

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JTEKT CORPORATION,
Petitioner,

v.

GKN AUTOMOTIVE LTD.,
Patent Owner.

Case IPR2016-00046
Patent 8,215,440 B2

Held: December 6, 2016

BEFORE: JAMES J. MAYBERRY, JOSIAH C. COCKS, and
MITCHELL G. WEATHERLY, Administrative Patent Judges.

The above-entitled matter came on for hearing on Tuesday,
December 6, 2016, commencing at 1:30 p.m., at the U.S. Patent
and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

Case IPR2016-00046
Patent 8,215,440 B2

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1 P R O C E E D I N G S

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3 JUDGE MAYBERRY: Good afternoon. Welcome to
4 the Patent Trial and Appeal Board. All right, we are here for oral
5 argument in IPR2016-00046, which involves U.S. Patent Number
6 8,215,440, the '440 patent. My name is Judge Mayberry and I am
7 joined by Judges Cocks and Weatherly.

8 We would like to start with introduction for counsel.
9 Would counsel for Petitioner please introduce themselves for the
10 record.

11 MS. MANDRUSIAK: Yes, Your Honor. It's Lisa
12 Mandrusiak from Oblon representing Petitioner, and with me are
13 my colleagues, Todd Baker and Ryan Smith.

14 JUDGE MAYBERRY: And for Patent Owner?

15 MS. SHAH: Sangeeta Shah on behalf of Patent Owner,
16 GKN Automotive. With me is Lissi Mojica from Brooks
17 Kushman, Nona Durham from Brooks Kushman, Kristin Murphy
18 from Brooks Kushman, and on behalf of GKN Jennifer
19 Brumbaugh.

20 JUDGE MAYBERRY: Thank you. As we set forth in
21 our hearing order, each party will have 45 minutes of argument
22 time. And, Petitioner, you will have the burden of showing
23 patentability, so you can go first and reserve rebuttal time. And
24 then Patent Owner will argue your opposition to Petitioner's case.
25 After that, Petitioner can use the rest of the remaining time to
26 respond to Patent Owner's presentation.

1 One other thing that would help us with the record,
2 when you put up a slide, please mention the slide number.

3 Any questions before we begin?

4 (No response.)

5 JUDGE MAYBERRY: Okay, Petitioner, you can begin
6 when you're ready.

7 MS. MANDRUSIAK: Thank you, Your Honor. My
8 name is Lisa Mandrusiak, representing Petitioner Jtekt
9 Corporation. I would like to reserve 15 minutes of time for my
10 rebuttal.

11 This case is simple, only four claims are still under
12 review and all features of those four claims are disclosed in the
13 prior art. Patent Owner's primary argument is that these
14 references, which are all in the same field, would not have been
15 combined. But, there is simply no barriers to the proposed
16 combinations, and there are several strong motivations to
17 combine the references.

18 As such, there is a clear prima facie case of obviousness
19 for each of claims 2, 3, 6 and 7. Patent Owner will attempt to
20 rebut this with allegations of secondary considerations, but
21 without any nexus to claims 2, 3, 6 and 7, this evidence is
22 insufficient.

23 Slide 2 is a summary of the institution grounds. After
24 institution, Patent Owner disclaimed claims 1, 4 and 5, so these
25 claims are no longer under review, but because the remaining
26 claims depend from these claims, I think it's worth quickly

1 comparing them with the prior art of record with respect to the
2 portions of Teraoka, the primary reference, that would be
3 modified by these secondary references.

4 At a high level, the '440 patent is directed to manually
5 connected four-wheel drive transmissions in vehicles configured
6 so that a portion of the secondary drivetrain can be shut down so
7 that it does not rotate or move when the vehicle is in two-wheel
8 drive mode. And this is reflected in claim 1.

9 In slide 7, we see that claim 1 specifies that the
10 secondary axle is connected via at least one side shaft coupling.
11 In Teraoka, the rear differential 25 corresponds to the at least one
12 side shaft coupling. Differential 25 includes an outer case, an
13 inner case, a beveled rear differential and a clutch mechanism 71,
14 which is a wet multi-plate clutch.

15 This is relevant because when we talk about claims 2
16 and 3, the combination replaces the side shaft coupling of
17 Teraoka with the side shaft coupling in Watanabe.

18 Slide 8 focuses on the shutdown section aspect of claim
19 1, specifying that the shutdown section is located between the
20 switch-on device and the at least one side shaft coupling. In
21 Teraoka, the switch-on device is the transfer case, and the side
22 shaft couple is the rear differential 25. In Teraoka, all the
23 secondary drivetrain components between differential 25 and the
24 transfer case are stopped when the vehicle is in two-wheel drive
25 mode.

1 Slide 10 further specifies the features of the shutdown
2 section, noting that in two-wheel drive mode, the shutdown
3 section is decoupled from both the primary axle and the wheels of
4 the secondary axle. This is also taught by Teraoka, which
5 explicitly explains that the rotation of various component stops
6 when the secondary drivetrain is uncoupled. This is relevant
7 because when we talk about claims 2 and 3, as well as 6 and 7,
8 the feature of stopping rotation of components in Teraoka is a
9 driving force behind each combination.

10 With that, I would like to move on to the claims that are
11 still under review. Slide 14 illustrates the limitations in claims 2
12 and 3. These claims both depend from claim 1, and both specify
13 that instead of at least one side shaft coupling, there is a side shaft
14 coupling on each side axle, and this is highlighted in purple on
15 this slide.

16 Claim 2 further specifies that these side shaft couplings
17 allow for transverse compensation without a differential,
18 highlighted in orange, and claim 3 specifies that these side shaft
19 couplings allow for longitudinal compensation differential,
20 highlighted in blue.

21 JUDGE WEATHERLY: In slide 3, in your view, is
22 longitudinal compensation, does that occur even if the secondary
23 axle is completely decoupled? Is that a type of longitudinal
24 compensation?

25 MS. MANDRUSIAK: If a secondary axle is
26 completely decoupled --

1 JUDGE WEATHERLY: Or does it require a power
2 split where both are being delivered to some primary, or maybe in
3 two different speeds.

4 MS. MANDRUSIAK: Let me confer with my
5 colleague on that. No, I don't believe there would be longitudinal
6 computation when it's completely uncoupled.

7 JUDGE WEATHERLY: So, that is not a type of
8 longitudinal coupling?

9 MS. MANDRUSIAK: Not a type of longitudinal
10 coupling.

11 JUDGE WEATHERLY: Okay. Thank you.

12 MS. MANDRUSIAK: Slide 15 is figure 3 from the
13 Watanabe reference, which is a cross-section of one embodiment
14 discussed in Watanabe. Of particular relevance, figure 3 depicts
15 a rear differential, including multi-plate clutches 89 and 91, those
16 are annotated in red. When these multi-plate clutches are
17 tightened, the rear wheels are driven and the vehicle enters
18 four-wheel drive mode.

19 These clutches allow for dispersing drive power to all
20 four wheels, adjusting the power distribution ratio and controlling
21 the distribution ratio between the left and right rear wheels. In
22 other words, the two multi-plate clutches replace the function of a
23 traditional beveled gear differential.

24 As previously shown, Teraoka discloses one side shaft
25 coupling in the form of rear differential 25, and as shown in slide
26 16, Watanabe discloses a side shaft coupling for each side shaft in

1 the form of multi-plate clutches 89 and 91. These multi-plate
2 clutches replace the function of a traditional beveled gear
3 differential when it's in four-wheel drive mode because unless the
4 features of ensuring transverse compensation and longitudinal
5 compensation, as shown in slide 17 and 18, are met by Watanabe
6 without a differential.

7 In other words, the combination of Teraoka and
8 Watanabe is simply substituting one known secondary drivetrain
9 configuration that uses a beveled gear differential with another
10 known configuration which replaces the differential with a known
11 multi-plate clutch system.

12 Each of the features of claims 2 and 3 are found in
13 combination of Teraoka and Watanabe. In fact, Patent Owner's
14 expert testified in Exhibit 1012 at pages 90 through 93 that a
15 clutch-based differential can be successfully implemented in a
16 four-wheel drive product, and that one skilled in the art could
17 combine Teraoka and Watanabe to result in a system where
18 Teraoka's vehicle had Watanabe's dual plate clutches. In other
19 words, there are no technical barriers to the combination of
20 Teraoka and Watanabe.

21 The only issue for consideration is whether or not one
22 skilled in the art would have combined these references, and
23 because there are numerous reasons to combine Teraoka and
24 Watanabe, as listed on slide 19, this combination renders claims 2
25 and 3 obvious.

1 JUDGE WEATHERLY: What are the differences, if
2 any, between the primary drive parts of the drivetrain between
3 Teraoka and Watanabe? Earlier you mentioned that the Teraoka
4 has a transfer case.

5 MS. MANDRUSIAK: Um-hmm.

6 JUDGE WEATHERLY: To transmit, as the switch-on
7 mechanism, essentially, as the claims describe. So, what sort of
8 device does Watanabe use to transfer torque from the primary and
9 secondary drive?

10 MS. MANDRUSIAK: If I can just grab the Watanabe
11 reference.

12 JUDGE WEATHERLY: And I apologize for asking
13 maybe a basic question, but I really want to try to get a sense of
14 your framing of the modifications.

15 MS. MANDRUSIAK: I believe the primary drive shaft
16 used in Watanabe is a -- there's no functional difference, it's a
17 locking kind of clutch, it's not quite the same as the transfer case,
18 but functionally very simple.

19 JUDGE WEATHERLY: Okay. By your
20 characterization of them being functionally similar, I take it that
21 you -- it's your position that the differences between those two
22 things -- between the two references is really of any importance
23 to your case?

24 MS. MANDRUSIAK: That is our position, yes.

25 JUDGE WEATHERLY: Okay.

1 MS. MANDRUSIAK: With regards to the front
2 drivetrain, yes.

3 JUDGE WEATHERLY: Okay.

4 MS. MANDRUSIAK: Turning to slide 20, one skilled
5 in the art would have been easily motivated to replace the beveled
6 differential in Teraoka with the multi-plate clutches in Watanabe
7 in order to reduce the weight of the drivetrain, and reducing
8 weight in automotive systems is a well-known goal.

9 This motivation comes from the reference itself.
10 Significantly, Watanabe teaches that using the multi-plate clutch
11 module to replace a center differential makes it possible to
12 simplify the vehicle's power transmission system and reduce cost
13 and weight, which are significant effects. That's found in Exhibit
14 1003, page 148, in the lower right column.

15 JUDGE MAYBERRY: And, counsel, the first time we
16 saw anything about that, though, was in your reply. Isn't that
17 correct? As far as the petition goes, exclusively relied on
18 Mr. Becker's declaration?

19 MS. MANDRUSIAK: The motivation of reducing
20 weight was presented in the petition, supported by the reference
21 itself, as well as Mr. Becker's declaration. I don't recall that that
22 particular quote was emphasized in the petition, that is correct.

23 JUDGE MAYBERRY: Did you cite to anything in
24 Watanabe in your petition for supporting the reduced weight?

25 MS. MANDRUSIAK: No, I don't believe we did.

26 JUDGE MAYBERRY: Okay.

1 MS. MANDRUSIAK: But I would point out that
2 emphasizing that portion of Watanabe is directly responsive to
3 arguments in their Patent Owner response, which alleged that
4 Watanabe would not be -- that it may not reduce weight.

5 So, based on these explicit teachings in Watanabe, it
6 would be predictable to one skilled in the art that replacing a
7 beveled gear differential with a multi-plate clutch could reduce
8 weight of the system overall, and this was recognized as a
9 desirable goal.

10 As Your Honor noted, this was supported by Petitioner's
11 expert, Mr. Becker, who testified that eliminating differential
12 gearing may provide weight savings, and the cites from his
13 declaration and transcript are shown here in slide 20. There's also
14 significant evidence supporting the fact that reducing weight in
15 general was a common goal in the automotive industry.

16 The Teraoka and Watanabe reference --

17 JUDGE WEATHERLY: Isn't it really true that all of
18 these components can be optimized for weight? I mean, I'm
19 having -- I have a little trouble with the rationale as you've
20 advanced it, almost as if it -- your rationale is that a skilled artisan
21 would know that switching from a beveled gear differential to a
22 clutch pack, essentially, differential, would save weight. But I've
23 examined all the -- all the citations to evidence that you have on
24 this slide 20, and none of them seem to explicitly support that
25 specific proposition.

1 In other words, it seems to me that some beveled gear
2 differentials are heavy and some are not as heavy. Some clutch
3 pack differentials are heavy and some are not as heavy. And
4 there's really not a way to categorically say that clutch pack
5 differentials are lighter than beveled gear differentials. What am
6 I missing? Or am I misunderstanding your evidence in some
7 way?

8 MS. MANDRUSIAK: No, I don't think you're
9 misunderstanding, because certainly there could be configurations
10 of a beveled gear that are lighter than a particular clutch pack and
11 vice versa. That's true.

12 JUDGE WEATHERLY: So, how does the reduction of
13 weight, which most of the evidence that I see you citing really is
14 just that automotive engineers consider weight, and they consider
15 lighter weight to be better, generally speaking. If a lighter weight
16 component can otherwise meet the demands in the application,
17 but how is reducing weight going to motivate a skilled artisan to
18 remove a differential -- a beveled gear differential and replace it
19 with a clutch pack? I don't see how the evidence supports that
20 concept.

21 MS. MANDRUSIAK: Well, I think Watanabe
22 itself clearly does support that, where it says that -- I'm just
23 finding the reference -- it says, "replacing a center differential
24 with a clutch pack makes it possible to reduce cost and weight,"
25 and because the center differential could be a beveled gear
26 differential, this rationale would apply to combining Watanabe

1 with Teraoka. And I don't think that every implementation
2 necessarily would need to be lighter in weight, as long as an
3 initial -- one skilled in the art attempting to modify Teraoka
4 would have thought that that was a reasonable -- a reasonable
5 idea, as Mr. Becker did in his declaration.

6 JUDGE COCKS: Counsel, were you just reading from
7 Teraoka?

8 MS. MANDRUSIAK: From Watanabe.

9 JUDGE COCKS: Okay. And what portion of that?

10 MS. MANDRUSIAK: That's page 148 in the lower
11 right column, Exhibit 1003. It's actually the bridging paragraph
12 between the lower left and lower right columns.

13 JUDGE WEATHERLY: See, I see that as Watanabe
14 saying that if you remove a component, center differential, that
15 you can reduce the weight, but the vehicle as a whole, not that
16 replacing a rear beveled gear differential with a clutch pack
17 differential is going to save weight necessarily. Am I misreading
18 it?

19 MS. MANDRUSIAK: I can't say that you're
20 misreading it, but we -- we do have the testimony of our expert
21 who has worked in the industry who thought that it would be a
22 reasonable expectation that it could reduce the weight. But in any
23 event, there are several additional motivations in these references.

24 JUDGE WEATHERLY: I see that testimony at page
25 175, really that was the only testimony I identified that might
26 support your proposition. The first five citations of testimony, to

1 me, merely focused on general considerations that a designer
2 likes light weight. But, of course, the application has as much to
3 do as how heavy a component needs to be as anything else, but
4 the testimony at 175 reads that potentially you're looking for a
5 weight savings. There may be a weight savings in eliminating the
6 differential housing and beveled gears. That seems a little bit
7 equivocal to me. Is that the best evidence that you have to
8 support that rationale?

9 MS. MANDRUSIAK: There's also paragraph 45 in his
10 declaration, which is Exhibit 1005.

11 JUDGE WEATHERLY: Yeah, I see that as kind of a
12 conclusion that really isn't supported by any evidence, other than
13 he said it. And, frankly, it's really just parroting language that
14 was written in the petition. So, I can tell you that in general, my
15 impression of evidence like that is that it's very weak support for
16 an argument. And, so, in particular, when I see on cross
17 examination that he's not really able to back up that conclusion,
18 as stated in paragraph 45 of his declaration, with any specific
19 examples of how, you know, a beveled gear differential for a
20 particular application, meaning being able to support a certain
21 level of torque, and replacing that kind of differential with a
22 clutch package differential, necessarily results in a weight
23 savings, or that a skilled artisan would even think to -- of using a
24 clutch pack differential as a -- an avenue for saving weight.

25 So, I guess, you know, I -- what I'm trying to do is let
26 you know that I'm not impressed by the evidence that you've

1 proffered on this point. I want to make sure that I'm not
2 misunderstanding evidence or that I'm not missing some
3 evidence. So, is page 20 or the slide 20 where you have your list
4 of evidence, is that all the evidence that you have marshaled? Is
5 there other evidence in the record that I should be looking at?

6 MS. MANDRUSIAK: That is the evidence that we
7 have cited that supports our position that reducing weight would
8 motivate one skilled in the art.

9 JUDGE WEATHERLY: And the list on slide 20 is an
10 exhaustive list of the evidence that you have cited in your papers?

11 MS. MANDRUSIAK: I would refer to the reply rather
12 than the -- the reply at pages 3 and 4 rather than this slide. I am
13 not sure that I put every cite from the reply on this slide.

14 JUDGE WEATHERLY: Well, perhaps you can take a
15 look and see on your reply on pages 3 and 4 and help me
16 understand whether there's something that's not listed that you
17 would like us to consider, also.

18 MS. MANDRUSIAK: Would you like me to do that
19 now or during the rebuttal?

20 JUDGE WEATHERLY: You don't have to do that
21 right now, your co-counsel can do that while you continue.

22 MS. MANDRUSIAK: Okay, thank you.

23 JUDGE WEATHERLY: Thank you.

24 MS. MANDRUSIAK: A second motivation to combine
25 these references is to provide a larger shutdown section. One
26 skilled in the art would have been motivated to replace the

1 beveled gear differential in Teraoka with the multi-plate clutches
2 in Watanabe in order to increase the side of the shutdown section,
3 and this motivation comes from the references themselves.
4 Watanabe specifically discusses stopping rotation of components
5 in the drive system, explaining that some of the benefits
6 associated with using this multi-plate clutch system are stopping
7 useless rotation and the associated wear, vibration, mileage
8 increases, et cetera, shown in slide 21.

9 JUDGE MAYBERRY: Counsel?

10 MS. MANDRUSIAK: Yes?

11 JUDGE MAYBERRY: I'm going to ask you for this
12 argument, what specific argument that the Patent Owner made is
13 this in response to? And I'll tell you that I'm going to ask the
14 same thing in your next two slides as well.

15 MS. MANDRUSIAK: That's fine. Thank you. This is
16 directly responsive to arguments on pages 41 to 42 of the Patent
17 Owner response, where they said that one skilled in the art would
18 not look to Watanabe when attempting to solve the problem of
19 drag rotation, and this clearly shows that that's incorrect, based on
20 the teachings of Watanabe itself.

21 JUDGE MAYBERRY: Okay.

22 MS. MANDRUSIAK: The third motivation to combine
23 Teraoka and Watanabe is to provide torque vectoring, the ability
24 to vary the torque to each wheel, and this directly responds to
25 arguments on pages 31 to 32 of the Patent Owner response, where
26 they stated that there is no explanation for why one skilled in the

1 art would combine Watanabe and Teraoka to provide coupling,
2 uncoupling and controllable power distribution; in other words,
3 torque vectoring.

4 And they also argue that the control handling and fuel
5 economy benefits associated with using a system equivalent to
6 combining Teraoka and Watanabe was not recognized, but as
7 summarized in slide 22, Watanabe teaches that the clutch system
8 provides numerous advantages related to torque vectoring,
9 including improved steerability, driving ease and stability. But
10 these benefits, more importantly, were also just known in the art
11 because torque vectoring was a known technology that had been
12 implemented in commercial vehicles since at least 1996, with one
13 example shown in Patent Owner's own Exhibit 2005.

14 Similarly, Exhibit 2012 from Patent Owner notes that
15 torque vectoring and torque management devices have been
16 gaining a bigger interest in the industry for years, and Patent
17 Owner's expert testified that torque vectoring capability is
18 desirable.

19 As such, the known benefits associated with torque
20 vectoring, including control, handling, fuel economy, which are
21 detailed in Watanabe and were known in the art, would have
22 encouraged one skilled in the art to apply Watanabe's teachings to
23 any four-wheel drive vehicle, including the connectable
24 four-wheel drive vehicles taught by Teraoka.

25 Finally, one skilled in the art would have been
26 motivated to replace the known beveled gear differential in

1 Teraoka with Watanabe's known dual clutch system under an
2 obvious-to-try rationale. At pages 31 to 32 of the Patent Owner
3 response, Patent Owner argued that there are many
4 power-dividing units known in the art, and that one skilled in the
5 art would have likely chosen a modification other than the dual
6 clutch system of Watanabe, but from the outset, this is a
7 completely flawed rationale.

8 The proposed combination is looking only at the
9 power-dividing unit, the dual clutches of Watanabe, and not all
10 the other power-dividing units that were known in the art. As
11 such, all we need is a reason to combine Watanabe and Teraoka,
12 and there are several that we've just discussed. But regardless,
13 even if one skilled in the art looked at all the power-dividing units
14 known in the art, both experts testified, and those cites are shown
15 here in slide 23, that the number of power-dividing units would
16 be reduced by common sense driveline design criteria to render
17 the combination simply one of a finite number of choices. In
18 other words, obvious to try with a reasonable expectation of
19 success.

20 Patent Owner may argue that significant testing and
21 optimization is required to replace a power-dividing unit, but this
22 is simply routine testing in the industry, and is common effect in
23 many engineering fields and does not render the claims
24 patentable. And, in fact, if Patent Owner's logic was followed to
25 its conclusion, no drivetrain patent would ever be found obvious.

1 With that, I would like to move to claims 6 and 7. Slide
2 25 illustrates the limitations of claims 6 and 7. Claim 6 specifies
3 that speed synchronization in the switch-on mechanism is
4 supported by the at least one side shaft coupling. Claim 7
5 depends from claim 6 and recites that the at least one side shaft
6 coupling is formed by a frictionally engaged multiple disk clutch
7 with additional features about how it is connected.

8 Burrows discloses three methods for transitioning
9 between two wheel drive and four-wheel drive mode while in
10 motion. In the method associated with figure 2, shown here in
11 slide 26, Burrows describes synchronizing an embodiment using
12 a dog clutch, very similar to what is disclosed in Teraoka.

13 Patent Owner argued in its preliminary response, as
14 well as the Patent Owner response, that it was not clear which of
15 the three mechanisms Petitioner was relying on, but the citations
16 in the petition and Mr. Becker's supporting declaration are clearly
17 to the second embodiment as the Board recognized in its decision.

18 JUDGE WEATHERLY: Help me understand how that
19 dog clutch positioned as shown constitutes speed synchronization
20 and switch-on mechanism that is supported by the at least one
21 side shaft coupling.

22 MS. MANDRUSIAK: So, Burrows teaches using the
23 slipping connection, which is in the clutch 22, to synchronize the
24 lock-in connection, which is the dog clutch up in 40, by the prop
25 shaft and its intermediary parts. The same is what is being done

1 in Teraoka, but vice versa, with the dog clutch in the primary
2 drivetrain and the slipping clutch in the rear differential.

3 JUDGE WEATHERLY: So, in your view, what is this
4 language in claim 6? Please, this phrase, "a positive lock is
5 supported by the at least one side shaft couplings?"

6 MS. MANDRUSIAK: The positive lock refers to the
7 lock of the dog clutch in the primary drivetrain, and it's supported
8 means it's functionally synchronized by the components of the
9 side shaft coupling.

10 JUDGE WEATHERLY: Meaning that adjustment of
11 the clutch pack at the rear causes the speed synchronization that
12 allows the dog clutch to engage?

13 MS. MANDRUSIAK: Correct.

14 JUDGE WEATHERLY: And go back to -- and I
15 apologize for asking you what may be kindergarten-type
16 questions, but I don't -- maybe it's just my eyesight, give me a
17 moment.

18 See, to me it seems that the dog clutch is the
19 synchronizing element in this Burrows embodiment, not the
20 clutch pack in the rear.

21 MS. MANDRUSIAK: With all due respect, I think
22 that's incorrect.

23 JUDGE WEATHERLY: Okay, help me understand
24 that.

1 MS. MANDRUSIAK: So, the synchronization recited
2 in claim 6 is inherently happening in Teraoka, because a dog
3 clutch requires synchronization to be functional.

4 JUDGE WEATHERLY: Right.

5 MS. MANDRUSIAK: So, that's what's happening here
6 in figure 2. So, in figure 2, element 22 is the wet clutch that is
7 slipping to allow the dog clutch to engage.

8 JUDGE WEATHERLY: I guess, I'm -- what I'm trying
9 to understand is where does the synchronizing device need to be
10 for -- in claim 6? Does it need to be the wet -- the clutch is at the
11 rear, the clutch pack at the rear of the vehicle? Or -- and I
12 recognize that when I say the rear of the vehicle, the claims are
13 actually disclosing a second drivetrain, for the reversal. Doesn't it
14 need to be in the same end as the side -- what I've been referring
15 to as the clutch pack essentially? Isn't that the synchronizing
16 device?

17 MS. MANDRUSIAK: The side shaft coupling is the
18 synchronizing device, but it's synchronizing the dog clutch which
19 is not in the rear. In the '440 patent, it is -- in the '440 patent, it is
20 pretty clearly described that the synchronizing device is in the
21 rear -- is in the rear and it is synchronizing the positive locking
22 clutch in the front drivetrain.

23 JUDGE WEATHERLY: Okay.

24 MS. MANDRUSIAK: So, I think the correct
25 interpretation of claim 6 is that the synchronizer device, if you
26 will, is in the side shaft coupling, which in the Teraoka

1 embodiment is in the -- or Teraoka reference is the rear
2 differential.

3 JUDGE WEATHERLY: Okay.

4 MS. MANDRUSIAK: I would just also add that there's
5 no synchronization device in claim 6, necessarily, it refers to a
6 synchronization being achieved rather than specifying any
7 particular device.

8 It would have been obvious for one of skill in the art to
9 synchronize Teraoka's dog clutch using the clutch mechanism 71
10 in the rear differential, because, as I think I just mentioned, this
11 type of synchronization was known in the art to be required when
12 a dog clutch was used, and although Teraoka probably is -- is
13 carrying out this exact type of synchronization, it was not
14 explicitly discussed in Teraoka, so we relied on Burrows as a
15 clear teaching of synchronizing of a dog clutch scenario.

16 In other words, this is an example of using a known
17 technique to improve a similar device in the same way it would
18 normally be used. And, in fact, the '440 patent itself recognizes
19 that this type of speed synchronization was known in the art, in
20 column 4, lines 17 to 22.

21 Furthermore, one skilled in the art would have been
22 motivated to combine Teraoka and Burrows because they're both
23 connected to relatable secondary drivetrains.

24 JUDGE COCKS: Well, counsel, is that really a
25 motivation to combine the fact that they might be related to the
26 same technology?

1 MS. MANDRUSIAK: Well, the motivation to combine
2 is in the knowledge that a dog clutch requires synchronization.
3 And so the motivation to combine exists in Teraoka itself just by
4 using a dog clutch embodiment. The reason that one skilled in
5 the art -- I guess I'm having trouble, because Teraoka -- we're not
6 actually combining Teraoka and Burrows, because the
7 synchronization is already happening in Teraoka, Burrows is just
8 providing the spelling out example of how the synchronization is
9 happening, and we think that they're applicable and can be
10 combined because they are related to the same area in general.

11 JUDGE COCKS: But you've offered a combination of
12 the two and proposed -- my understanding of your petition was
13 that you proposed a combination by modifying Teraoka is that --
14 do I have it -- am I off?

15 MS. MANDRUSIAK: There's no actual modification
16 of Teraoka with any component from Burrows. It's simply
17 explaining that what's likely happening in Teraoka is that the
18 clutch mechanism 71 that's already existing in Teraoka is doing
19 the slipping that allows the dog clutch to be synchronized.

20 JUDGE COCKS: Okay. Thank you.

21 MS. MANDRUSIAK: Okay. In anticipation of Judge
22 Mayberry asking a question, on pages 4 to 49 of the Patent Owner
23 response, they argued that one skilled in the art would not have
24 looked to Burrows, but as I kind of just mentioned, they are
25 directed to the same area as shown here in slide 30.

1 Patent Owner argued on page 49 that Burrows is not
2 applicable to Teraoka because it is allegedly directed only to
3 ATVs, referring to small straddled ATVs with handlebars, but
4 this argument was originally rejected by the Board and must be
5 rejected again because Burrows is not limited to ATVs for the
6 reasons summarized in slide 31.

7 Regardless, even if Burrows is considered to be limited
8 to ATVs, it's analogous art for obviousness because it's the same
9 field of endeavor as Teraoka and the '440 patent itself, four-wheel
10 drive drivelines.

11 Patent Owner asserts several types of secondary
12 considerations to overcome the obviousness established, but these
13 all fail, as shown in slide 33. Primarily, none of the alleged
14 secondary considerations based on the GKN Twinstar provide
15 any nexus to the claims under review. In fact, they didn't argue or
16 even have their expert opine on whether the construct they rely on
17 is covered by the claims, and that testimony is in Exhibit 1012 at
18 page 72. And without this nexus, there can be no persuasive
19 evidence of secondary considerations.

20 And, so, with that, I would like to reserve my remaining
21 time for rebuttal.

22 JUDGE MAYBERRY: All right. Thank you.

23 Patent Owner, you may begin when you're ready.

24 MS. SHAH: Thank you. So, we wanted to start with an
25 overview, kind of recapture what's principally at issue here at this
26 point. Once again, we have two grounds, ground 2 that covers

1 claims 2 and 3, and ground 3 that covers claims 6 and 7. For both
2 grounds, you have Teraoka that Petitioner has put forward as the
3 primary reference; in ground 2, Teraoka combined with
4 Watanabe; ground 3, Teraoka is combined with Burrows.

5 At this point, it's important to kind of point out that
6 there are two primary disputed issues, in between. The primary
7 issue here is really whether Petitioners put forward sufficient
8 rationale to combine the various references associated with
9 grounds 2 and 3. Drilling down, kind of one layer beyond that is
10 has Petitioner actually explained how you would combine the
11 references, what is to be combined, and why that combination
12 would be something that a person of skill in the art would have
13 actually thought of doing back in 2008, the relevant time period.

14 We argue that Petitioner has not met the burden with
15 respect to that stated issue. The second issue is when the ground
16 3 combination, whether, in fact, the combination of Teraoka and
17 Burrows actually even satisfies the limitations of claims 6 and 7.
18 And once again, we argue that Petitioner has not met its burden
19 with regard to that issue either.

20 So, we would like to step back. Well, actually, let me
21 pause. We have had an opportunity to hear Petitioner's statement
22 of the case, and on all of the issues that it bears the burden on.
23 Number one, once again, you know, as they -- the party that put
24 forward this case, and bears the burden on those issues, Petitioner
25 essentially put forward its case in 25 pages. And then tried to
26 kind of gap-fill through the reply by adding three additional new

1 rationale to combine arguments that are completely inappropriate,
2 based on the IPR procedures, and in particular, 37 CFR 42.23(b)
3 that does not allow Petitioners at the eleventh hour at the reply
4 stage to inject completely new arguments. That's what was --
5 that's essentially what Petitioner has done here. Again, contrary
6 to established law. And moreover, puts both the Board and,
7 frankly, the Patent Owner in an awkward situation.

8 Number one, the rules have been violated; number two,
9 Patent Owner does not get an opportunity substantively to
10 respond. We don't have an opportunity to have our expert come
11 back and specifically speak to and provide testimony evidence
12 with respect to those three additional new rationales to combine
13 that cover, as you saw, you know, that are highlighted all over
14 both in the reply, as well as in these demonstrative slides, the
15 issue of whether a torque vectoring is an available rationale to
16 combine; whether obvious to try is a rationale to combine; and
17 then third, the idea of whether there can be a larger shutdown
18 section and that that provides a predicate for a rationale to
19 combine.

20 None of those arguments were presented by Petitioner
21 when it was to provide its case in chief at the petition stage. Once
22 again, all of that was done at the reply stage, for the first time, not
23 providing any opportunity to Patent Owner to rebut.

24 So, that being said, both with respect to the sort of
25 procedural aspects and the liberties that have been taken by

1 Petitioner here, I also want to look at the substance of what's been
2 said with respect to what was Petitioner's case in chief.

3 There are three sort of primary flaws with respect to
4 Petitioner's argument. Number one is this idea that because you
5 can identify prior art elements -- I'm sorry, because you can
6 identify claimed elements in the prior art, that that somehow
7 means that there is not -- that there is necessarily an obviousness
8 case. That's not the case here.

9 It's well established law that if you have a series of prior
10 art elements that are put together in a specific new combination,
11 that can give rise to a new and novel patentable idea. That's
12 basically what we have. You know, if you look at the '440 patent,
13 which is highlighted here on slide 3, you'll see a combination of
14 structural components that provide certain key electromechanical
15 differences with this drivetrain configuration.

16 Number one, you have a switch-on device that is
17 demarcated as element 3 in this figure, figure 3 of the '440 patent.
18 That switch-on device, which is located on the primary axle of
19 the drivetrain, works in conjunction with, if you look at the rear
20 drivetrain, which is sort of demarcated there as 12, once again,
21 you'll see that there are two side shaft couplings that are marked
22 as 4 on that figure 3. The combination of the switch-on device
23 that is located in the primary axle works in conjunction with the
24 side shaft couplings that are part of that rear axle. The
25 combination of that, the fact that the switch-on device connects to

1 the side shaft couplings in an electromechanical sense, that
2 creates an opportunity to have a shutdown section.

3 And more importantly, the location of the side shaft
4 couplings works in conjunction with the switch-on device to
5 create a large shutdown section. With the idea being that when
6 you switch, again, this is sort of all relevant because you're
7 thinking about it in the context of four-wheel drive applications,
8 where very frequently you don't need to be in four-wheel drive.
9 Most of the time in traditional passenger car embodiments, you
10 really only need to be in two-wheel drive. It's only on occasion
11 do you really need the addition of the benefit of all four wheels
12 and having power distributed to all four wheels.

13 So, when you don't need that extra power distribution,
14 you want to be able to shut off a very big portion of the drivetrain
15 to eliminate the rotational losses that, number one, require power;
16 number two, those rotational losses lead to a reduction of fuel
17 economy. And, so, those are sort of the functional aspects that
18 were being asserted in the '440 patent.

19 Once again, the way that that is sort of solved comes
20 about through this combination of the location of the switch-on
21 device, on a primary axle, that allows you then to decouple --
22 when you're in two-wheel drive mode, to decouple the secondary
23 rear axle from the primary axle, because you've created an
24 electromechanical connection between the switch-on device and
25 the side shaft couplings in this case, if you're looking at claim 2.

1 So, it's, again -- and if you look at the specification at
2 the bottom left-hand corner of the slide 3, you can see that the
3 specification itself explicitly indicates that it's not the fact that
4 you have these components that, you know, number one, you
5 have side shaft couplings and you also have a switch-on device,
6 it's the fact that they work synergistically, that that is "the
7 fundamental inventive idea," that's literally in the specification,
8 and further echoed in the file wrapper.

9 JUDGE MAYBERRY: Counsel, doesn't Teraoka do
10 that? I mean, its switch-on mechanism works with the one single
11 side clutch to couple and decouple from two-wheel to four-wheel
12 drive and creating a large shutdown section. So, what's inventive
13 of the '440 patent, I think you just said, seems to be exactly what
14 Teraoka does, it only -- it just doesn't have the two clutches in the
15 back, it has one.

16 MS. SHAH: So, to that point, Your Honor, you're
17 correct, Teraoka does have a shutdown section, it does have a
18 switch-on mechanism that works in conjunction with -- notably
19 here, it works in conjunction with, like you said, a single
20 coupling. That coupling is used as a torque decoupling location
21 to provide that shutdown mechanism.

22 The difference here, with claim 2, which is the claim
23 that is relevant at this point, the difference with claim 2 is, we
24 have the side shaft couplings, which allow you twofold. You
25 have the ability to decouple, use the side shaft couplings as a
26 mechanism to decouple and, you know, move from four-wheel

1 drive to two-wheel drive, number one, like Teraoka, but the
2 enhancement that takes place, it's not --

3 JUDGE WEATHERLY: Before you move on.

4 MS. SHAH: Yes?

5 JUDGE WEATHERLY: That gets accomplished by
6 essentially disconnecting both the side couplings, right?

7 MS. SHAH: That's correct.

8 JUDGE WEATHERLY: Then you have no drive
9 torque being applied to the wheels at the rear?

10 MS. SHAH: That's correct. From the power --

11 JUDGE WEATHERLY: But you do still have the
12 central -- the drive shaft that goes between the front and the back,
13 that's still rotating in that situation?

14 MS. SHAH: No. There is no rotation.

15 JUDGE WEATHERLY: Unless the switch-on
16 mechanism is engaged.

17 MS. SHAH: I'm sorry, yes, that's correct.

18 JUDGE WEATHERLY: Okay.

19 MS. SHAH: So, the scenario, basically the way the
20 '440 patent is structured is you're going to have the switch-on
21 mechanism that works simultaneously and they engage each
22 other. That connection exists between the switch-on mechanism
23 and either one coupling or two couplings in this case, so that you
24 -- purposefully, with the idea being that you want to get that drive
25 shaft -- that center drive shaft -- to stop rotating when you're
26 going from four to two-wheel drive.

1 JUDGE WEATHERLY: So, in your claim system, one
2 way to decouple the drivetrain, the drive shaft.

3 MS. SHAH: Yes.

4 JUDGE WEATHERLY: From front to back.

5 MS. SHAH: Um-hmm.

6 JUDGE WEATHERLY: Is with the switch-on
7 mechanism, and you could leave the two side couplings engaged,
8 and still the entire shutdown section would be static, it wouldn't
9 be moving, there wouldn't be any rotational losses, right?

10 MS. SHAH: Well, you can get rotational losses that
11 come from the wheels, also, so that's the other reason why you
12 actually want to have the decoupled as close to the wheels as you
13 can, while still being able to provide power distribution to the
14 wheels.

15 JUDGE WEATHERLY: Okay.

16 MS. SHAH: So the location of the side shaft couplings
17 is actually beneficial in that sense because you can get rotational
18 losses that come from the opposite way, right, from the wheels,
19 with the wheels up.

20 JUDGE WEATHERLY: Right.

21 MS. SHAH: So, there's twofold. So, to get back to
22 Judge Mayberry's question, it's Teraoka, while, yes, it does have a
23 shutdown section, that is again, you know, the switch-on device
24 coupled with the side shaft coupling that provides the torque
25 decoupling location, the difference is with claim 2 of the '440

1 patent, you have a substantially greater enhancement in that the
2 side shaft couplings function as power distribution mechanisms.

3 So, when you have two side shaft couplings that
4 essentially, in lieu of the mechanical differential -- so let's keep in
5 mind, in Teraoka, it's the mechanical differential that is providing
6 power distribution. It is not the side shaft coupling. That side
7 shaft coupling that's on the rear axle of Teraoka only functions as
8 a torque decoupling -- for torque decoupling purposes.

9 In contrast, in the '440 patent --

10 JUDGE WEATHERLY: I thought it was like a lock-up
11 differential.

12 MS. SHAH: It's a wet multi-plate clutch differential --
13 I'm sorry, side shaft coupling in Teraoka.

14 JUDGE WEATHERLY: Yeah, so it's --

15 MS. SHAH: That side shaft coupling is a wet
16 multi-plate clutch coupling.

17 JUDGE WEATHERLY: To engage both wheels in the
18 rear?

19 MS. SHAH: No, again, so that clutch basically is
20 intended to work with the switch-on mechanism, which is the dog
21 clutch in the primary axle, and that creates the shutdown section
22 in Teraoka. So that wet multi-plate clutch that exists -- let me see
23 if I can get that photograph, it would probably be easier.

24 If we look here, so if we look here on the left-hand side,
25 you'll see the figure 1 of Teraoka.

26 JUDGE WEATHERLY: Yes.

1 MS. SHAH: Within Teraoka, you have a differential.
2 So, the most important kind of, I guess, aspect that we want to
3 stress here is, in Teraoka, for power distribution to the rear
4 wheels, they're using a mechanical differential. That's sort of the
5 standard, that's what everybody has used, that's what they
6 continue to use, that's what was used back in 1999 and at the time
7 of Watanabe, that's basically the gold standard of what you use
8 when you want to effectuate power distribution in a very sort of
9 safe, mechanical way. And that's the differential.

10 That is what Teraoka is utilizing as its power
11 distribution mechanism. The side shaft coupling that they have,
12 and really what Teraoka is all about, frankly, is they moved that
13 side shaft coupling from one side of the gear reduction
14 mechanism of the differential, to the other side, so that when the
15 gear reduction, when that -- those losses -- when the gear
16 reduction is taking place, you minimize those rotational losses.
17 That's really the crux of Teraoka.

18 It recognizes that the differential has a gear reduction
19 mechanism in it, that the turning of those gears creates a certain
20 amount of loss, associated with drag torque, that you want to
21 minimize. That was the point of Teraoka.

22 So, again, in contrast, the '440 patent is really about
23 using -- claim 2, looking at claim 2, which is the relevant claim
24 for this argument, is looking at claim 2 in the context of now you
25 have two side shaft couplings, those couplings are, number one,
26 providing a mechanism to decouple the secondary drivetrain from

1 the primary, so that's its first purpose, but beyond that, you have
2 now the ability to take those side shaft couplings and use them to
3 independently control power distribution to each of your rear
4 wheels. Which led to -- again, this is the secondary indicia
5 established, which leads to and enables the possibility of torque
6 vectoring.

7 Now, while the idea of torque vectoring is not new, the
8 fact that you had a -- the ability to provide torque vectoring,
9 coupled with all of these other features, right, you have a
10 shutdown section, you have the ability to minimize power losses,
11 system -- a drivetrain system that allows maximized fuel
12 economy, coupled with when you -- you know, when you have
13 the right set of controls in place, to provide torque vectoring, that
14 combination, as we'll get to sort of later on, led to a fairly
15 significant amount of industry praise and awards and a whole
16 series of things that sort of cut against the argument that this was,
17 in fact, an obvious invention.

18 JUDGE MAYBERRY: A couple of things about that.

19 MS. SHAH: Yes?

20 JUDGE MAYBERRY: So, focusing on claim 2 now,
21 we've got Watanabe, which has the clutch pack, which will allow
22 you to do differential torque on each of the wheels, so it gives
23 you that handling and torque vectoring stuff. And Watanabe tells
24 us about that. And, so, we've got Teraoka, which does the -- one
25 of the parts that you invented, and then Watanabe does the other
26 part, so now we've -- of course, the reason why we're sitting here

1 today is because we've brought them together, and now that gives
2 us our complete picture. The complete picture, as you've painted,
3 what is the invention of claim 2, and so these are both things that
4 were kind of known, and it seems like each of them tells you
5 what's going to happen. Teraoka you're going to get this
6 shutdown section, the benefit of all this stuff not spinning, and
7 Watanabe tells you you're going to get this benefit of being able
8 to steer better and that kind of stuff.

9 And, so, when we now just put them all together and
10 that's what we've got, it seems like that's kind of we've gotten
11 what would have been predictable or expected.

12 MS. SHAH: Okay, so that's --

13 JUDGE MAYBERRY: And I did want to say one other
14 thing before we lose it, just to make sure I didn't hear wrong.
15 You also said and coupled with certain controls, that's what gave
16 you this industry praise. And I know reading some of the exhibits
17 it talks about how you can't -- software is great, and is able to
18 control these rear clutches. I just want to be clear, is there certain
19 language in the claims that require that?

20 When I went through the claims, I didn't really see
21 where the control aspect was actually a requirement in the claims.
22 Are you saying that there is language in there that would require
23 this type of control?

24 MS. SHAH: No. You're 100 percent correct, there is --
25 this patent is really entirely about the drivetrain, the mechanics of
26 the drivetrain, coupled with, as you can see from -- let's look at --

1 JUDGE WEATHERLY: There have been a couple of
2 times, also, that you have alluded to electromechanical aspects.

3 MS. SHAH: Yes, so let me get to that.

4 JUDGE WEATHERLY: The electro being really the
5 controls, right?

6 MS. SHAH: Well, again, even if you look at the
7 claims, so if you look here at slide 4, you will see here, you
8 know, obviously these are the claims that are in question,
9 principally, right? It's claim 2, which is the dependent claim in
10 relationship to claim 1. You will see here, number 1, these are
11 the -- these are some of the key sort of limitations that exist with
12 respect to this claim.

13 Number one, as we've talked about extensively, there's a
14 switch-on device that connects the secondary axle to the primary
15 axle for power transfer. That -- you know, the details of how that
16 is done and the connection that exists to facilitate that power
17 transfer, that's one of the electromechanical features that we're
18 talking about, that it's explicitly claimed.

19 The details of which are not part of these claims, but the
20 point being, this is not a combination. Petitioner tries to argue as
21 if these are modular components. You can take anything -- you
22 know, you can take the entire rear drivetrain and swap it out, you
23 know, take the rear drivetrain of Watanabe, swap it out. You
24 know, it's all the same, you can mix and match. That's not the
25 case.

1 You know, we'll get to in some of the details. You
2 know, drivetrain components, the analysis of what a person of
3 skill in the art would do still requires some context. It requires
4 the context of the specific invention that's in question.

5 These inventions are about drivetrains. They are about
6 drivetrains that have -- again, while they have mechanical
7 structures to them that they employ, and they -- to facilitate either
8 transverse compensation, which is part of claim 2, or longitudinal
9 compensation, which is part of claim 3, there is a set of controls
10 that are implicitly required to be able to facilitate that transverse
11 compensation, or longitudinal compensation, as required in claim
12 3.

13 You know, to try to pretend that you can just swap out
14 a -- you know, a differential for two side shaft couplings and
15 know -- to your point, Judge Mayberry, you indicated that, you
16 know, the linchpin of the issue here, frankly, post-KSR, for these
17 analyses, is is this really predictable. Is this something that a
18 person of skill in the art, back in 2008, with all of these references
19 in front of them, starting with Teraoka, when you're looking at a
20 reference, like Teraoka, once again, which is really about this
21 issue of reducing drag torque. Reducing drag torque specifically
22 by taking the side shaft coupling and moving it to the other side
23 of the gear-reduction mechanism, that's the purpose of Teraoka.
24 Are you really going to go from Teraoka to Watanabe?
25 Watanabe, that has two side shaft couplings that are constantly
26 creating drag torque, because you're now -- because again, let's

1 keep in mind, this main difference here is those side couplings in
2 Watanabe are about power distribution, which is what the '440
3 patent did.

4 When you're using the side shaft couplings for power
5 distribution, you're constantly -- the oil pressure that exists within
6 those side shaft couplings creates a constant source of drag
7 torque. So, every time you are employing power to each of the --
8 to the wheels, you are creating drag torque, which is completely
9 contrary to Teraoka. Number one.

10 And again, we get to the issue of this being simple
11 substitution that is predictable. Let's deal with what, you know,
12 Petitioner has actually put forward as its one and only rationale to
13 combine in the petition. If you look at slide 7, they invoke the
14 KSR language, "simple substitution to yield the predictable results
15 of reducing mass and rotating losses." The question that arises
16 here is there's two different sort of explanations of what is to be
17 combined. If you sort of look explicitly at what Petitioner has
18 argued, you'll see that if you're just going to switch the
19 drivetrains, you're going to take the secondary drivetrain of
20 Watanabe and insert that into the remaining drivetrain of
21 Teraoka.

22 What you're going to have -- what you're going to miss
23 is, in fact, you're not going to have a shutdown section, because
24 per the claims, to get a shutdown section, you need a connection
25 between the switch-on mechanism and in this instance the side
26 shaft couplings.

1 Watanabe never contemplated either a switch-on
2 mechanism or a shutdown section, it doesn't have those
3 structure -- it doesn't have those features in it. Petitioner will
4 point to one sentence that it inserted in the reply, where Watanabe
5 talks about the fact that on one hand it explicitly says that you
6 don't need a switch-on mechanism, that Watanabe's structure does
7 not require a switch-on mechanism. It does say that, you know, if
8 you did want to put one in, you could put one in. And that's the
9 sum and substance of Petitioner's argument with respect to
10 Watanabe saying anything about power loss. And again, at the
11 reply stage, for the first time.

12 If you look at their second recitation of what is to be
13 combined, they're talking about in this instance you're going to
14 replace the clutch 71, with -- and the differential 25 of Teraoka
15 with the two side shafts of Watanabe. Once again, the problem
16 here is if you look at that very simplistic explanation of what you
17 would do, you're going to miss on the fact that you need controls
18 situated with those side shaft couplings to help facilitate
19 longitudinal compensation for claim 3 and the transverse
20 compensation for claim 2.

21 JUDGE WEATHERLY: Take us back to Judge
22 Mayberry's question as to whether these claims require controls.
23 So, for example, the phrases at the end of claims 2 and 3, claim 2,
24 "to ensure transverse compensation." Is it your position that
25 those -- the presence of those words requires necessarily some
26 controls?

1 MS. SHAH: That's correct. To facilitate and to use the
2 side shaft couplings for distribution purposes at all and in
3 particular to ensure transverse compensation or longitudinal
4 compensation, you have to have a set of controls that
5 independently is able to provide power distribution through each
6 of those side shafts.

7 JUDGE WEATHERLY: I thought when Judge
8 Mayberry asked you whether the claims required controls, your
9 answer was no.

10 MS. SHAH: Well, okay, let me say this: We don't
11 specifically define what the control mechanism is. The
12 limitations require controls. So, I'm sorry if I -- if I indicated
13 otherwise. The requirements that are -- you know, the claim
14 limitation requires a set of controls to facilitate power
15 distribution, which is claimed, and then explicitly power
16 distribution that requires -- that allows for transverse or
17 longitudinal compensation.

18 JUDGE COCKS: So, just to be clear, when you say the
19 limitation, looking at, for instance, claim 2, what is the limitation
20 that you just referred to?

21 MS. SHAH: Sure. So, let's see here. If you have --
22 okay, sort of the second half of claim 2, the side shaft couplings
23 allow a driving power distribution, so once again, to facilitate
24 drive power distribution, you have to have some set of controls
25 that are actually going to provide you with the ability to, you
26 know, use the side shaft couplings to distribute power. And then

1 it continues on to say, "without a differential gearing between the
2 drive wheels of the secondary axle to ensure transverse
3 compensation."

4 So, you know, to be able to facilitate drive power
5 distribution through the side shaft couplings, there does seem to
6 need to be some form of control.

7 JUDGE WEATHERLY: Well, that would seem to me
8 to recite a capability of a clutch on each side of the -- a clutch for
9 each wheel, essentially, but it wouldn't necessarily require that
10 you be able to -- that you actually add controls and do the torque
11 vectoring, it just -- I mean, in other words, it seems like it's just a
12 statement of a truism, that if you have -- maybe all dual clutch
13 differentials allow a power -- a driving power distribution without
14 a differential gearing.

15 MS. SHAH: Okay. So, I guess to that point, again, if
16 you look at Teraoka itself, right, it has a side shaft coupling and it
17 has a differential. The reason it has a differential is because it
18 actually used the differential to provide power distribution to the
19 wheels. That's sort of the gold standard.

20 JUDGE WEATHERLY: Help me understand.

21 MS. SHAH: Yeah.

22 JUDGE WEATHERLY: I came into the case late, so
23 I'm sort of running catchup.

24 MS. SHAH: Sure.

25 JUDGE WEATHERLY: Let me understand where the
26 side shaft coupling is in Teraoka. You've had the figures up.

1 Everything is represented schematically, and so help me with --
2 just take me through the numbers, the reference numbers that
3 Teraoka actually uses. Where's the side shaft coupling? Where's
4 the real differential? That will help me understand.

5 MS. SHAH: No problem. So, the side shaft coupling is
6 71, that's referred to in -- I'm sorry, you asked me with respect to
7 Teraoka, right?

8 JUDGE WEATHERLY: Um-hmm.

9 MS. SHAH: So, with respect to Teraoka, they refer to
10 the side shaft coupling as a clutch mechanism, that's 71. You
11 know, for purposes of the claims, it's referred to as a side shaft
12 coupling. So, as you can see here, 71 is sort of on the left-hand
13 side of the differential gear mechanism. 69 is the differential --
14 the gear reduction mechanism.

15 JUDGE WEATHERLY: When I see that, that looks
16 like a limited slip differential to me. Do you know what that
17 refers to?

18 MS. SHAH: Yes, um-hmm.

19 JUDGE WEATHERLY: That just looks like a viscous
20 limited slip differential, as opposed to a torqued limited slip
21 differential, which is gears as opposed to wet clutches. Do I
22 understand that correctly?

23 MS. SHAH: So, what you have in -- again, if you look
24 at Teraoka, if you look at the differential that's in Teraoka, it a
25 beveled gear differential that's in Teraoka. Once again, what
26 Teraoka was essentially doing was taking the 71, as explicitly

1 referred to, the clutch mechanism is a wet multi-plate clutch. The
2 purpose of that clutch in Teraoka is just to serve as a torque
3 decoupling mechanism.

4 JUDGE WEATHERLY: It would decouple the wheel
5 31 from the drivetrain?

6 MS. SHAH: It decouples the secondary axle from the
7 primary axle, that's all.

8 JUDGE WEATHERLY: Okay. I guess I was confused
9 by the way it's drawn.

10 MS. SHAH: Right.

11 JUDGE WEATHERLY: It looked to me -- and you're
12 talking about the side of the differential that it's on, it actually on
13 the drive shaft side?

14 MS. SHAH: That's correct.

15 JUDGE WEATHERLY: It's just not indicated that way
16 to me. It's hard for me to see.

17 MS. SHAH: I'm sorry, did you say is it located on the
18 drive shaft side?

19 JUDGE WEATHERLY: Yes.

20 MS. SHAH: So, the torque decoupling location and this
21 differential are on the rear axle. And so, as you can see here, the
22 engine, the primary axle, that's all marked as 5.

23 JUDGE WEATHERLY: Does wheel 33
24 remain connected to the differential?

25 MS. SHAH: So, here, once again, essentially what you
26 could is when you eliminate the -- when you engage the clutch

1 decoupling location, you want to do it with the purpose of, again,
2 removing, in a power distribution sense, you're removing that
3 whole secondary axle from the primary axle.

4 So, what you're doing in two-wheel drive mode is
5 you're just essentially relying on the primary axle to serve as the
6 only power that's used then in the drivetrain, cutting off the power
7 to the entire rear axle. Because you don't want the power, you
8 don't want the losses associated -- the power loss and the
9 rotational loss. And so that's sort of functionally why it's
10 required.

11 JUDGE WEATHERLY: I'm having trouble seeing it,
12 but I'll figure it out.

13 MS. SHAH: All right.

14 So, I want to kind of get through this sort of idea of
15 predictable results, because I think this is kind of at the crux of
16 what's going on here. Petitioner argues that this sort of switch
17 from taking Watanabe side shaft couplings and substituting it into
18 Teraoka's structure, that that would have been predictable, that a
19 person of skill in the art could have, in fact, done that. The
20 reason that context is so relevant in all obviousness analyses, but
21 this one in particular, is because we're talking about a drivetrain.
22 You know, we don't get to -- Petitioners don't get to rewrite what
23 the issue is here.

24 In the context of a drivetrain system, if you look at the
25 figure 3 that's at the top of slide 8, this is a figure that actually
26 comes out of an SAE paper from a noted driveline expert,

1 Dr. Vantsevich. He has sort of provided in illustrative form why
2 the drivetrain system is such kind of at the heart of the
3 automobile. It's the kind of, you know, nerve center for what
4 goes on with the automobile.

5 And that's because the primary operational capabilities
6 of the car are run through the drivetrain. If you look at -- you
7 know, you look at the driveline system that's sort of at the bottom
8 left of that figure, you'll see it directly impacts several different
9 vehicle dynamics from tractive and velocity capability to fuel
10 consumption to offroad mobility to handling and turnability.
11 That's its direct impact.

12 Then if you kind of look at the array of the other lines
13 that have been drawn, you quickly see that each one of those
14 aspects then has an interrelationship with the rest of the vehicle
15 dynamics, from suspension to breaking to smoothness to steering,
16 they're all interconnected, which essentially means -- and again,
17 it's important to note here that both experts and all of the extrinsic
18 evidence that is of record in this case makes it clear that when
19 there's a driveline design change that is put forward, it is done
20 with extensive modeling, with extensive testing, with extensive
21 simulations, and some layers and layers of analysis to try to
22 understand if you make one driveline design change, what are the
23 ripple effects to that entire system? There's no other way to do
24 that.

25 Mr. Becker spent two and a half pages in one single
26 answer of his deposition outlining what takes place with the

1 design change. A driveline design change. To argue that that's
2 somehow predictable, that a person -- you know, a person of skill
3 in the art, which in this case is someone with a couple of years of
4 driveline design background could actually predictably
5 understand what's going to take place when you swap an entire
6 rear drivetrain and substitute it into the primary axle of Teraoka,
7 they're going to know what the impact of that is going to be. It's a
8 gross oversimplification of what takes place in real-world
9 driveline modifications.

10 JUDGE WEATHERLY: Even if I were to agree with
11 you --

12 MS. SHAH: I'm sorry?

13 JUDGE WEATHERLY: Even if I were to agree with
14 you.

15 MS. SHAH: Yes?

16 JUDGE WEATHERLY: Aren't the claims a gross
17 oversimplification of how to describe the drivetrain?

18 MS. SHAH: Claims, you know, as we know, based on
19 the way that claims are structured, they provide -- they provide
20 the sort of metes and bounds, right? They provide the minimum
21 of what's needed to be able to facilitate certain, in this case,
22 drivetrain functions. So, for that purpose, like I said, you have in
23 this instance that the key element of this claim are the existence
24 of a switch-on mechanism that is in the primary axle, the
25 existence then of a side shaft coupling, one or more, depending
26 on whether you're talking about claim 1 or claim 2, that then,

1 number one, allow the ability to decouple that rear axle from the
2 primary axle; that's the first element.

3 Number two, then, in the case of claim 2, to use those
4 side shaft coupling to help provide independent power
5 distribution capability.

6 JUDGE WEATHERLY: Well, you don't have to use
7 them that way, you have to permit them to be done, allow that to
8 be done.

9 MS. SHAH: That's correct. The claim explicitly
10 provides power distribution through the side shaft couplings.
11 And so, you know, for purposes of the '440 patent, the primary
12 structure that's required to facilitate those abilities, you know, we
13 talked about shutdown section, minimizing power losses, having
14 certain steering and handling capabilities that are possible
15 because you have power distribution capabilities through the side
16 shaft coupling. That is what is taught, essentially, in claim 2.

17 As we know --

18 JUDGE WEATHERLY: That's not what's taught in
19 claim 2.

20 MS. SHAH: Well, that the structure that is provided in
21 claim 2. Obviously the specification teaches the details.

22 JUDGE WEATHERLY: You had a question.

23 JUDGE MAYBERRY: Yeah, a couple actually. One,
24 it seems that -- like you had your elaborate schematic from --

25 MS. SHAH: Sure. This one?

1 JUDGE MAYBERRY: -- Dr. Vantsevich, but this is
2 what you're going to consider when you're making a car for
3 production. Like when you want to make a Ford Focus RS, you
4 have to consider all these things. And even in Mr. Becker's and
5 Dr. Stein's depositions, when they talked about these involved
6 process, it seemed to me to be the process involved in making a
7 production car.

8 Are you contending that that's the measure for
9 obviousness here, that our level of predictability and the what one
10 of ordinary skill in the art would do is with the focus on -- no pun
11 intended there -- making a production car?

12 MS. SHAH: No, Your Honor. We're not indicating
13 that this is startup ground design and, you know, groundbreaking
14 new drivetrain design. The point is, the testimony that is being
15 referred to here, whether you're talking about Mr. Becker's or
16 Dr. Stein's is actually talking about for any driveline design
17 change, not of brand new drivetrain creation, but even if you're
18 going to make a drivetrain modification.

19 So, if you look here at the bottom of slide 8,
20 specifically, or this is Dr. Stein's testimony, he says, "Any
21 change in the design of the driveline system must take into
22 consideration the resulting changes in the tracting and velocity
23 capability, fuel consumption, offroad capabilities," and that's just
24 because this is the nature of drivetrain. It's not because -- and
25 that's why the context is very important here. If you're going to
26 make one small change, you need to understand the ripple effect

1 that goes across, tractive velocity, kind of look at all the changes
2 that are going to take place because it's in the driveline.

3 That's why in Mr. Becker's testimony, which exists right
4 here, when asked, again, if you're going to specifically talk about
5 a time range, he says it takes two years to make a driveline design
6 change. It takes 100-plus people just on the OEM side, that
7 doesn't account to the supplier side.

8 JUDGE MAYBERRY: But again, that's the typical
9 procedure in the automotive industry? You know, so that's what's
10 involved, again, in making a production vehicle to be able to hit
11 the market, not what it would take a skilled artisan to combine the
12 teachings of Watanabe with the teachings of Teraoka. Those are,
13 to me, different measures.

14 JUDGE WEATHERLY: I mean, like that's the truth of
15 what it requires, what's required to design any all-wheel drive
16 drivetrains, whether it is a Subaru drivetrain or a Mazda
17 drivetrain, which are very different, or the super-handling
18 all-wheel drive system that Honda came out with, or the Ford
19 Focus RS, for that matter. And maybe it will take a little bit less
20 time to design a rear-wheel drivetrain or a front-wheel drivetrain,
21 but I'm certainly there's a process for designing all of those kind
22 of drivetrains and they're very detailed and take into account all
23 of these things found here in your slide, but the claims are defined
24 at a much higher level.

25 You criticized the Petitioner's case for saying these
26 things are modular. But aren't they, in a sense, modular?

1 MS. SHAH: Okay. So, I guess the point is that you
2 can't -- because at the crux of this, while you may be able to
3 mechanically make these adjustments, and in that instance, you
4 could think about it as being modular. The predictable side of
5 this is, okay, that you were able -- Petitioner talks about this
6 ability that there isn't anything technical or barriers that exist that
7 allows you to swap out a drivetrain or move a clutch or, you
8 know, make those adjustments. That's really not the issue here.
9 The issue is, number one, how would you have done that?
10 They've never raised -- they've never addressed the issue of how,
11 which is obviously a critical piece.

12 JUDGE WEATHERLY: Well, in a sense, you're telling
13 us how they could do it. This is how the automotive industry
14 does it.

15 MS. SHAH: That's not my burden to tell you. If you
16 look at their petition, they never said how. I am telling you this
17 because I'm trying to give you the background to understand it's a
18 very complicated how.

19 Their petition, as you can see here on page slide 8,
20 what's highlighted in pink basically says, it's joined in a
21 conventional manner. That is the sum and substance of what they
22 said as to how. There is nothing else in their petition.

23 The issue as to whether this is predictable, again, while
24 you can mechanically make those substitutions, the idea of what
25 takes place, are you really going to be able to provide power
26 distribution? Are you really going to be able to get longitudinal

1 and transverse compensation? That requires extensive modeling.
2 And like I said, both experts and all the extrinsic evidence makes
3 it clear that virtual modeling is required, which kind of cuts
4 against the idea that, you know, somebody with a couple of years
5 of drivetrain experience would have known definitively if I make
6 a drastic change, like literally swapping one rear drivetrain for
7 another, I am going to predictably know what's going to happen.
8 That's not the case here.

9 JUDGE MAYBERRY: Well, a couple of things,
10 counsel. One, I thought I had understood Dr. Stein to testify that
11 those -- these types of steps are within the level of ordinary skill,
12 and I also want to touch on something because now you've said
13 twice a couple of years of experience. My understanding of the
14 definition of one of ordinary skill in this case is several years of
15 experience in drivetrain design. So, it seemed like kind of the
16 record of evidence is that a person of ordinary skill in the art
17 would understand this involves a process. So, it would not be
18 outside their level of ordinary skill, again, given these basic
19 teachings of the two references, now to go head and apply this
20 more sophisticated process to combine the teachings.

21 MS. SHAH: Okay. So, to that point, while it's true that
22 both parties have agreed as to what the standard is for a person of
23 skill in the art, the question is, whether that person of skill in the
24 art would have actually understood -- number one, let's start with
25 the predicate. You're starting with Teraoka. What would have
26 even led you to Watanabe in the first place? You're starting with

1 the reference of Teraoka, which is about minimizing drive torque,
2 which would you then swap out the use of a differential that
3 doesn't have the issues of drag torque, why would you modify
4 that and go to Watanabe, where now you're using the side shaft
5 couplings to constantly create drag torque issues. Number one,
6 that issue is not properly addressed in Petitioner's arguments.

7 Number two, even if you talk about, you know, the only
8 rationale to combine that was put forward in the petition was
9 reduction of weight. Okay, if you're starting with the premise that
10 you've got this entire drivetrain and you want to reduce weight,
11 why would you -- again, what gets you to the fact that you're
12 going to take the differential, you're going to eliminate it, and
13 you're going to substitute it with two side shaft couplings for the
14 purposes of weight. That's clear hindsight, you know, bias, that's
15 implicated here.

16 JUDGE WEATHERLY: Assuming that we agree with
17 you on that point, what about the other rationale that was
18 advanced in the reply?

19 MS. SHAH: So, number one, all of the other rationales,
20 as you mentioned --

21 JUDGE WEATHERLY: And assuming that they're
22 properly before us, because I don't want to have a presentation
23 about whether they're properly before us right now.

24 MS. SHAH: Would you be okay if I just raised the fact
25 that the Federal Circuit in the last -- this year has twice indicated
26 that --

1 JUDGE WEATHERLY: I'm aware.

2 MS. SHAH: -- there are serious procedural issues of a
3 new matter.

4 JUDGE COCKS: Counsel, we are aware that you have
5 an objection to the presentation in the reply, but I think my
6 colleague is asking a different question.

7 MS. SHAH: Sure. I'm sorry.

8 So, with respect to the additional arguments that were
9 put forward in the reply stage, number one, that it would be
10 obvious to try, we would say, looking at slide 10, this is the slide
11 10, the illustrative that's part of Exhibit 2036, shows you just for
12 the power drive units, all of the various permutations of what, you
13 know, various kinds of power-dividing units are available to be
14 used.

15 If you're looking at it in the context of, you know,
16 obvious to try, finite, predictable set of solutions, if you start with
17 Teraoka, and you want to reduce and you want to sort of try out a
18 variety of different kinds of permutations, you would have three
19 power-dividing units that are part of every single four-wheel
20 drive system, and you have all of those range of power-dividing
21 unit options to choose from. So, three sets of power-dividing
22 units, and that whole plethora of options of different kinds of
23 PDU units to select from.

24 To indicate --

25 JUDGE WEATHERLY: Well, the problem though, in
26 my view, with that argument for you is the claims are written in

1 such a way that the switch-on device covers a wide variety of the
2 boxes that are shown on that slide. And by the way, in my slide,
3 that's slide 9, not slide 10.

4 MS. SHAH: Oh.

5 JUDGE COCKS: I think if I could just interrupt
6 briefly, that's the case I have as well. So, the slides you presented
7 here were not the ones that were filed.

8 MS. SHAH: No, it's the same, the sequence is just
9 changed. No, we haven't made any modifications.

10 JUDGE COCKS: For the integrity of the record, the
11 public record, it's best that we have filed a copy of the slides that
12 have been discussed today. If you're going to refer to slide 10, for
13 instance, someone looking at the transcript is not going to know.

14 MS. SHAH: I apologize for that, the paper copies that
15 you have been given are exactly what has been used for the
16 hearing.

17 JUDGE COCKS: I'm just looking out for the public
18 later on.

19 MS. SHAH: Yes, you're right. If it helps, we can, you
20 know, upload the --

21 JUDGE COCKS: After this file.

22 MS. SHAH: There is literally just one slide that was
23 moved, but I appreciate that it throws the numbering sequence
24 off.

25 JUDGE COCKS: I'm sorry, I interrupted Judge
26 Weatherly's further question.

1 MS. SHAH: I'm sorry, I'm not sure if I recall the
2 question.

3 JUDGE WEATHERLY: The observation is that the
4 way the claims are written, they are not written at the level of
5 detail that you have shown as rational art in this slide, the
6 switch-on mechanism, for example -- my eyes aren't good enough
7 to read that.

8 JUDGE MAYBERRY: Ms. Shah, you have two and a
9 half minutes.

10 MS. SHAH: Okay.

11 JUDGE WEATHERLY: I think it's a misrep -- it's sort
12 of a misrepresentation -- or your argument is decoupled from the
13 claims. That's the problem that I'm having, Ms. Shah.

14 MS. SHAH: So, I guess what we would like to say is
15 you're starting off with Teraoka. In Teraoka, you're using the
16 mechanical differential to provide power distribution. And the
17 question is why would a person of skill in the art go from Teraoka
18 to Watanabe? If you're talking about it in terms of weight, there's
19 an endless series of things you can do to reduce weight. Why go
20 to two such --

21 JUDGE WEATHERLY: I agree.

22 MS. SHAH: So, that's the first question. If you're
23 looking at it in terms of obvious to try, if you've got -- you know,
24 whatever, if you've got three power-dividing units, and a range of
25 different kinds of power-dividing units you can select from, as is

1 indicated here on the SAE paper at the bottom of slide 10, the
2 options are "practically uncountable."

3 So, the obvious to try scenario, when, again, the
4 combination of the fact that there's a very large number of
5 possible PDUs that you can select from, coupled with the fact that
6 how they function in the drivetrain is not inherently predictable.
7 So, you're going to have to go through all this of modeling to try
8 to understand what actually happens.

9 That's basically our argument is that we don't think that
10 there is a proper explanation that's been provided to get from
11 Teraoka to Watanabe.

12 With that, I did want to kind of get to this sort of final
13 issue here, which is that there is a missing limitation with respect
14 to claim 6. And I think that the --

15 JUDGE MAYBERRY: Counsel, while you're putting
16 that together, can you point us to where in the Patent Owner
17 response this is?

18 MS. SHAH: It is not in the Patent Owner response,
19 Your Honor. Essentially this came up in Petitioner's reply,
20 explicitly indicated at two different locations that it was
21 undisputed that all the limitations were met; and moreover, it's
22 explicitly indicated that Dr. Stein indicated that all the limitations
23 of claims 6 and 7 were met when his deposition testimony
24 indicates otherwise. And, so, for that purpose --

25 JUDGE MAYBERRY: But you didn't argue it?

26 MS. SHAH: We did not --

1 JUDGE MAYBERRY: -- that Petitioner failed to
2 demonstrate that known element of claim 6 was present in the
3 art?

4 MS. SHAH: That argument was not put forward in the
5 Patent Owner response, that's correct. And the issue -- any
6 objections that were to be filed with respect to that issue are
7 waived under 42.64, for purposes of today's hearing.

8 And, so, we do want to point out, and I think Judge
9 Weatherly indicated this, there's some confusion that existed in
10 Petitioner's presentation regarding what was really happening
11 with respect to the synchronizing mechanism. What actually
12 takes place in Teraoka is Teraoka doesn't need synchronizing. If
13 you look at the slides and the briefing that took place on this
14 point, it's because Teraoka uses a wet multi-plate clutch in its rear
15 axle to serve as the torque decoupling location. That does not
16 need synchronizing. That was one of the advantages of Teraoka's
17 structure.

18 The flip happens, when you look at the '440 patent,
19 that's not the case. They essentially, number one, are using a --
20 the use of a dog clutch does create certain issues with respect to
21 synchronizing, but the question is, where is that mechanism
22 supposed to be -- where is the location of that mechanism?
23 Under claim 6, if you look at the claim itself -- so let me back up.

24 Claim 6 depends from claim 5. Claim 5 explicitly
25 requires that the switch-on mechanism is to exist on the primary
26 axle. That's not the case with Burrows. Burrows has the

1 switch-on mechanism located, which is -- which is demarcated as
2 number 40, that is on the rear axle of Burrows.

3 So, when you put these two, you know, as sort of
4 proffered, the combination of Teraoka and Burrows does not
5 actually teach the limitations of claims 6 and 7.

6 JUDGE MAYBERRY: But the switch-on mechanism
7 is taught on the primary drive in Teraoka?

8 MS. SHAH: The switch-on mechanism is taught in the
9 primary --

10 JUDGE MAYBERRY: And it's the dog clutch that
11 would require synchronization.

12 MS. SHAH: Okay, so -- well, what they do is they use
13 the torque -- they use a wet multi-plate clutch in the rear axle.
14 That does not need --

15 JUDGE MAYBERRY: That's clutch 71.

16 MS. SHAH: That's correct. That does not need
17 synchronizing. So, really what you're doing when you're going
18 from four to two, when you move -- when you want to re-engage
19 all four wheels to go into four-wheel drive mode, then you need
20 to make sure that you spin up the clutch so that the secondary
21 axle basically is kind of synchronizing in a torque sense with
22 respect to the primary axle.

23 So, when you're using a wet multi-plate clutch in the
24 secondary axle like Teraoka, you don't have to synchronize. And
25 that was one of the primary features and advantages of Teraoka.
26 That's why, once again, there is no real rationale, in the

1 synchronizing sense, that would require you to go from Teraoka
2 to Burrows.

3 And I would like to quickly point out that page 121 of
4 Dr. Stein's declaration testimony explicitly points out that the
5 limitations are missing.

6 And then, finally, in the short remaining time that we
7 have here, I wanted to turn to --

8 JUDGE MAYBERRY: You actually don't have any
9 more time.

10 MS. SHAH: I don't have any time? Well then I will
11 just rely on the demonstratives to make the rest of the case.
12 Thank you very much.

13 JUDGE COCKS: Counsel, I think I have to say
14 something. The demonstratives are not briefing.

15 MS. SHAH: Yes.

16 JUDGE COCKS: So, you can't rely on the
17 demonstratives to make the case. Do you understand that?

18 MS. SHAH: Yes, I do, Your Honor. Yes. My mistake.
19 The briefing, as it's been provided.

20 JUDGE MAYBERRY: Whenever you're ready.
21 Counsel, you have 12 minutes.

22 MS. MANDRUSIAK: Thank you very much. First
23 with regard to Judge Weatherly's question, I confirmed that all of
24 the citations in slide 20 correspond with all of the citations in our
25 reply regarding the motivation of reducing weight.

1 And with regard to Judge Cocks' question on modifying
2 Teraoka in view of Burrows, I would just like to draw your
3 attention to page 23 of the petition, which I think most clearly
4 explains what we were -- what our position was, and I'll just read
5 it into the record. "It would have been obvious to one of ordinary
6 skill in the art to synchronize the switching mechanism 7 of
7 Teraoka" -- and that's the dog clutch in Teraoka -- "using the
8 clutch mechanism 71" -- that's the rear differential of Teraoka --
9 "connected by propeller shaft 21" -- also in Teraoka -- "as taught
10 by Burrows to perform synchronization without the use of
11 additional equipment."

12 So, I think it's clear from that sentence that our position
13 is that Burrows is simply explaining what the components are
14 doing in Teraoka when they are synchronizing.

15 With that, I would like to move to addressing some of
16 the points raised by Patent Owner. They started by arguing at
17 length about new arguments and evidence not being in the record.
18 We would like to note that they had the opportunity to depose
19 Mr. Becker when we filed his second declaration in support of
20 our reply, and they chose not to. It was a strategic move they
21 made.

22 They had the opportunity to file observations in any
23 cross examination and they did not do that. And, in fact, Patent
24 Owner are the ones that introduced the concept of torque
25 vectoring in this case. In their own exhibits, in Exhibit 2005 and
26 2012, but first, initially, they introduced it by asking Mr. Becker

1 about torque vectoring in their cross examination of him, and that
2 can be found in Exhibit 2020 at pages 81 to 82.

3 And, finally, another note, they argued the
4 obvious-to-try argument is somehow newly presented in our
5 reply. The *KSR* rationale is, in fact, included in the institution
6 decision itself.

7 Patent Owner has spent a great deal of time trying to
8 emphasize how the components of claim 1 operate synergistically
9 and argued that is the inventive concept of the '440 patent, but
10 they disclaimed the claims 1, 4 and 5 in view of Teraoka, as
11 Judge Mayberry noted, so there is actually nothing in claim 1 in
12 view of the prior art.

13 Patent Owner also argued, seems to be arguing that the
14 presence of any driving torque whatsoever would render Teraoka
15 inoperable for its intended purpose, but this too narrowly defines
16 Teraoka's principle of operation. Teraoka's principle of operation
17 allows for selective two-wheel drive and four-wheel drive
18 operations while reducing drag in two-wheel drive mode, and as
19 modified by Watanabe, even if the dual-plate clutches added
20 some small amount of drag torque, Teraoka would still function
21 under this selectable connection principle.

22 And, in fact, Patent Owner's expert, Dr. Stein, testified
23 that the combined device would still function as a drivetrain, so
24 certainly any reliance on *In Re: Gordon* is misplaced because
25 Teraoka combined with Watanabe would still be functional as a
26 drivetrain.

1 In Patent Owner's slide 7, they argued that putting the
2 dual clutches in Teraoka requires controls and various control
3 algorithms to meet the limitations of ensuring the transverse and
4 longitudinal compensation, but I think as the panel correctly
5 noted, the claims do not require the controls, and it's, in fact, the
6 function of any clutch pack.

7 And I would also note that GKN has a different patent
8 covering the control strategy of this type of clutch system, so it
9 would seem strange for the claims to cover the control strategy of
10 both patents. And, in fact, even if the claims are read as requiring
11 the control system, all clutch pack on-demand systems need
12 control elements to be functional. And, in fact, Dr. Stein testified
13 that those skilled in the art have been using computer sensors and
14 actuators for decades, and as such, including controller elements
15 would have been well within the skill set of one skilled in the art
16 when they were doing part of their routine optimization.

17 Patent Owner's arguments about driveline design
18 changes requiring substantive or substantial optimization,
19 modeling, simulations, et cetera, I think Patent Owner hit the nail
20 on the head where they called it real-world driveline design.
21 Unfortunately, the patent world is not the real world, and bringing
22 a commercial product to market is far beyond the level of -- the
23 level that we're talking about when we're combining Teraoka with
24 Watanabe.

25 And, in fact, Patent Owner's slides point out -- they
26 point out testimony from the experts talking about on the OEM

1 side, that just confirms the fact that they're talking about
2 commercial production of vehicles.

3 And, in fact, in that discussion, Ms. Shah actually
4 conceded that there are no mechanical barriers to combining
5 Teraoka and Watanabe, and if there's no mechanical -- and if you
6 have this mechanical combination, you get the inherent properties
7 of claims 2 and 3, indeed the capability of any two-clutch system.

8 And with regard to Ms. Shah's final point about saying
9 that Dr. Stein thought that maybe the elements of claim 6 would
10 not be met by the combination, I think that there is a
11 misunderstanding either from Dr. Stein's point of view or from
12 Ms. Shah's point of view, that I think the panel understood, but I
13 would just for the record like to make it clear that, of course, the
14 wet clutch in Teraoka did not require synchronization, it's the dog
15 clutch in the primary drivetrain that does require synchronization.

16 And with that, I have no further comments.

17 JUDGE MAYBERRY: Any questions?

18 (No response.)

19 JUDGE MAYBERRY: All right, thank you.

20 MS. MANDRUSIAK: Thank you very much.

21 JUDGE MAYBERRY: All right, we are adjourned.

22 **(Whereupon, at 3:03 p.m., the hearing was**
23 **adjourned.)**