

Filed: May 10, 2012

IN THE SUPREME COURT OF THE STATE OF OREGON

STATE OF OREGON

Respondent on Review,

v.

JAVIER EUMANA-MORANCHEL,

Petitioner on Review.

(CC 081053188; CA A142632; SC S059602)

En Banc

On review from the Court of Appeals.*

Argued and submitted January 9, 2012.

Erik Blumenthal, Deputy Public Defender, Salem, argued the cause and filed the brief for petitioner on review. With him on the brief was Peter Gartlan, Chief Defender, Office of Public Defense Services.

Matthew J. Lysne, Assistant Attorney General, Salem, argued the cause and filed the brief for respondent on review. With him on the brief were John R. Kroger, Attorney General, and Anna M. Joyce, Solicitor General.

BALMER, C. J.

The decision of the Court of Appeals is affirmed. The judgment of the circuit court is reversed, and the case is remanded to the circuit court for further proceedings.

De Muniz, J., filed a dissenting opinion in which Durham and Walters, JJ., joined.

*Appeal from Multnomah County Circuit Court, Lewis B. Lawrence, Judge. 243 Or App 496, 260 P3d 501 (2011).

1 BALMER, C. J.

2 This case arises out of defendant's motion *in limine* to exclude the
3 testimony of the state's expert witness in his prosecution for driving under the influence
4 of intoxicants (DUII). The issue presented is whether the state can introduce an expert's
5 testimony to prove that defendant's blood alcohol content (BAC) was over the legal limit
6 of .08 percent when a police officer stopped him for driving erratically, even though
7 defendant's BAC was under the legal limit at the time of his breath test, approximately an
8 hour and a half later. At the pretrial hearing on defendant's motion, the trial court
9 excluded the expert's testimony interpreting defendant's breath test results to the extent
10 that that testimony would explain that defendant's BAC was over .08 percent at the time
11 he was driving. The state filed an interlocutory appeal of that ruling and the Court of
12 Appeals reversed, concluding that the expert's testimony was derived from a chemical
13 analysis of defendant's breath and was, therefore, admissible. [State v. Eumana-](#)
14 [Moranchel](#), 243 Or App 496, 260 P3d 501 (2011). We now affirm the decision of the
15 Court of Appeals.

16 The parties stipulated to the following facts for purposes of the hearing on
17 defendant's motion *in limine*. On September 27, 2008, at 3:08 a.m., a police officer
18 stopped defendant on a public road in Multnomah County after the officer observed
19 defendant's pickup truck weaving across the center line. The officer noticed that
20 defendant's eyes were glassy and that his movements were slow and lethargic. Defendant
21 told the officer that he had had three beers that evening, but had had no alcohol since 2:00
22 a.m., when the bars closed. A second officer arrived on the scene. She noted the smell of

1 alcohol emanating from defendant's truck. She administered field sobriety tests, which
2 defendant failed. The officer arrested defendant for DUII, advised him of his *Miranda*
3 rights, and transported him to the police station. At 4:42 a.m., the officer administered a
4 breath test that measured defendant's BAC at .064 percent, which was below the legal
5 limit of .08 percent.¹

6 Defendant was charged by information with "misdemeanor driving while
7 under the influence of intoxicants." The offense of driving under the influence of
8 intoxicants is defined in ORS 813.010(1), which provides:

9 "A person commits the offense of driving while under the influence
10 of intoxicants if the person drives a vehicle while the person:

11 "(a) Has 0.08 percent or more by weight of alcohol in the blood of
12 the person as shown by chemical analysis of the breath or blood of the
13 person made under ORS 813.100, 813.140 or 813.150;

14 "(b) Is under the influence of intoxicating liquor, a controlled
15 substance or an inhalant; or

16 "(c) Is under the influence of any combination of intoxicating liquor,
17 an inhalant and a controlled substance."

18 The information did not identify a particular paragraph of ORS 813.010
19 that the state accused defendant of violating. The state, thus, was free to establish at trial
20 that defendant violated ORS 813.010 either by driving while impaired, under ORS
21 813.010(1)(b) or (c), or by driving with a BAC of at least .08 percent, under ORS

¹ The officer first administered a breath test at approximately 4:30 a.m. that measured defendant's BAC at .064 percent. The parties and the expert have relied on the second, 4:42 a.m. breath test result in this case and we do the same in this opinion.

1 813.010(1)(a). See *State v. King*, 316 Or 437, 446, 852 P2d 190 (1993), *overruled in part*
2 *on other grounds by [Farmers Ins. Co. v. Mowry](#)*, 350 Or 686, 697, 261 P3d 1 (2011)
3 (ORS 813.010(1)(a), (b), and (c) describe single offense, and jury need not agree on
4 which test results (BAC or field sobriety tests or combination) established that the driver
5 was under the influence).

6 Before trial, the state indicated that it intended to offer an expert's
7 testimony to establish defendant's guilt under ORS 813.010(1)(a) -- to prove that
8 defendant drove with a BAC of .08 percent -- notwithstanding that his BAC at the time of
9 the test was below that legal limit. As noted, defendant moved *in limine* to exclude that
10 testimony.

11 At the hearing on the motion *in limine*, the prosecution proffered the
12 testimony of Shane Bessett, an expert in the field of alcohol absorption and dissipation, to
13 establish that, although defendant's BAC at the time of his breath test was .064 percent,
14 his BAC when he was stopped, one hour and 34 minutes earlier, was between .08 and .10
15 percent and, therefore, above the legal limit. Bessett testified that he had arrived at that
16 range by using a method called retrograde extrapolation, which he explained as follows:
17 Bessett testified that men and women eliminate alcohol at an average rate of .018 percent
18 per hour,² but that the specific elimination rate for any particular individual varies
19 according to his or her tolerance for alcohol. The least alcohol-tolerant drinker would

² Bessett testified that men and women eliminate alcohol at the same rates.

1 eliminate alcohol at a rate of .01 percent per hour, while the most tolerant drinker would
2 eliminate alcohol at a rate of up to .025 percent per hour.³ For that reason, Bessett
3 testified, retrograde extrapolation would produce a *range* for a driver's BAC at any given
4 time, rather than a single, specific number. Further, Bessett testified, to calculate a
5 person's BAC at a given time, he would need to know the time of the test, the time of the
6 driver's last consumption of alcohol, and the time that the driver was stopped.

7 Bessett testified that, in this case, based on information in the police
8 reports, he assumed that defendant had stopped drinking by 2:00 a.m., that he was
9 stopped and arrested at 3:08 a.m., and that the breath test at 4:42 a.m. revealed that his
10 BAC was .064 percent.⁴ Based on those assumptions, Bessett then calculated that
11 defendant, having eliminated the alcohol in his blood at a rate of between .01 and .025
12 percent per hour for one hour and 34 minutes, likely would have had a BAC of between
13 .08 and .10 percent when he was driving.

14 The trial court granted defendant's motion to exclude Bessett's testimony.

³ Because those parameters would encompass "virtually everyone," which he described as 98 out of 100 people tested, Bessett testified that there was no margin of error.

⁴ Bessett testified that it was important to know when a subject stopped drinking, because 80 percent of alcohol is absorbed into the bloodstream within five to 10 minutes of consumption, and all alcohol consumed ordinarily is absorbed into the bloodstream within 30 to 60 minutes. In this case, Bessett assumed that, when defendant was stopped at 3:08 a.m., one hour and eight minutes after defendant stopped drinking, defendant would have been eliminating alcohol, not absorbing it. Defendant did not challenge that assumption.

1 In reaching that result, the court concluded that it was bound by the Court of Appeals
2 opinion in *State v. Johnson*, 219 Or App 200, 182 P3d 256 (2008), which, in its view,
3 prevented the state from convicting a defendant for DUII unless a chemical analysis,
4 standing alone, proved the defendant's BAC to be at least .08 percent.⁵ The trial court
5 entered an order excluding

6 "(1) Any testimony by State's expert witness referring to BAC
7 content if that testimony would permit the jury to convict defendant based
8 on his BAC.

9 "(2) Any testimony by State's expert witness that his BAC at the
10 time of the alleged stop was at least .08 percent."

11 That ruling effectively prevented the state from establishing defendant's guilt under ORS
12 813.010(1)(a).

13 The state appealed that pretrial ruling, and the Court of Appeals reversed,
14 concluding that Bessett's testimony concerning retrograde extrapolation was admissible,
15 because it "was derived, using scientific principles, from a chemical analysis of
16 defendant's breath." *Eumana-Moranchel*, 243 Or App at 502.

17 In this court, defendant argues that ORS 813.010 provides three methods
18 for the state to prove that a defendant was driving under the influence of intoxicants.

⁵ In *Johnson*, a breath test revealed that the defendant's BAC was .07 percent at the time of the test, approximately an hour after the defendant was stopped. At the defendant's trial in that case, the arresting officer testified that, based on his observations, the defendant's BAC was at or above .08 percent at the time he was stopped. The Court of Appeals accepted the state's concession that evidence of observable indicia of intoxication is not admissible to prove that a defendant's BAC exceeded the legal limit, because it is not based on a chemical test of the defendant's breath or blood. 219 Or App at 204-05.

1 Two of those methods, set out in ORS 813.010(1)(b) and (c), require proof that the
2 defendant drove while impaired by alcohol or controlled substances. The third, set out in
3 ORS 813.010(1)(a), does not require proof of impairment. Rather, that paragraph
4 requires only that the state prove that the defendant drove with a BAC of .08 percent or
5 more "*as shown by chemical analysis* of the breath or blood of the person." (Emphasis
6 added.) Defendant argues that, under the plain words of ORS 813.010(1)(a), only a
7 chemical analysis can *show* a BAC of .08 percent or more. Retrograde extrapolation is a
8 formula, not a chemical analysis, defendant asserts, and, therefore, it cannot be used to
9 show a particular BAC. He contends that *only* the numerical result of the
10 chemical analysis (the breath test result) is admissible to show that he drove a vehicle
11 while he had .08 percent or more by weight of alcohol in his blood. According to
12 defendant, any other evidence is irrelevant for that purpose.

13 We begin our analysis by examining the words of the statute. For
14 convenience, we repeat them here:

15 "(1) A person commits the offense of driving while under the
16 influence of intoxicants if the person drives a vehicle while the person:

17 "(a) Has 0.08 percent or more by weight of alcohol in the blood of
18 the person as shown by chemical analysis of the breath or blood of the
19 person made under ORS 813.100, 813.140 or 813.150;

20 "(b) Is under the influence of intoxicating liquor, a controlled
21 substance or an inhalant; or

22 "(c) Is under the influence of any combination of intoxicating liquor,
23 an inhalant and a controlled substance."

24 We first observe that ORS 813.010(1) prohibits *driving* under the influence
25 of intoxicants: "A person commits the offense of driving while under the influence of

1 intoxicants if the person *drives a vehicle while the person* is under the influence.
2 (Emphasis added.) As this court stated in *State v. Clark*, 286 Or 33, 38, 593 P2d 123
3 (1979), quoting *State v. Clark*, 35 Or App 851, 856, 583 P2d 1142 (1978),

4 "[t]he gravamen of [the predecessor statute to ORS 813.010] is driving
5 with a certain blood alcohol level. The legislature has seen fit to forbid this
6 act, without more."

7 Thus, the focus of the statute is on the act of driving, and doing so while impaired.

8 The statute then sets out two ways to prove that a person drove while under
9 the influence of intoxicants: The state can establish that the defendant's BAC was .08
10 percent or more, ORS 813.010(1)(a), regardless of observable symptoms, or the state can
11 prove that the person was "under the influence of intoxicating liquor, a controlled
12 substance, or an inhalant," that is, that the defendant was adversely affected by
13 intoxicants to a perceptible degree, ORS 813.010(1)(b), (c). *See King*, 316 Or at 446
14 ("The legislature did intend that a person could commit [the offense of DUII] by driving
15 with the specified BAC but with no perceptible impairment or by driving with a legally
16 permissible or unknown BAC but while nonetheless perceptibly impaired[.]"); *Clark*, 286
17 Or at 39 (in making it an offense to drive with a certain BAC, "the legislature apparently
18 assumed, based on scientific studies and medical knowledge, that the physical and mental
19 condition of a driver with such a level of blood alcohol is impaired to such a degree as to
20 make it unsafe for him to drive a motor vehicle, regardless of observable physical
21 symptoms"). Under either scenario, the state must prove that the driver had the

1 proscribed BAC or was perceptibly impaired *at the time that he or she was driving*.⁶
2 ORS 813.010(1)(a), (b), and (c) (a person commits the offense of DUII "if the person
3 drives a vehicle while the person" has a BAC of 0.08 percent or more or was impaired).

4 This case requires us to consider how the state may prove that defendant
5 violated ORS 813.010(1)(a). Under that statute, BAC at the time of driving must be
6 "*shown by chemical analysis of the breath or blood.*" (Emphasis added.) However, it is

⁶ In contrast, many other states explicitly require proof of a chemical test result over the legal limit at the time of the test or within a certain period of time after driving. *See, e.g.*, Alaska: Alaska Stat § 28.35.030(2) (offense committed if driver has .08 percent BAC within four hours of driving); Arizona: Ariz Rev Stat § 28-1381(2) (offense committed if driver has .08 percent BAC within two hours of driving); California: Cal Veh Code § 23152(b) (rebuttable presumption of guilt if driver has .08 percent BAC at time of test within three hours of driving); Delaware: Del Code § 4177(5) (offense committed if driver has .08 percent BAC or more within four hours of driving, "without regard to the person's alcohol concentration at the time of driving"); Kansas: Kan Stat Ann § 8-1567(2) (offense committed if driver has .08 percent BAC within three hours of driving); Kentucky: Ky Rev Stat Ann § 189A.010(1)(a) (offense committed if driver has .08 percent BAC at time of test within two hours of driving); Minnesota: Minn Stat § 169A.20, subd.1 (5) (offense committed if driver has .08 percent BAC as measured within two hours of driving); Montana: Mont Code Ann § 61-8-401(4)(c) (rebuttable inference of guilt if driver has .08 percent BAC at time of test); Nevada: Nev Rev Stat § 484C.110(1)(c) (offense committed if driver has .08 percent BAC within two hours of driving); New Mexico: NM Stat Ann § 66-8-102(C)(1) (offense committed if driver has .08 percent BAC within three hours of driving); North Dakota: ND Cent Code § 39-08-01(1)(a) (offense committed if driver has .08 percent BAC at time of test within two hours of driving); Oklahoma: Okla Stat § 47-11-902v (A)(1) (offense committed if driver has .08 percent BAC within two hours of driving); Pennsylvania: Pa Cons Stat § 3802(a)(2) (offense committed if driver has .08 percent BAC within two hours of driving); Utah: Utah Code Ann § 41-6a-502(1)(a) and (c) (offense committed if driver has .08 percent BAC at the time of the test or at the time of operating vehicle); Washington: RCW § 46.61.502(1)(a) (offense committed if driver has .08 percent BAC within two hours of driving); Wyoming: Wyo Stat Ann § 31-5-233(b) (ii) (offense committed if driver has .08 percent BAC at time of driving or within two hours of driving).

1 virtually always the case that the chemical test of the breath or blood is administered
2 some time *after* the person has stopped driving. That is so for several reasons. First, a
3 breath test may not be administered until after the driver actually has been arrested for
4 DUI. ORS 813.100(1) ("Any person who operates a motor vehicle * * * shall be
5 deemed to have given consent * * * to a chemical test of the person's breath * * * for the
6 purpose of determining the alcoholic content of the person's blood if the person is
7 arrested for driving a motor vehicle while under the influence of intoxicants in violation
8 of ORS 813.010[.]"). In all cases, a certain amount of time will have passed after the stop
9 and before the arrest, while a police officer investigates the crime. In addition, to test the
10 driver, the police officer must use a specific machine, the Intoxilyzer 5000 or the
11 Intoxilyzer 8000, which are the only breath test machines approved by the Oregon State
12 Police for use in performing a chemical analysis of a person's breath, OAR 257-030-
13 0060; OAR 277-030-0120 (so stating), and which typically are located at the police
14 station. Finally, before administering the test, the police officer must inform the person
15 of the consequences of refusing to take a breath test, ORS 813.100(1)(a), and then wait at
16 least 15 minutes to be certain that the person has not taken anything by mouth, vomited,
17 or regurgitated. OAR 257-030-0070(2)(a) (Intoxilyzer 5000); OAR 257-030-0130(2)(a)
18 (Intoxilyzer 8000).

19 Importantly, a person's BAC changes during the time between being
20 stopped and undergoing a breath test. Bessett testified at the hearing on defendant's
21 motion *in limine* that 80 percent of consumed alcohol enters the blood within five to 10
22 minutes, and 100 percent enters the blood within 30 to 60 minutes. Moreover, as

1 discussed above, alcohol is eliminated from the blood at a rate between .01 and .025
2 percent per hour. It follows that a chemical test result alone never "shows" the actual
3 BAC of the driver at the time of driving.

4 Something more is necessary to connect the breath test result to the
5 statutory requirement of a BAC of .08 percent or more at the time of driving. This court
6 has suggested that, when a breath test taken after the time of driving establishes a BAC of
7 .08 percent or higher, the trier of fact reasonably may infer the necessary connection.
8 That is, the jury may infer that the driver's BAC while driving was at least as high as the
9 later test result. *See State v. Parker*, 317 Or 225, 232 n 9, 855 P2d 636 (1993) (stating, in
10 *dictum*, that, in case where the defendant had a BAC of .07 percent five hours after
11 driving, the state did not need to call an expert on the dissipation of blood alcohol
12 content, because the fact that blood alcohol dissipates over time is common knowledge).
13 In this case, defendant's breath test established a BAC at the time of the test of less than
14 the legal limit, at .064 percent. The question here, then, is whether, in that circumstance,
15 the state may attempt to connect the breath test result to the statutory requirement of .08
16 percent BAC or more while driving with evidence that is not necessarily common
17 knowledge: the precise rate of dissipation.

18 We conclude that the answer is yes. As just discussed, ORS 813.010(1)(a)
19 provides that a person commits the offense of driving under the influence of intoxicants
20 if, while driving, the person "has 0.08 percent or more by weight of alcohol in the blood *
21 * * as shown by chemical analysis of the breath or blood[.]" Because a breath test result
22 will never "show" a person's BAC at the exact time of driving, the state must be able to

1 offer relevant evidence to explain how a driver's BAC at the time of the test "shows" that
2 he or she had .08 percent or more by weight of alcohol in the bloodstream at that earlier
3 point. That is true whether the driver's BAC was exactly .08 percent, more than .08
4 percent, or less than .08 percent. And an expert's testimony explaining retrograde
5 extrapolation, which uses a person's BAC at the time of the test to establish, based on a
6 scientific formula, that the person's BAC was above the legal limit at a certain earlier
7 time, is relevant and admissible for that purpose. OEC 401 (evidence is relevant if it
8 makes any fact of consequence to the determination of the action more probable); OEC
9 402 (all relevant evidence is admissible unless otherwise provided).

10 Defendant nevertheless argues that, under ORS 813.010, a chemical
11 analysis, and only a chemical analysis, can "show" that a person drove while over the
12 legal limit. However, as this court stated in *Clark*, if the legislature had intended for the
13 numerical breath test result to be the only evidence admissible under *former* ORS
14 487.540(1)(a), the predecessor statute to ORS 813.010(1)(a), it would have worded the
15 statute to make that limitation clear.⁷ 286 Or at 44-45. The court went on:

16 "[T]he more reasonable reading of the statute is that the driver must be
17 found in fact to have .10 percent blood alcohol [the legal limit at that time]
18 *and* that this must be shown by a chemical analysis. In other words, the
19 state cannot establish a violation of [*former*] ORS 487.540(1)(a) without a
20 chemical analysis properly performed, but the analysis must 'show' the
21 actual presence of that percentage in the blood, not merely in the instrument
22 reading."

⁷ And, as discussed above, at note 6, the DUII statutes of many other states clearly specify that the operative BAC is the driver's BAC at the time of the test.

1 *Id.* at 45 (emphasis in original).

2 The court in *Clark* addressed a somewhat different question than is
3 presented here: whether a defendant was entitled to offer evidence, such as the testimony
4 of nonexpert witnesses relating to defendant's observable conduct, to impeach the
5 accuracy of the result of a chemical analysis. Nonetheless, we think that the court's
6 reasoning in *Clark* is equally applicable in this case, where the state is the party seeking
7 to offer additional evidence to explain the results of the chemical analysis. As the court
8 stated in *Clark*, the statute requires the chemical analysis to "show" the actual presence of
9 the alcohol in the blood at the time of driving; it does not merely require a certain
10 instrument reading. That is, under the statute, the "chemical analysis" is the numerical
11 result that the machine produces *together with* an explanation of that result. That
12 explanation can be simply an inference that blood alcohol rates dissipate over time, or, as
13 in this case, an expert's testimony explaining that retrograde extrapolation shows the
14 actual presence of the prohibited percentage of alcohol in a driver's blood when he or she
15 was driving.

16 Defendant contends, on the contrary, that this court, in *State v. O'Key*, 321
17 Or 285, 899 P2d 663 (1995), held that a chemical analysis is the "only" manner of
18 proving intoxication under ORS 813.010(1)(a). Defendant is incorrect. In *O'Key*, this
19 court held that evidence that the defendant failed a field sobriety test -- the horizontal
20 gaze nystagmus test -- was not admissible under ORS 813.010(1)(a) to prove that the
21 defendant, who had refused to take a breath test, drove with a BAC of .08 percent or
22 more. The court held that

1 "the offense of DUII with a .08 percent or more BAC may be proved *only*
2 by a '*chemical analysis of the breath or blood of the person[.]*' * * * An
3 HGN test does not involve a chemical analysis of breath or blood. Hence,
4 an HGN test is not a chemical test under ORS 813.010(1)(a). Under ORS
5 813.010(1)(a), HGN test evidence is not, therefore, admissible to prove that
6 a person had a BAC of .08 percent or more."

7 321 Or at 308 (emphasis in original). It is, of course, true that an expert's testimony
8 explaining retrograde extrapolation also is not a "chemical test." However, defendant
9 does not dispute that the state intends to offer a chemical test -- defendant's breath test
10 result -- showing that defendant had a BAC of .064 percent at the time of the test, to
11 prove that defendant drove while having a BAC of .08 percent or more. Moreover, as the
12 Court of Appeals held below, [*Eumana-Moranchel*](#), 243 Or App at450, and as we have
13 explained, the expert's retrograde extrapolation analysis is based on and derived from that
14 chemical test. Thus, much as the observable conduct testimony in *Clark* explained that
15 the chemical test result *did not* "show" that the defendant drove with the prohibited BAC,
16 here, the retrograde extrapolation analysis, applied to the chemical test result, explains
17 that the chemical test "shows" that defendant drove with a BAC of .08 percent or more.

18 Context supports our conclusion that the legislature did not intend to
19 prohibit the state from introducing evidence, based on the breath test result, that a
20 person's BAC was over the legal limit at the time of driving. First, in ORS 813.100,
21 Oregon's implied consent statute, the legislature expressly imposes various administrative
22 penalties on a driver whose BAC is over the legal limit *at the time of the test*. ORS
23 813.100 provides, in part:

24 "(3) If a person refuses to take a test under this section or *if a breath*
25 *test under this section discloses that the person, at the time of the test, had*

1 *a level of alcohol in the person's blood that constitutes being under the*
2 *influence of intoxicating liquor* under ORS 813.300 [providing that a BAC
3 of .08 percent or more constitutes being under the influence of intoxicating
4 liquor], the person's driving privileges are subject to suspension under ORS
5 813.410 and the police officer shall [take certain enumerated actions.]

6 "(4) If a blood test under this section discloses that the person, *at the*
7 *time of the test*, had a level of alcohol in the person's blood that constitutes
8 being under the influence of intoxicating liquor under ORS 813.300, the
9 person's driving privileges are subject to suspension under ORS 813.410
10 and the police officer shall report to the department within 45 days of the
11 date of arrest that the person failed the blood test."

12 (Emphasis added.) The legislature's specificity in pointing to *the time of the test* in those
13 statutes suggests that, had the legislature intended the trier of fact to consider only a
14 person's BAC at the time of the breath test in determining whether a person has
15 committed the offense of driving while under the influence of intoxicants under ORS
16 813.010(1)(a), it could have done so by inserting the words "at the time of the test" into
17 ORS 813.010(1)(a).⁸

18 Second, ORS 813.300(1), which deals with the use of BAC as evidence,
19 also is consistent with our conclusion that evidence helping to explain that a person's
20 BAC was over the legal limit while he or she was driving is admissible under ORS
21 813.010(1)(a). That statute provides:

22 "At the trial of any civil or criminal action, suit or proceeding arising out of
23 the acts committed by a person driving a motor vehicle while under the
24 influence of intoxicants, if the amount of alcohol in the person's blood *at*
25 *the time alleged* is less than 0.08 percent by weight of alcohol as shown by
26 chemical analysis of the person's breath or blood, it is indirect evidence that

⁸ Those words are not found in ORS 813.010(1)(a) and we are, of course, admonished "not to insert what has been omitted." ORS 174.010.

1 may be used with other evidence, if any, to determine whether or not the
2 person was then under the influence of intoxicants."

3 (Emphasis added.) That statute describes the use of evidence at trial in a case "arising out
4 of the acts committed by a person driving a motor vehicle while under the influence of
5 intoxicants," including, as relevant here, a prosecution for DUII. Under that statute, if a
6 person's BAC "at the time alleged" is less than .08 percent as shown by a chemical
7 analysis of the person's breath or blood, it is indirect evidence that may be used with
8 other evidence to prove that the person was under the influence of intoxicants. Because
9 the "gravamen of [ORS 813.010] is driving with a certain blood alcohol level," *Clark*,
10 286 Or at 38, the reference in ORS 813.300(1) to "the amount of alcohol in the person's
11 blood *at the time alleged*" (emphasis added) is a reference to BAC at the time of driving.
12 However, as we already have explained, the "chemical analysis of the person's breath" --
13 the breath test -- does not prove the amount of alcohol in the person's blood at the time of
14 driving. Retrograde extrapolation is the mechanism by which the amount of alcohol in a
15 person's blood *at the time alleged* is "shown" to be more or less than 0.08 percent.⁹ It
16 provides the necessary connection between evidence of a person's BAC at the time of the
17 test and his or her BAC while driving.¹⁰

⁹ And it follows that, if retrograde extrapolation shows that a person's BAC
at the time of driving was *less* than .08 percent, then, under ORS 813.300(1), the driver's
BAC still is admissible as indirect evidence that may be used with other evidence to
prove that the driver was under the influence of intoxicants.

¹⁰ Both defendant and the state contend that legislative history supports their
respective positions. However, neither party has pointed to any legislative history

1 We hold that the state should have been permitted to offer the expert's
2 testimony explaining retrograde extrapolation to establish that defendant's BAC was over
3 .08 percent at the time he was driving.

4 The decision of the Court of Appeals is affirmed. The judgment of the
5 circuit court is reversed, and the case is remanded to the circuit court for further
6 proceedings.

showing that the legislature actually considered whether expert testimony explaining to the jury the relationship between a BAC test result and a defendant's BAC some time earlier, at the time of driving, would be admissible. Nor has either party identified any legislative history suggesting that the legislature intended that the state's ability to convict a driver under ORS 813.010(1)(a) would depend only on the driver's BAC at the time of the test. In short, nothing in the legislative history suggests that the legislature had any express intention to require the state to prove BAC only with the numerical result of a breath test taken at some point after the person stopped driving.

1 **DE MUNIZ, J.**, dissenting.

2 Although the only chemical analysis conducted in this case showed a blood
3 alcohol content (BAC) of .064 percent, the majority opinion goes to great lengths to
4 avoid the plain meaning of the term "chemical analysis" in ORS 813.010(1)(a) in order to
5 permit the state to use retrograde extrapolation to prove that defendant drove while his
6 BAC was over .08 percent. Because I conclude that the legislature enacted ORS
7 813.010(1)(a) as a bright-line rule intended to include only those persons who actually
8 register a BAC of .08 percent or greater on a chemical test, I respectfully dissent.

9 When prosecuting a DUII, the state ordinarily may proceed under either
10 paragraph (a) or (b) of ORS 813.010(1) (or both, in the alternative) -- that is, the state
11 may convict the defendant by proving either that the defendant drove with a BAC of .08
12 percent or more "as shown by chemical analysis," or that the defendant was "under the
13 influence of intoxicating liquor." However, because of the limited procedural posture of
14 this case, we consider the use of retrograde extrapolation *only* as it applies to paragraph
15 (a) of ORS 813.010(1). Nothing in this opinion affects the use of that evidence under
16 paragraph (b), as evidence of actual impairment at the time of driving. As a practical
17 matter, then, the only case in which the state would require that evidence to secure a
18 conviction is when a person *both* has a BAC lower than .08 percent when tested *and* has
19 exhibited no outward signs of impairment sufficient to convict under paragraph (b). The
20 majority holds that, in that situation, the statute permits the state to convict on the basis of
21 expert testimony extrapolating from the results of a chemical analysis by factoring in
22 additional, nonchemical evidence regarding mathematical formulas, average dissipation

1 rates,¹ and the time defendant last consumed alcohol and last drove, in direct
2 contradiction to the statute's directive that BAC may be proved only "by chemical
3 analysis." In my view, the more logical explanation is that the legislature simply
4 intended for a person in that position to be acquitted. As I discuss in more detail below,
5 both the structure of the statute and the plain meaning of its text requiring the requisite
6 minimum BAC to be "shown by chemical analysis" support that conclusion.

7 As I interpret it, the structure of the statute indicates that there is only one
8 crime -- driving under the influence of intoxicants -- for which the legislature has
9 provided two methods of proof. The first method of proof is to secure a chemical
10 analysis showing a BAC above .08 percent. The second method of proof is to prove
11 beyond a reasonable doubt that the defendant's driving was actually impaired by the
12 consumption of alcohol. By contrast, the majority's interpretation has created an
13 additional crime of driving with a BAC above .08 percent, the elements of which the state

¹ The mathematical formulas used in the kind of retrograde extrapolation performed in this case were not specifically tailored to the defendant, but were derived from studies of average alcohol dissipation rates across a broad population. As the state's expert admitted, those rates can vary widely from person to person, preventing the analysis from determining what defendant's specific BAC was at the time of driving. Rather, the tests can return only a "range" of possible results, which, as the state's expert testified, will be accurate for only 98 out of 100 people. ___ Or at ___ n 3 (slip op at 4 n 3). In my view, using those averages and calculations that are not specific to defendant's particular physiology and circumstances directly contravenes the statutory text that the subject of the "chemical analysis" must be the breath or blood *of the defendant*. ORS 813.010(1)(a).

1 may establish by whatever means it pleases.² After today, the state need not be bothered
2 to try to prove that any defendant's driving was actually impaired (the actual wrongful
3 conduct intended to be punished), unless the defendant's BAC, when tested, was so low
4 that by no possible "range" of extrapolation could the defendant's BAC ever have
5 exceeded .08 percent.

6 Because the first method of proof provided in paragraph (a) is a type of
7 evidentiary presumption -- a means by which the state is permitted to prove the
8 commission of the offense *without* proving the actual underlying wrongful conduct -- it
9 would make sense for the legislature to limit the means of establishing that presumption
10 to a method erring slightly on the side of under inclusivity. By limiting the use of
11 paragraph (a) to those defendants who manifest a .08 percent BAC or higher at the time
12 of the test, paragraph (a) of the statute is under inclusive as to those persons who may
13 have been at or slightly over .08 percent BAC at the time of driving, but whose BAC has
14 dissipated to below .08 percent by the time of the test. However, the state may still opt to

² It is no defense to the majority's position that the retrograde extrapolation analysis is "based" on a chemical analysis. There is no way to arrive at any known percentage of blood alcohol content -- as the statute requires -- without *some* reference to a chemical analysis. The inclusion of the additional requirement in the statute that the .08 percent must be "shown by chemical analysis of the breath or blood of the person made under ORS 813.100, 813.140 or 813.150" is better understood not as redundant to that obvious truth but rather as limiting the universe of methods by which the state is permitted to prove the defendant's precise blood alcohol content. That limitation necessarily implies that there are *other* ways to prove that defendant's blood contained .08 percent alcohol at the time of driving; however, only those ways expressly listed are admissible to satisfy the evidentiary presumption provided by paragraph (a).

1 prosecute those defendants under paragraph (b) by proving that their driving was actually
2 impaired. Indeed, the state may still introduce its retrograde extrapolation evidence to
3 demonstrate how much higher the defendant's BAC likely was at the time of the crime, in
4 conjunction with any other evidence tending to prove impairment. That interpretation of
5 the statute, in which paragraph (a) may be used to establish a presumption of impairment
6 in the most clear-cut cases, while paragraph (b) is used to ensure that in borderline cases
7 wrongful conduct is established beyond a reasonable doubt, reliably encompasses the
8 harm sought to be proscribed while adequately balancing the interests of both defendants
9 and the state.

10 On the other hand, if, as the majority holds, retrograde extrapolation
11 standing alone is sufficient to establish a violation of the statute, the statute risks over
12 inclusivity, because there is no limit to how far the state may extrapolate to secure a
13 conviction. The majority's interpretation would permit the state to prove through
14 retrograde extrapolation not only that a person with a .07 percent BAC was over .08
15 percent one hour earlier, but also that a person with a .01 percent BAC was over .08
16 percent eight hours earlier. The scientific principles supporting retrograde extrapolation
17 have not advanced to such a state today -- and certainly had not in 1975 when the
18 legislature first enacted this statute -- to permit such a conviction beyond a reasonable
19 doubt. Indeed, in 1975, a first offense for driving under the influence of intoxicants was
20 a mere traffic infraction, punishable by fine only, not to exceed \$1,000. *See former ORS*
21 *487.540(2) (1975), repealed by Or Laws 1983, ch 338, § 978 (providing that "[d]riving*
22 *while under the influence of intoxicants is a Class A traffic infraction"); former ORS*

1 484.360(1), (2) (1975), *repealed by* Or Laws 1983, ch 338, § 978 (providing that "the
2 penalty for committing a traffic infraction shall be a fine only," which, for Class A traffic
3 infractions, may not exceed \$1,000). It can hardly be contended that in that context the
4 1975 legislature could have envisioned a battle of competing scientific expert witnesses
5 at a full-blown criminal trial testifying with regard to science that, if it existed at all, was
6 in its very nascence. That the legislature intended to create a simple, bright-line
7 evidentiary presumption is more plausible in that context.

8 The plain meaning of the text of the statute also supports my conclusion
9 that the legislature had no intention of including retrograde extrapolation as a "chemical
10 analysis" under paragraph (a). The legislature required that a BAC of .08 percent or more
11 must be "shown by chemical analysis of the breath or blood of the person" in order to
12 support a determination that a person has committed the offense of driving under the
13 influence under ORS 813.010(1)(a). The legislature did not provide that a BAC of less
14 than .08 percent, as shown by chemical analysis, could somehow be rehabilitated or
15 explained away by expert testimony or any other circumstantial evidence under
16 paragraph (a). The terms the legislature used in paragraph (a) plainly require that a
17 chemical analysis made under ORS 813.100, ORS 813.140, or ORS 813.150 must *itself*
18 show that a person has a BAC of .08 percent or greater. That reading of the text is well
19 supported by the applicable definitions of the terms the legislature used in the statute and
20 by the general rules of grammatical construction that inform our understanding of
21 statutory terms.

22 The statutory phrase, "as shown by chemical analysis of the breath or

1 blood of the person made under ORS 813.100, 813.140 or 813.150," when broken down
2 into its significant constituent parts, provides the following construct. "Shown" is the
3 past participle of the verb "show," and the synonyms for the general term "show" are as
4 follows:

5 "syn EVINCE, MANIFEST, EVIDENCE, DEMONSTRATE: in this series
6 SHOW is a general term, usu. interchangeable with any of the others, for
7 indicating, revealing, displaying[.]"

8 *Webster's Third New Int'l Dictionary* 2105 (unabridged ed 2002). "Chemical" means:

9 "3 : having reference to or relating to the science of chemistry[.]" *Id.* at 383. "Analysis,"
10 in the context of chemistry, means:

11 "4 a : the separation of compound substances into their constituents by
12 chemical processes b : the determination, which may or may not involve
13 actual separation, of one or more ingredients of a substance either as to kind
14 or amount; *also* : the tabulated result of such a determination[.]"

15 *Id.* at 77. Thus, the phrase "as shown by chemical analysis of the breath or blood of the
16 person" most directly and most reasonably is read to mean the result demonstrated by the
17 chemical test itself.

18 That point is made even more evident by the legislature's explicit
19 articulation of the three specific ways in which a person's BAC may be "shown" under
20 paragraph (a): by a chemical analysis "made under ORS 813.100, 813.140 or 813.150."
21 Those statutory provisions provide for the administration of chemical tests of the
22 defendant's breath, blood, or urine -- without mention of any kind of extrapolation or
23 extrinsic interpretation of the results of those tests. In limiting the chemical analyses that
24 can be used to those "made" under those statutes, the legislature specified a manner of

1 proof -- a specific type of test with a specific result. It is the office of this court to
2 ascertain and declare what is contained within the substance of the statute -- not to insert
3 what may have been omitted or to second-guess the policy choices made by the
4 legislature. *See* ORS 174.010 (providing that "[i]n the construction of a statute, the office
5 of the judge is simply to ascertain and declare what is, in terms or in substance, contained
6 therein, not to insert what has been omitted."). Whether or not we think that modern
7 retrograde extrapolation analysis may be a reliable and convenient manner of proving a
8 defendant's BAC at the time of driving, it is not for us to add a fourth method to the three
9 the legislature saw fit to permit. Consequently, I determine that we should take the terms
10 the legislature enacted in ORS 813.010(1)(a) at face value and adhere to the policy choice
11 that the legislature made in setting out the specific manner for proving a violation of the
12 statute.

13 The legislative history of the statute also supports that interpretation. As
14 the majority notes, the legislative history of ORS 813.010(1)(a) provides little direct
15 enlightenment regarding whether the legislature ever actually considered the problem of
16 dissipation in the interim between the time of driving and the time of a chemical analysis.
17 __ Or at __ (slip op at 15 n 10). But what little legislative history we do have on the
18 subject is at least consistent with, if not supportive of, a more restrictive reading of ORS
19 813.010(1)(a) than the majority allows.

20 The text "as shown by chemical analysis" was initially enacted in *former*
21 ORS 487.540(1)(a) (1975), *repealed by* Or Laws 1983, ch 338, § 978, as part of a
22 comprehensive overhaul of Oregon's motor vehicle laws, which included changes to

1 Oregon's DUII laws.³ Prior to enacting that statute, the Committee on the Judiciary,
2 which prepared the Motor Vehicle Code and the text of *former* ORS 487.540(1)(a),
3 discussed the evidentiary problems that alcohol absorption and elimination could create
4 in DUII prosecutions. According to the committee minutes, then-Solicitor General W.
5 Michael Gillette testified before the committee regarding the problem with time lapses in
6 chemical analyses in the following terms:

7 "[Gillette's] concern was that the trier of fact had been told that some use
8 could be made of a blood alcohol content of .08 percent and lower as
9 indirect evidence but he was not told what to do with evidence of .08
10 percent or higher. In addition to instructions as to what to do when the
11 evidence was less than .08, his proposal would give the courts direction as
12 to what to do when the analysis showed more than .08. He pointed out that
13 the blood test was not contemporaneous with the driving; the test results
14 were established at a later time. His answer to this problem as set out in his
15 proposed revision * * * was that *a person who was shown to have .08*
16 *percent or higher at the time of the blood test was at least then under the*
17 *influence, and from there it could be inferred backward that he was under*
18 *the influence at the earlier time, even though the court could not be certain*
19 *that his blood alcohol content at the time of driving was .08."*

20 Minutes, Committee on Judiciary, Sept 24, 1974, 7 (emphasis added). That statement
21 highlights that the proposed answer to the evidentiary problems that alcohol absorption
22 and elimination could create was to provide that, once a person is shown to have a BAC

³ Although *former* ORS 487.540 was repealed by Or Laws 1983, ch 338, § 978, the legislature's intent with regard to that provision presumably applies with equal force to ORS 813.010(1)(a), which was enacted by a different section of that same chapter and contained substantially the same text. The legislature explicitly provided that "[i]t is not the purpose or intent of the Oregon Legislative Assembly to change the law by enacting the revision of the Oregon Vehicle Code contained in chapter 338, Oregon Laws 1983." Or Laws 1983, ch 338, § 3.

1 of .08 percent or higher *at the time of the test*, it can be inferred backward that the person
2 must have had a BAC no lower than .08 percent at the time of driving -- even though the
3 court could not be certain of the defendant's precise BAC at the time of driving.⁴ That
4 theory is consistent with the language of the statute actually enacted by the legislature,
5 requiring BAC to be proved under paragraph (a) "by chemical analysis,"⁵ and also
6 comports with the additional provisions enacted by the legislature as *former* ORS
7 487.545(1) and (2) (1975).⁶ *Former* ORS 487.545(1) specifically provided that the

⁴ Solicitor General Gillette's testimony referred to a BAC of .08 percent. The legislature initially enacted provisions in *former* ORS 487.545 (1975), *repealed by* Or Laws 1983, ch 338, § 978, and *former* ORS 487.540 (1975), that set the legal presumption of intoxication at .10 percent BAC. The legislature then later modified the standard to .08 percent BAC, as it is currently set out in ORS 813.300 and in ORS 813.010. Those changes in the BAC standard, however, do not affect the central issue in this case.

⁵ *Former* ORS 487.540(1)(a) (1975) provided:

"A person commits the offense of driving while under the influence of intoxicants if he drives a vehicle while:

"(a) He has .10 percent or more by weight of alcohol in his blood as shown by chemical analysis of his breath, blood, urine or saliva made under ORS 487.805 to 487.815 and 487.825 to 487.835[.]"

⁶ *Former* ORS 487.545(1) and (2) provided:

"(1) At the trial of any civil or criminal action, suit or proceeding arising out of the acts committed by a person driving a motor vehicle while under the influence of intoxicants, if the amount of alcohol in the person's blood at the time alleged is less than .10 percent by weight of alcohol as shown by chemical analysis of the person's breath, blood, urine or saliva, it is indirect evidence that may be used to determine whether or not he was then under the influence of intoxicants.

1 appropriate use of a BAC lower than the legal limit (then .10 percent), "as shown by
2 chemical analysis," was as "indirect evidence that may be used to determine whether or
3 not [defendant] was then under the influence of intoxicants." By contrast, *former* ORS
4 487.545(2) provided that a BAC over the legal limit "constitutes being under the
5 influence of intoxicating liquor."

6 Consistent with that legislative history, all of the statutory provisions can be
7 given full effect by determining that the requisite proof for a prosecution under ORS
8 813.010(1)(a) is a chemical breath or blood test showing a BAC of .08 percent or higher
9 and determining that a chemical test showing a BAC lower than .08 percent constitutes
10 only indirect evidence that the person is under the influence of intoxicants for
11 prosecutions under ORS 813.010(1)(b) or (c). Those determinations, of course, lead
12 ineluctably to the conclusion that a chemical test showing a BAC lower than .08 percent
13 cannot establish that a person drove with a BAC of .08 percent or higher, and any

"(2) Not less than .10 percent by weight of alcohol in a person's
blood constitutes being under the influence of intoxicating liquor."

ORS 813.300(1) and (2) now provide:

"(1) At the trial of any civil or criminal action, suit or proceeding
arising out of the acts committed by a person driving a motor vehicle while
under the influence of intoxicants, if the amount of alcohol in the person's
blood at the time alleged is less than 0.08 percent by weight of alcohol as
shown by chemical analysis of the person's breath or blood, it is indirect
evidence that may be used with other evidence, if any, to determine
whether or not the person was then under the influence of intoxicants.

"(2) Not less than 0.08 percent by weight of alcohol in a person's
blood constitutes being under the influence of intoxicating liquor."

1 testimony about the import of such a test result (based upon retrograde extrapolation or
2 any other theory) is not relevant for purposes of determining whether the person violated
3 ORS 813.010(1)(a).

4 Furthermore, this determination also comports with the prior decisions of
5 this court. In *State v. O'Key*, 321 Or 285, 308, 899 P2d 663 (1995), this court stated that
6 "the offense of DUII with a .08 percent or more BAC may be proved *only* by a '*chemical*
7 *analysis of the breath or blood of the person* made under ORS 813.100, 813.140 or
8 813.150.'" (Emphasis in original.) The majority correctly notes that the precise issue
9 addressed by this court in *O'Key* was limited to whether the horizontal gaze nystagmus
10 (HGN) test was admissible under ORS 813.010(1)(a) to prove that the defendant drove
11 with a BAC of .08 percent or more, but I think it significant that this court described the
12 universe of available proof under ORS 813.010(1)(a) as limited to a chemical analysis of
13 the breath or blood. The majority opinion distinguishes in this case between an HGN
14 test, which is clearly not a chemical test, and testimony concerning retrograde
15 extrapolation, which the majority concludes is derived from a chemical test. __ Or at __
16 (slip op at 12-13). But in doing so, the majority opinion acknowledges, as it must, that
17 testimony explaining retrograde exploitation analysis is not a chemical test. *Id.* And that
18 is where we draw different lines. While the majority opinion concludes that testimony
19 concerning retrograde extrapolation is admissible to prove a violation of ORS
20 813.010(1)(a), despite the fact that the majority agrees that testimony about retrograde
21 extrapolation is not a chemical test that shows the BAC of the defendant, I conclude, in
22 harmony with this court's express statement in *O'Key*, that only a chemical test that shows

1 that the BAC of the defendant was .08 percent or more at the time of the test is
2 admissible to prove such a violation.

3 The majority also relies in part on this court's decision in *State v. Clark*, 286
4 Or 33, 593 P2d 123 (1979), for support. __Or at __ (slip op at 11). The only issue
5 directly presented in *Clark*, however, was defendant's right to attack the validity and
6 accuracy of the chemical test result that showed that defendant had a BAC of .10 percent
7 or more under *former* ORS 487.540. The narrow issue decided by this court in *Clark* was
8 that,
9 "because the 'chemical analysis' of the blood test of this defendant by the use of a
10 Breathalyzer could 'produce invalid results through human error or chemical or
11 mechanical defect,' the defendant was entitled to attempt to impeach the accuracy of the
12 testimony of the expert witness relating to the results of that test by any competent
13 evidence."
14 286 Or at 43. Here, of course, the testimony that the state wished to present concerning
15 retrograde extrapolation was not in any way intended to impeach the accuracy of the
16 chemical test result; indeed, the testimony necessarily relied upon the accuracy of the
17 chemical test result that showed that defendant's BAC was .064 percent (well below the
18 statutory standard of .08 percent). Nothing expressed by this court in *Clark* addresses the
19 issue presented in this case -- *viz.*, whether evidence that is unrelated to the accuracy of
20 the chemical test result is admissible in a prosecution under ORS 813.010(1)(a).

21 Finally, the majority also notes this court's decision in *State v. Parker*, 317
22 Or 225, 855 P2d 636 (1993). __ Or at __ (slip op at 10). In *Parker*, however, there was

1 no distinction drawn between a prosecution pursued under ORS 813.010(1)(a) and
2 prosecutions pursued under ORS 813.010(1)(b) and (c). *See Parker*, 317 Or at 227
3 (noting that defendant was charged with driving under the influence under ORS 813.010
4 generally). The court then merely noted in passing, in addressing the propriety of a
5 denial of a request for a continuance, that in a prosecution brought under ORS 813.010
6 the state could rely upon the common knowledge that blood alcohol dissipates over time,
7 and that defendant could have prepared to address that issue whether or not the state gave
8 timely notice of its intent to present expert testimony on the matter. *Id.* at 232 n 9. In
9 addition, while this court did also refer to the fact that there was expert testimony
10 presented to establish that defendant's BAC was greater than .08 percent at the time of the
11 accident, based upon a breath test result showing a BAC of .07 percent more than five
12 hours later, that discussion is of no moment here, because the admissibility of that
13 evidence in a prosecution pursued solely under ORS 813.010(1)(a) was not presented or
14 decided in *Parker*. Consequently, this court's decision in *Parker* is also inapposite to the
15 issue presented in this case.

16 As discussed above, I conclude that the text and legislative history establish
17 that the legislature intended prosecutions under ORS 813.010(1)(a) to rely *only* on
18 chemical test results showing that the defendant had a BAC of .08 percent or more at the
19 time of the test. I also conclude that that interpretation of ORS 813.010(1)(a) is
20 consistent with, and not precluded by, this court's prior decisions. Consequently, I would
21 hold that the trial court properly excluded the retrograde extrapolation testimony
22 proffered by the state. I respectfully dissent, therefore, from the contrary determination

1 reached by the majority.

2 Durham and Walters, JJ., join this opinion.

3