECESSARY FOR COMPLEX LIFE AND SCIENTIFIC OBSERVATION.

BUT, WAS THIS MERELY AN ISOLATED FLUKE OF NATURE...OR A GLIMPSE AT A PRINCIPLE AND A PURPOSE FUNDAMENTAL TO THE UNIVERSE AS A WHOLE?

138. Jay Richards

Jay Richards

“That was the million dollar question that we continually had before us.

“What if those things that make a planet habitable also make that planet the best place for making scientific discoveries? That is, what if those rare locations in the universe that are compatible with observers like ourselves, are also the best places, overall, for making observations?”

139.

Narration

FOR THREE YEARS, RICHARDS AND GONZALEZ METICULOUSLY TESTED THEIR IDEA AGAINST EVIDENCE GATHERED FROM A WIDE RANGE OF SCIENTIFIC DISCIPLINES.

140.

IN THE 2004 BOOK, "THE PRIVILEGED PLANET," THEY PUBLISHED THEIR HYPOTHESIS:

"THE SAME NARROW CIRCUMSTANCES THAT ALLOW US TO EXIST ALSO PROVIDE US WITH THE BEST OVERALL SETTING FOR MAKING SCIENTIFIC DISCOVERIES."

141. Jay and B-roll of galaxy...end with atmosphere shot

Jay Richards

"In the book we detail more than a dozen examples of the correlation between life and discovery. And they're not quirky, marginal examples. Each treats a condition critical to its respective scientific field. Some deal with remote things, like the nature of galaxies. Others, are much closer to home."

142. Shot of clouds dissipating and sun breaking through, followed by a series of TL clouds.

Narration

WHILE A PERFECT SOLAR ECLIPSE WAS THE CATALYST FOR GONZALEZ AND RICHARDS' HYPOTHESIS...

...THEIR OBSERVATIONS WOULD NEVER HAVE BEEN POSSIBLE WITHOUT ANOTHER, MORE FAMILIAR EXAMPLE OF THE CORRELATION BETWEEN LIFE AND DISCOVERY--THE ATMOSPHERE OF THE EARTH.

143. Guillermo (in box), atmosphere from space montage

Guillermo Gonzalez (vo)

“It’s striking when you see pictures of the Earth from the Apollo missions or other spacecraft and you see this very thin layer of the atmosphere surrounding the Earth. It sustains all the life that we know on Earth.

144. GG on camera

Guillermo Gonzalez

“And so you need a certain mix of elements to support a complex biosphere like ours, not just any atmosphere will do.”

145. Voyager/ Galileo/ Magellan space craft

Narration

OUR APPRECIATION OF THE EARTH’S ATMOSPHERE HAS INCREASED SIGNIFICANTLY DURING THE PAST 40 YEARS, AS EXPLORATORY SPACECRAFT HAVE PROBED THE SOLAR SYSTEM.

146. Spacecraft fly-bys

THESE MISSIONS HAVE CONFIRMED, THAT WITHIN THE SUN’S FAMILY OF MORE THAN 70 PLANETS AND MOONS, THE EARTH IS ONE OF SEVEN BODIES ENVELOPED BY A THICK CANOPY OF GAS.

147. Earth

YET, AMONG THESE SEVEN, ONLY THE EARTH’S ATMOSPHERE CAN SUSTAIN COMPLEX LIFE ...AND ONLY THE EARTH’S ATMOSPHERE IS TRANSPARENT.

148. Maybe GG in box, again...over more views of Earth from space.

Guillermo Gonzalez

“...It’s an atmosphere that’s made up of mostly oxygen and nitrogen with very little carbon dioxide and very little other carbon compounds or atoms in the atmosphere that gives you a transparent atmosphere.

149. Surface of Titan (JPL art—Titan surface looks back at Saturn)

Guillermo Gonzalez

“If we had too much carbon in the atmosphere, we’d get hazes ...organic hazes in the atmosphere. Like you see on the large moon Titan, for example.”

150. CU Titan and other planets/ thick clouds from Earth (as per JR)

Narration

THE DENSE SHROUD OF GAS THAT BLANKETS SATURN’S LARGEST MOON, RESEMBLES THE ATMOSPHERES SURROUNDING NEPTUNE, URANUS, SATURN, JUPITER—AND THE GREENHOUSE CAULDRON OF VENUS.

NONE OF THESE ALIEN WORLDS KNOW THE STARS ...OR EVEN OFFERS A CLEAR VIEW OF THE SUN.

151.

Jay Richards

“Now, of course, if you were suddenly transported to Titan or Venus, or one of the outlying gas giant planets, the lack of a clear view of the universe wouldn’t be much of an issue...because you’d be dead.

(on camera)

But, that’s precisely the point. If we’re right...if the conditions for habitability and scientific discovery appear in the same places, then you’re going to get conditions like you do on Earth—an atmosphere that sustains complex life, like ourselves...and also enables scientific discovery of the universe around us.”

152. Shuttle shots from “Blue Planet”/ super quotation

THE VIRTUES OF SUCH AN ATMOSPHERE ARE CONTINUALLY TESTED.

153. Earth moving/ radiation

Narration

AS THE EARTH MOVES THROUGH SPACE, IT IS BOMBARDED BY RADIATION FROM THROUGHOUT THE UNIVERSE.

154. Radiation from sun/ supernova explosion

THIS RADIATION IS EMITTED BY THE SUN...AND OTHER CELESTIAL OBJECTS INCLUDING SUPERNOVAS AND DISTANT GALAXIES.

155. Super names over Earth/ EM spectrum with names (as per GG)

IT REACHES OUR PLANET IN WAVELENGTHS DESCRIBED AS GAMMA, X-RAY, ULTRAVIOLET, VISIBLE, INFRARED, MICROWAVE AND RADIO. TOGETHER, THEY COMPRISE THE ELECTROMAGNETIC SPECTRUM.

156. EM spectrum

ALMOST ALL OF THESE WAVELENGTHS ARE INVISIBLE TO THE EYE... AND EITHER LETHAL OR USELESS TO ORGANIC LIFE.

YET, WITHIN THIS SPECTRUM OF FREQUENCIES— A THIN SLIVER OF RADIATION PROVES ESSENTIAL TO PLANTS, ANIMALS, AND HUMAN BEINGS.

157.

Jay Richards

“In other words, there’s really just a very narrow part of the electromagnetic spectrum that’s going to be useful for living processes like photosynthesis. It’s not as if life could have evolved to use gamma radiation or x-ray radiation or something like that. There’s really just a narrow part of the spectrum that would be useful to life processes.

Well, as it turns out, that’s also the same narrow part of the spectrum that is the most informative about the various structures that we discover in the universe around us.”

158. EM scale

THESE SPECIFIC FREQUENCIES (THAT ENABLE PLANTS TO MANUFACTURE FOOD AND ASTRONOMERS TO OBSERVE THE COSMOS), REPRESENT LESS THAN 1 TRILLIONTH OF A TRILLIONTH OF THE UNIVERSE’S RANGE OF NATURAL ELECTROMAGNETIC EMISSIONS.

159.

FORTUNATELY, IT IS THE TYPE OF LIGHT OUR SUN PRODUCES IN ABUNDANCE...AND THAT MOST EASILY PENETRATES THE FILTERING SHIELD OF OUR ATMOSPHERE TO REACH THE SURFACE OF THE EARTH.

160.

Guillermo Gonzalez

It’s a remarkable coincidence that the kind of atmosphere that’s needed for complex life, like ourselves, does not preclude that life from observing the distant universe.”

161.

Guillermo Gonzalez

“...it’s a surprise. It’s something that you wouldn’t expect just chance to produce. Why would the universe be such that those places that are most habitable also offer the best opportunity for scientific discovery?”

162. Guillermo at work (temp—Behe/papers on desk)

Narration

IN 1997, GUILLERMO GONZALEZ BEGAN A STUDY OF THE EARTH’S SPECIFIC LOCATION WITHIN THE MILKY WAY GALAXY.

IT WOULD EVENTUALLY LEAD HIM TO MORE EVIDENCE OF A CORRELATION BETWEEN LIFE AND DISCOVERY.

163. CHZ diagram.

Guillermo Gonzalez

“Just as our location in the Solar System is optimized for habitability, so is our location in the galaxy.

164. GG in box/ Milky Way model

Guillermo Gonzalez

“We inhabit a spiral galaxy which means that it’s highly flattened, it has a spherical bulge in the center and has spiral arms and we live about half way between the center of the galaxy and the edge.”

165. GG looking over galaxy illustration (Anm. End with move toward core)

Narration

WORKING CLOSELY WITH ASTROBIOLOGISTS PETER WARD AND DONALD BROWNLEE, GONZALEZ COMPARED OUR POSITION IN THE MILKY WAY TO OTHER REGIONS WITHIN AN OFTEN HOSTILE GALAXY.

166. Animation—core/ GG in box

Guillermo Gonzalez

“The galaxy has a lot of dangers and, perhaps the most dangerous place in the galaxy is a galactic center.”

167. DB in box. Animation: Dense stars/ supernovas

Donald Brownlee

“... Well, in the center of the galaxy, the density of stars is very high—with supernovas, and other things that could harass life, right in the dead center regions of our galaxy.”

168. GG in box. Animation: Black hole

Guillermo Gonzalez

“You also have a giant black hole at the very center of the galaxy and if it were to have a close encounter with a star passing near, it would rip it to shreds and form an accretion disc around it and emit lots of radiation, particle radiation and electromagnetic radiation, gamma rays, X-rays

169. Anm—galaxy. Start close on core—move out toward edge

Narration

WHILE A BLACK HOLE, EXPLODING STARS, AND DEADLY RADIATION WOULD MAKE COMPLEX LIFE VIRTUALLY IMPOSSIBLE NEAR THE GALACTIC CORE...

THE OUTER EDGE OF THE MILKY WAY POSES OTHER CHALLENGES TO HABITABILITY.

170. Donald Brownlee/ Anm—edge of galaxy.

Don Brownlee

"In the outer regions, the situation is much more subtle. We live on a planet made out of iron, magnesium, silicon, and oxygen

If we went in the more distant regions of our galaxy...out toward the outer edge ...the abundance of these heavy elements are lower...

171. Anm—edge of galaxy

Guillermo Gonzalez

...there probably aren't enough heavy elements to build Earth size planets that can support life.

172. . Anm—full galaxy

Guillermo Gonzalez

"So there's a happy medium . . . between the dangerous galactic center and the outer edge of the galaxy."

173. GHZ

Narration

**GONZALEZ, BROWNLEE, AND WARD LABELED THIS REGION
(WHERE COMPLEX LIFE IS POSSIBLE WITHIN THE MILKY WAY)
THE “GALACTIC HABITABLE ZONE.”**

174. Magazine article

**THEIR THEORY WAS FIRST PUBLISHED IN 2001...AND, HAS SINCE
RECEIVED GROWING ACCEPTANCE AMONG ASTROBIOLOGISTS.**

175. Overlap GHZ

Guillermo Gonzalez

**“There’s a lot more research that needs to be done to determine just how
wide the habitable zone is, but I think there’s general agreement, that, “Yes,
there are definitely places in the galaxy that you cannot have civilizations
because they’re very dangerous, and there are places where you just have a
very low abundance of heavy elements...”**

176. Galaxy full—move toward arms (as per JR)

Narration

**WHILE THESE OBSTACLES TO HABITABILITY
ARE MINIMIZED FAR FROM THE CORE AND EDGE OF THE MILKY
WAY, GONZALEZ HAS ALSO IDENTIFIED LARGE AREAS WITHIN
THE GALACTIC HABITABLE ZONE, ITSELF, WHICH ARE LESS
HOSPITABLE TO COMPLEX LIFE.**

177. Supernova explosions

Guillermo Gonzalez

**“Even within the habitable zone in the galaxy, it’s broken by the spiral arms
... which are dangerous places. That’s where most of the supernovae go off in
the galaxy. That’s where the star formation is taking place.**

178. Nemati on camera

Bijan Nemati

“We don’t want to be too close to a spiral arm. We want to be outside a spiral arm at about the right region of the galaxy.”

179. CU—between arms

Narration

IT APPEARS THIS IS PRECISELY WHERE THE EARTH IS LOCATED—IN THE RELATIVELY SAFE AND UNCROWDED REGION BETWEEN THE SAGITARIUS AND PERSEUS ARMS OF THE MILKY WAY.

180. GG on camera

Guillermo Gonzalez

“Location is everything. And so we occupy that special place in the galaxy where habitability is optimized, threats are minimized, and we have enough building blocks to build an Earth.”

181. GHZ model

Narration

GUILLERMO GONZALEZ AND JAY RICHARDS HAVE CONDUCTED RESEARCH ON ANOTHER FACET OF THE GALACTIC HABITABLE ZONE.

THEY NOW ARGUE THAT THE EARTH IS ALSO LOCATED IN THE BEST SETTING WITHIN OUR GALAXY FOR ASTRONOMICAL RESEARCH.

182. On camera

Guillermo Gonzalez

“As it turns out, our position in the universe is not only critical for life but it’s also surprisingly important for making scientific discoveries.”

183. View between arms

Guillermo Gonzalez

We’re located near the mid-plane of the galaxy, a fairly highly flattened galaxy, between spiral arms in the region with very low dust extinction. While we are in the plane in the galaxy, that does not obscure a large part of the sky so we can have very clear views.

184.

Narration

FOR MORE THAN A CENTURY, THIS NEARLY IDEAL PLATFORM OF OBSERVATION HAS ENABLED ASTRONOMERS TO STUDY THE STRUCTURE OF THE MILKY WAY.

185. Sag Constellation

LOOKING TOWARD THE CONSTELLATION SAGITTARIUS ON A CLEAR NIGHT, FOR EXAMPLE, WE SEE THAT THE STARS IN OUR GALAXY ARE NOT UNIFORMLY DISTRIBUTED ACROSS THE SKY.

INSTEAD, THEY APPEAR AS PART OF A CONCENTRATED BAND –A FLATTENED DISK OF STARS, DUST, AND GAS 100 THOUSAND LIGHT YEARS IN DIAMETER.

- 186. Milky Way prominent and then the Milky Way band flooded out as night sky brightens with more and brighter stars all over the night sky.**

Guillermo Gonzalez

“The Milky Way band in the night sky is us looking edge on into the plane of the galaxy.”

“If we were living in the center of the galaxy things would be much more spherically distributed, so it would be very hard to distinguish things inside the galaxy from things that are outside.”

- 187. Move toward core**

Guillermo Gonzalez

“It’s also very dusty...much dustier toward the galactic center than it is in our region. And so, views of the distant universe would be much more difficult to obtain. They would be much more compromised.”

- 188. Animation—travel through spiral arm**

Narration

SIMILAR PROBLEMS WOULD EXIST FOR ASTRONOMERS WORKING ON A PLANET LOCATED WITHIN ANY OF THE GALAXY’S SPIRAL ARMS.

HERE, DENSER CONCENTRATIONS OF DUST CLOUDS AND GAS ILLUMINATED BY STARS WOULD MAKE IT DIFFICULT TO DETERMINE THE SHAPE OF THE MILKY WAY ...OR TO DISTINGUISH THE STARS IN OUR GALAXY FROM THE REST OF THE UNIVERSE.

189. Interview

Jay Richards

“On the surface of the Earth, we’re really in the optimum position for seeing both the nearby structure of the Milky Way galaxy, as well as seeing the distant cosmos, as a whole.

So, once again, we see that best location for habitability and for producing a habitable planet is also the best overall position for scientific discovery. In this case, at the galactic scale.”

190. Super: Transitional quote

“The most incomprehensible thing about the universe is that it is comprehensible.”

Albert Einstein

191. Jay Richards

Jay Richards

“For centuries, the fact that we can discover things about the universe has really been something of a mystery.

Why would beings like ourselves be able to discover a universe like this? Why is what we think about the universe...why would it correspond to the way things really are?”

192. Paul Davies/ could use Mt. Wilson observatory

Paul Davies

“...our ability to discern and understand the universe is a fundamental part of what makes the universe tick. So that we’re linked into it (this isn’t an accident, a trivial little by-product—it is something that is linked to the great cosmic scheme of things. Now, I have no idea how that linkage works, why it’s there, or, any of that sort, but I’m very, very struck by the fact that we can understand the universe in such exquisite detail, and at such a deep level.”

193.

Narration

THE SPECTACULAR PROGRESS OF MODERN ASTRONOMY AND PHYSICS IS THE PRODUCT OF A UNIVERSE ACCESSIBLE TO THE HUMAN EYE AND MIND.

194. Super forces/ constants. End with “gravity.”

Narration

IT IS A UNIVERSE GOVERNED BY LAWS AND FORCES THAT, LITERALLY, HOLD OUR PLANET EARTH—AND THE ENTIRE COSMOS—TOGETHER...AND ARE FINELY CALIBRATED TO ALLOW FOR BOTH COMPLEX LIFE AND SCIENTIFIC DISCOVERY.

195. Robin Collins

Robin Collins

“...if you didn’t have something like gravity that pulled matter together, you wouldn’t never get planets, you wouldn’t get stars, you wouldn’t get any complex organisms...

If you didn’t have the strong nuclear force, there would be nothing to hold protons and neutrons together in the nucleus. So you wouldn’t have any atoms. So no chemistry.

If you didn’t have the electromagnetic force, you’d have no bonding between chemicals. You’d have no light.”

196.

Robin Collins

“...and the list goes on. You need all these sorts of fundamental principles. They have to be in place in order for life to occur. Wipe out one of these principles, wipe out one of these laws—no life.”

197.

Narration

DURING THE PAST 40 YEARS, SCIENTISTS HAVE DETERMINED THE RELATIVE STRENGTHS OF EACH OF THESE PRIMARY LAWS AND FORCES.

THESE STRENGTHS ARE SO CRITICALLY BALANCED, THEY ARE OFTEN DESCRIBED AS BEING, “FINELY-TUNED.”

198. Interview

Jay Richards

“...if you’re to take the basic, fundamental constants of nature, and you were to change these, even slightly, or you were to pick their values at random – you would almost never get a universe that would be habitable in any sort of way.

That is, you couldn’t have galaxies, you couldn’t have planets, you couldn’t have complex biological organisms, if these fundamental constants were even slightly different – slightly stronger, slightly weaker than they actually are in this universe. That’s the idea of fine-tuning.”

199. Machine/ universe

Narration

TO BETTER APPRECIATE THIS CONCEPT, IMAGINE A MACHINE ABLE TO CONTROL THE STRENGTHS OF EACH OF THE PHYSICAL CONSTANTS.

200.

IF YOU CHANGED—EVEN SLIGHTLY FROM ITS CURRENT SETTING—THE STRENGTH OF ANY ONE OF THESE FUNDAMENTAL FORCES (SUCH AS GRAVITY), THE IMPACT ON COMPLEX LIFE WOULD BE CATASTROPHIC.

201.

Robin Collins

“...if you increased it by a little bit—no large scale life forms could exist...anything that was more than the size of a pea would be completely crushed.

So you might be able to get life of a very, very primitive sort, such as bacteria, but you could never get conscious observers.”

202. Paul Davies

Paul Davies

“This is one of a long list of properties in underlying physics that seem to be prerequisites for a universe with life. For example, the strengths of the other forces are all important. The masses of the various sub-atomic particles. If all of these things were even a little bit different, then certainly, life as we know it could not exist.

203. Graphics—force names morph into equations.

Narration

THESE FORCES AND CONSTANTS ARE ANOTHER EXAMPLE OF THE CORRELATION BETWEEN LIFE AND DISCOVERY...FOR NOT ONLY ARE THEY FINELY TUNED FOR OUR EXISTENCE, THEY CAN ALSO BE UNDERSTOOD.

204.

Guillermo Gonzalez

“It’s remarkable how well the laws work, and not only that it’s remarkable how simple they are. And that also is related to the discoverability of the laws.”

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205.

ALBERT EINSTEIN WROTE, “I HAVE DEEP FAITH THAT THE PRINCIPLES OF THE UNIVERSE WILL BE BOTH BEAUTIFUL AND SIMPLE.”

FOR NEARLY 400 YEARS, SCIENTISTS HAVE DISCOVERED AN ELEGANT SIMPLICITY IN THE MATHEMATICAL EQUATIONS THAT EXPRESS AND UNLOCK THE LAWS OF THE COSMOS.

206. Interview

Jay Richards

“... it’s been said that many of the most important theories in theoretical physics can be written on a single sheet of paper and this, I think, ought to be considered surprising – that such...such a simple formula or equation could have such far reaching applications to a very complicated and very large universe.

207.

Robin Collins

“What you have is a universe that is not only finely tuned for life to occur, but also has a beautiful, elegant mathematical structure, and a structure such that we can discover that structure.

208.

Paul Davies

“Most scientists take it for granted that the world is both ordered and intelligible. And, the intelligible part, I find, is really quite extraordinary. It’s one thing to accept the universe as ordered, but ordered in a way that human beings are capable of understanding is an extraordinary thing.

“And so the question naturally arises—‘what is the explanation for that?’”

209.

MANY WHO HAVE PONDERED THIS MYSTERY OF AN INTELLIGIBLE UNIVERSE ARGUE THAT IT CANNOT BE EASILY EXPLAINED AWAY.

210.

Robin Collins

“From naturalistic assumptions, you would not expect the universe to be understandable by human reason. After all, within the standard naturalistic story, human reason was developed to be able to hunt prey, get around in the everyday world, attract mates.

211. Paul Davies.

Paul Davies

“We have certain skills, for example--we can jump streams and catch falling apples, and so on—which are necessary for getting by in the world.

“...but, why is it that we also have the ability to discern , for example, what’s going on inside atoms or inside black holes. These are completely outside the domain of everyday experience...totally surface requirements...not at all necessary for good Darwinian survival ...

212.

Guillermo Gonzalez

“Discoverability of the universe is something we didn’t need for our existence. This is something additional to it. It seems then, that whatever the source of the universe is, it intended that it contain observers who can discover.”

213.

Jay Richards

“You put observers in the best places for observing. That is, if you’re going to do things intelligently, that’s what you’d do.”

214.

Jay Richards

“...the nature of our planet, the nature of its atmosphere, the location in the solar system, the type of solar system it’s in, even the type of star that we’re around and the location within the galaxy, are optimal for making a wide range of scientific discoveries. It turns out that those are also all the very most...most important conditions for a habitable planet, that is for a planet that’s conducive to beings like us and without which we could not survive. I think, that’s just the sort of pattern that ought to suggest to people conspiracy, rather than mere coincidence.”

215. Interview

Guillermo Gonzalez

“...there’s something about the universe that can’t be simply explained just by the impersonal forces of nature and atoms colliding with atoms. And so, you have to reach for something beyond the universe to try to account for it.”

216. Copernicus diagrams

Narration

SUCH AN APPROACH LIES AT THE FOUNDATION OF MODERN SCIENCE.

217. Diagrams/ Copernicus

Narration

IN HIS SEARCH FOR A MORE ELEGANT DESCRIPTION OF THE SOLAR SYSTEM, NICHOLAS COPERNICUS WAS MOTIVATED BY HIS DESIRE TO COMPREHEND WHAT HE CALLED, “THE MECHANISM OF THE UNIVERSE, WROUGHT FOR US BY A SUPREMELY GOOD AND ORDERLY CREATOR...THE SYSTEM THE BEST AND MOST ORDERLY ARTIST OF ALL FRAMED FOR OUR SAKE.”

217/23/05

218. Dennis Danielson

Dennis Danielson

“And so he imagined this analogy of a workman or craftsman making something that worked well and was beautiful. That analogy wasn’t one of his conclusions...that analogy was one of his assumptions.”

219.

Jay Richards

“The founders of modern science like Copernicus and Kepler and Galileo and Newton himself believed that the universe was the product of a mind – that it was intelligible to beings like ourselves because the universe itself was the product of an intelligent being.”

220.

Paul Davies

“They were driven by this notion that this was, essentially, a theological quest. They were uncovering God’s handiwork in the way the world works.”

“I mean, what a thought—we can glimpse the mind of God. We can actually figure out how God put the universe together. So there is a hidden subtext in nature which can be exposed through this procedure we call, ‘science.’”

221. Mt. Wilson observatory/ begin trip out

Narration

THOUGH MOST SCIENTISTS NO LONGER THINK IN SUCH EXPLICITLY THEOLOGICAL TERMS, RECENT EVIDENCE MAY AGAIN POINT TO AN EARTH FAR DIFFERENT FROM THE CONTEMPORARY IMAGE OF A PALE BLUE DOT LOST IN A COSMIC SEA.

222. Jay Richards/ trip through the universe

Jay Richards

“We’ve often been told, especially in the 20th century, that the universe does not have us in mind. That is, that we exist in a very large universe and that the universe was not designed for beings like us.. We are simply life that happened to come about on a tiny little planet, surrounding a tiny, insignificant star, in a run of the mill galaxy, within a very large universe, that was not intended.

223.

Jay Richards

Our argument suggests something completely different. It suggests that the universe was intended, that the universe exists for a purpose. And, that purpose isn’t simply for beings like ourselves to exist, but for us to extend ourselves, beyond our small and parochial home to view the universe at large –to discover the universe and, in fact perhaps, to consider whether that universe points beyond itself

224. Travel through large scale structure of the Universe

Narration

**AS WE GAZE EVER DEEPER INTO THE UNIVERSE, WE ARE
INEVITABLY DRAWN BACK TO TIMELESS QUESTIONS:**

**WHAT IS THE SOURCE OF THE COSMOS...AND, WHAT IS OUR
PURPOSE WITHIN IT?**

**WHILE ANSWERS WILL ALWAYS BE DEBATED, VALUABLE NEW
INSIGHTS ARE NOW AT HAND...EMERGING FROM A CORNER OF
THE UNIVERSE WHERE COMPLEX LIFE AND SCIENTIFIC
DISCOVERY HAVE CONVERGED, ON AN EXTRAORDINARY PLANET
CALLED EARTH.**

225. Credits