“On the Level”

by Oliver Sacks

Text Selection: In his book *The Man Who Mistook His Wife for a Hat*, Dr. Oliver Sacks writes about his experiences working with patients who suffer from unusual neurological disorders. In this excerpt from the book, the chapter “On the Level,” Dr. Sacks explains how he helped one patient recognize that Parkinson’s disease was causing him to walk with an extreme tilt, a condition that had previously gone unnoticed by the patient. He describes the process of working with his patient to devise a level-like gadget to attach to his glasses to help him walk upright. By reading and rereading “On the Level” closely and focusing their reading through a series of questions and discussions about the text, students will explore how Dr. Sacks uses word choice, analogies, and formatting—such as dashes and italicizing words—to convey a highly personal doctor/patient interaction as well as explain scientific background information about his patient’s condition. When combined with writing about the text, students will gain a deeper understanding of how Dr. Sacks expresses his ideas and how he envisions his role as a doctor in a patient’s life.

Workshop Connection: This text delves deeper into the ideas raised in the Workshop Readings and *RDI 1* Stretch Text about how the brain and nervous system function, how scientists study the brain, and how a neurological disorder can affect a person.

Words and Phrases to Know: appalled, cadence, cumbersome, gnarled, homely, incommunicable, knitted, labyrinth, neurology, obscure, paradoxical, Parkinson’s disease, profoundly, prototype, straight as a die, subtle, unlauded, vestibular, Victorians

Workshop Vocabulary: complex*, conscious, data, sensation*, specific


* appears in “On the Level”
“On the Level”

Lesson Overview:
Whole Group:  
- Have students silently read paragraph 1. (5 minutes)
- Read entire text aloud to students. (15 minutes)

Small Group:  
- Lead discussion about paragraphs 1–11, using Guided Questions 1–4. (20 minutes)
- Use QuickWrite and Think (Write)-Pair-Share to encourage active participation by all students.

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<thead>
<tr>
<th>Whole Group: Reading</th>
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| **Introduce the text.** | ¶1 It is nine years now since I met Mr* MacGregor, in the **neurology** clinic of St. Dunstan’s, an old-people’s home where I once [worked], but I remember him—I see him—as if it were yesterday. 
[read the intervening paragraphs] | the **scientific study of** the nervous system and **diseases related to it** |
| - Hand out copies of the entire text. | ¶31 Mr MacGregor’s spectacles became the rage of St. Dunstan’s. We had several other patients with Parkinsonism who also suffered from impairment of tilting reactions and postural reflexes—a problem not only hazardous but also notoriously resistant to treatment. Soon a second patient, then a third, were wearing Mr MacGregor’s spirit spectacles, and now, like him, could walk upright, on the level. | |
| - Announce the title and author of the text. | END | |
| **Have students read independently.** | | |
| - Ask students to read paragraph 1 silently. | | |
| - Point out that definitions are provided for underlined words and phrases. | | |
| **Read aloud the text.** | | |
| - Read the entire text aloud to students, asking students to follow along. | | |
| - Use the **Oral Cloze Routine** to encourage students to read the text as you read it aloud. | | |

* British style/spelling
“On the Level”

Small Group: Text-Based Questioning

(Q1) QuickWrite What clue does the author include to indicate he knows that Mr. MacGregor tilts as he walks before he asks Mr. MacGregor, in paragraph 6, to walk for him?

- Provide sentence starters:
  o To indicate that he already knows that Mr. MacGregor tilts as he walks, the author writes that ____. (“he tilted in” in paragraph 2)

- Be sure students understand that the author knows that Mr. MacGregor tilts as he walks when the author says, “But you don’t feel any tilt?” and “Let’s have a look.”

- Have students discuss what this reveals about the author’s style of interacting with patients: the author is respectful to his patients; he wants to help his patients recognize their own conditions rather than just telling them or diagnosing them (“and I want you to see too”).

Text  Definitions

1. It is nine years now since I met Mr* MacGregor, in the neurology clinic of St. Dunstan’s, an old-people’s home where I once worked, but I remember him—I see him—as if it were yesterday.

2. “What’s the problem?” I asked, as he tilted in.

3. “Problem? No problem—none that I know of . . . But others keep telling me I lean to the side: ‘You’re like the Leaning Tower of Pisa,’ they say. ‘A bit more tilt, and you’ll topple right over.’”

4. “But you don’t feel any tilt?”

5. “I feel fine. I don’t know what they mean. How could I be tilted without knowing I was?”

* British style/spelling.
### Small Group: Text-Based Questioning

(Q2) *Why does the author “videotape” Mr. MacGregor taking “a little stroll”?*

- Help students recognize that Mr. MacGregor has already been told that he tilts (“others keep telling me”), yet doesn’t believe that he tilts (“How could I be tilted without knowing I was?”).
- Guide students to infer that the author thinks Mr. MacGregor has to see himself tilting in order to *believe it*; the author thinks that simply hearing this from others has no effect on Mr. MacGregor.

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<table>
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<tr>
<td>¶6 “It sounds a queer business,” I agreed. “Let’s have a look. I’d like to see you stand and take a little stroll—just from here to that wall and back. I want to see for myself, and I want you to see too. We’ll take a videotape of you walking and play it right back.”</td>
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</table>
### Small Group: Text-Based Questioning

**Q3** What detail does the author include to make it clear to the reader that Mr. MacGregor tilts significantly as he walks?

- Help students identify the detail “his centre of gravity way off to the left, maintaining his balance by the narrowest possible margin.”
- Guide students to understand that “narrowest possible margin” suggests that if Mr. MacGregor tilted any more, he might fall over.
- Have students discuss the degree to which Mr. MacGregor must be suffering from a nervous system disorder if he cannot recognize that he tilts to the point of almost falling over (“See! No problems—I walked straight as a die.”); his problem must be fairly serious.

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<td>¶7 “Suits me, Doc,” he said, and, after a couple of lunges, stood up. What a fine old chap, I thought. Ninety-three—and he doesn’t look a day past seventy. Alert, bright as a button. Good for a hundred. And strong as a coal-heaver, even if he does have Parkinson’s disease. He was walking, now, confidently, swiftly, but canted over, improbably, a good twenty degrees, his centre* of gravity way off to the left, maintaining his balance by the narrowest possible margin.</td>
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<td>¶8 “There!” he said with a pleased smile. “See! No problems—I walked straight as a die.”</td>
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<tr>
<td>¶9 “Did you, indeed, Mr MacGregor?” I asked. “I want you to judge for yourself.”</td>
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*a disease that affects the nervous system, causing shaking, stiffness, and/or slowed movement

an idiom for “completely straight”

* British style/spelling
### Small Group: Text-Based Questioning

(Q4) **Think (Write)-Pair-Share** What does the author say is “the heart of the problem”? Why is it the “heart of the problem”?

- Provide sentence starters:
  - The author says that “the heart of the problem” is _____. (Mr. MacGregor doesn’t “feel” that he tilts)
  - It is “the heart of the problem” because _____. (his inability to feel his tilting indicates that this is a problem of the nervous system; if the problem were caused by something else, like a broken bone, he would likely feel something, like pain)

### Text

<table>
<thead>
<tr>
<th>¶10</th>
<th>I rewound the tape and played it back. He was profoundly shocked when he saw himself on the screen. His eyes bulged, his jaw dropped, and he muttered, “I’ll be damned!” And then, “They’re right, I am over to one side. I see it here clear enough, but I’ve no sense of it. I don’t feel it.”</th>
</tr>
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</table>
| ¶11 | “That’s it,” I said. “That’s the heart of the problem.” | great or completely

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“On the Level”
**“On the Level”**

**Lesson Overview:**

**Whole Group:**
- Have students silently read paragraph 12. (5 minutes)
- Read paragraphs 12–20 aloud to students. (15 minutes)

**Small Group:**
- Lead discussion about paragraphs 12–20, using Guided Questions 1–6. (20 minutes)
- Use Idea Wave and Think-Pair-Share to encourage active participation by all students.

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<td>Revisit the text.</td>
<td>¶12 We have five senses in which we glory and which we recognise* and celebrate, senses that constitute the sensible world for us. But there are other senses—secret senses, sixth senses, if you will—equally vital, but unrecognised,* and unlauded. These senses, unconscious, automatic, had to be discovered . . .</td>
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<td></td>
<td>¶20 I nodded a third time and said, “Yes. Yes. Yes.”</td>
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- Remind students of the title and author of the text.
- Use the Summary Routine or ask a volunteer to summarize what they read the previous day. Provide sentence starters:
  o Oliver Sacks begins his text by _____.
  o He reveals that _____.

**Have students read independently.**
- Ask students to read paragraph 12 silently.
- Point out that definitions are provided for underlined words and phrases.

**Read aloud the text.**
- Read paragraphs 12–20 aloud to students, asking students to follow along.
- Use the **Oral Cloze Routine** to encourage students to read the text as you read it aloud.

* British style/spelling

unnoticed or not praised
(Q1) **Idea Wave** *What does the author say about the “other senses” in paragraph 12?*

- Provide sentence starters:
  - One thing the author says about the “other senses” is that they are ____.
  - He also says that they are ____.

- Possible responses include:
  - “secret”
  - “equally vital” as the recognized five senses
  - “unrecognised”
  - “unlauded”
  - “unconscious”
  - “automatic”
  - “more recently discovered”

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¶12 **We have five senses in which we glory and which we recognise** and celebrate, senses that constitute the sensible world for us. But there are other senses—secret senses, sixth senses, if you will—equally vital, but unrecognised, and unlauded. These senses, unconscious, automatic, had to be discovered. Historically, indeed, their discovery came late: what the Victorians vaguely called “muscle sense”—the awareness of the relative position of trunk and limbs, derived from receptors in the joints and tendons—was only really defined (and named “proprioception”) in the 1890s.

¶12 continued on next page
<table>
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| **(Q2) How does the purpose of the text change in paragraph 12?** | 12 continued And the complex mechanisms and controls by which our bodies are properly aligned and balanced in space—these have only been defined in our own century, and still hold many mysteries. Perhaps it will only be in this space age, with the paradoxical license and hazards of gravity-free life, that we will truly appreciate our inner ears, our vestibules and all the other obscure receptors and reflexes that govern our body orientation. For normal man, in normal situations, they simply do not exist. | seeming to contradict itself  
not very well known |
| • Help students recognize that the author conveys a personal experience working with a patient in paragraphs 1–11, but switches to giving scientific background information about his patient’s condition in paragraph 12. | | |
| • Prompt a volunteer to explain that the five senses “we recognise” are sight, hearing, smell, taste, and touch; all senses that give us information. We are aware of this information and we react to it. | | |
| • Ask what “they” in the last sentence of paragraph 12 refers to (the “secret senses”). | | |
| • Have students discuss what the author means by “they simply do not exist” (we are not aware of “the secret senses”; we don’t actively react to them; we don’t think about them; we are not aware of or consciously reacting to the information the secret senses provide.) | | |
**Small Group: Text-Based Questioning**

(Q3) *What is the meaning of conspicuous* (obvious; clearly noticeable)? *What context clues helped you determine its meaning?*

- Prompt students to review the end of paragraph 12—“they simply do not exist.”
- Ask students to identify a signal word that suggests an opposite situation is about to be described (“yet”) in paragraph 13.
- Help students use these context clues, as well as “absence,” to determine that something that is “conspicuous” is the opposite of something that seems to “not exist.”
- Guide students to recall that Mr. MacGregor’s tilting, a result of one of his “secret senses” becoming “defective,” was “quite conspicuous.”

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**Text**

> Yet their absence can be quite conspicuous. If there is defective (or distorted) sensation in our overlooked secret senses, what we then experience is profoundly strange, an almost incommunicable equivalent to being blind or being deaf. If proprioception is completely knocked out, the body becomes, so to speak, blind and deaf to itself—and (as the meaning of the Latin root *proprius* hints) ceases to “own” itself, to feel itself as itself (see Chapter Three, “The Disembodied Lady”).

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**Definitions**

- not able to be expressed or communicated to others
### Small Group: Text-Based Questioning

(Q4) **What factors constitute the “therapeutic moment” that the author loves to see?**

- Be sure students have determined that “therapeutic” means “healing.” To help them determine its meaning, remind them that the author is a doctor, and his goal is to help or heal patients.

- Help students identify that the factors that constitute the “therapeutic moment” for the author are: 1) the patient “seeing for the first time exactly what is wrong,” and 2) knowing “exactly what there is to be done” about it.

- Assist students in recognizing that both factors must exist for the author to describe the moment as “therapeutic.”

- Guide students to infer that the “therapeutic moment” is clearly an important part of the doctor/patient relationship for the author (“the picture that I love to see”).

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### Text

14 The old man suddenly became intent, his brows **knitted**, his lips pursed. He stood motionless, in deep thought, presenting the picture that I love to **see**: a patient in the actual moment of discovery—half-appalled, half-amused—seeing for the first time exactly what is wrong and, in the same moment, exactly what there is to be done. This is the therapeutic moment.

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### Definitions

- **pullled together**

- **very shocked; upset**
“On the Level”

**Small Group: Text-Based Questioning**

(Q5) *What caused the loss of a secret sense in Mr. MacGregor, in turn causing him to tilt?*

- Help students find the detail, “Can it be knocked out by Parkinson’s disease?”
- Ask students to identify what “it” refers to (the “spirit level in the brain”—or the secret sense).
- Have students point to the specific text that confirms that “Parkinson’s disease” is the ultimate cause of Mr. MacGregor tilting (“Yes. Yes. Yes.” in paragraph 20).

(Q6) **Think-Pair-Share** Review yesterday’s and today’s sections. What are some examples of italics, dashes, and repetition in the text?

- Provide sentence starters:
  - One example of using italics is _______. (“you” in paragraph 4; “could” in paragraph 5)
  - An example of using dashes is _______. (“—I see him—” in paragraph 1; “—none that I know of” in paragraph 3)
  - An example of using repetition is _______. (“I nodded” in paragraphs 16 and 18; “Yes. Yes. Yes.” in paragraph 20)
- Be sure students understand that the author uses these devices to emphasize information.

**Text**

¶15 “Let me think, let me think,” he murmured, half to himself, drawing his shaggy white brows down over his eyes and emphasizing each point with his powerful, gnarled hands. “Let me think. You think with me—there must be an answer! I tilt to one side, and I can’t tell it, right? There should be some feeling, a clear signal, but it’s not there, right?” He paused. “I used to be a carpenter,” he said, his face lighting up. “We would always use a spirit level to tell whether a surface was level or not, or whether it was tilted from the vertical or not. Is there a sort of spirit level in the [brain]?”

¶16 I nodded.

¶17 “Can it be knocked out by Parkinson’s disease?”

¶18 I nodded again.

¶19 “Is this what [has] happened with me?”

¶20 I nodded a third time and said, “Yes. Yes. Yes.”

**Definitions**

*bent; twisted*
“On the Level”

Lesson Overview:
Whole Group:
• Have students silently read paragraph 21. (5 minutes)
• Read paragraphs 21–23 aloud to students. (15 minutes)

Small Group:
• Lead discussion about paragraph 21–23, using Guided Questions 1–5. (20 minutes)
• Use QuickWrite and Think (Write)-Pair-Share to encourage active participation by all students.

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<td>Introduce the text.</td>
<td>¶21 In speaking of such a spirit level, Mr MacGregor had hit on a fundamental analogy, a metaphor for an essential control system in the brain. Parts of the inner ear are indeed physically—literally—like levels; the labyrinth consists of semicircular canals containing liquid whose motion is continually monitored . . .</td>
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<td>¶23 . . . But the precariously balanced Parkinsonian may do so. (One often sees Parkinsonian patients sitting in the most grossly tilted positions, with no awareness that this is the case. But let a mirror be provided, so they can see their positions, and they instantly straighten up.)</td>
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<tr>
<td>Have students read independently.</td>
<td>In paragraphs 12–20, we learned that ____. The author explains how ____.</td>
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<tr>
<td>Read aloud the text.</td>
<td>[read the intervening text]</td>
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a maze
### “On the Level”

**Small Group: Text-Based Questioning**

**Q1** QuickWrite *What is the “fundamental analogy” that “Mr MacGregor had hit on”?’

- Provide a sentence starter:
  - The “fundamental analogy” is **[ ]**. (that the “semicircular canals” in the “inner ear” are like a “spirit level”)

- Remind students that an analogy is a comparison of two things.

- Ask students if they know what a “spirit level” is. Point them to the detail “use a spirit level to tell whether a surface was level or not” in paragraph 15. Then point them to the details “parts of the inner ear are . . . like levels” and “canals containing liquid” in paragraph 21. Guide them to determine that a “spirit level” is a tool that has liquid in it; when the tool is placed on a surface, the liquid indicates whether the surface tilts.

- Have a volunteer identify the phrase (“but it was not these”) that indicates that Mr. MacGregor’s problem was not actually a defect with the “semicircular canals” in his “inner ear.”

- Guide students to understand that the problem was with his “ability to use” what happens in his inner ear. The whole system of the “three secret senses” was not working properly—the “synthesis” was “impaired.”

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<tr>
<td>a maze</td>
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<td>not attractive; simple</td>
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In speaking of such a spirit level, Mr MacGregor had hit on a fundamental analogy, a metaphor for an essential control system in the brain. Parts of the inner ear are indeed physically—literally—like levels; the labyrinth consists of semicircular canals containing liquid whose motion is continually monitored. But it was not these, as such, that were essentially at fault; rather, it was his ability to use his balance organs, in conjunction with the body’s sense of itself and with its visual picture of the world. Mr MacGregor’s homely symbol applies not just to the labyrinth but also to the complex integration of the three secret senses: the labyrinthine, the proprioceptive, and the visual. It is this synthesis that is impaired in Parkinsonism.
“On the Level”

**Small Group: Text-Based Questioning**

(Q2) What is the meaning of “disintegrations”? What context clues helped you determine its meaning?

- Help students understand that the prefix *dis-* means “not.”
- Have students review paragraph 21 to remind themselves that “integration” means “the act of combining into a whole.”
- Guide students to recognize that “disintegrations” means “the processes of coming apart or not working as a combination of elements” or “not working in synthesis” (paragraph 22).

(Q3) How can you tell that the author admires Purdon Martin? What does Martin’s quotation mean?

- Help students identify clues that reveal the author’s admiration for Purdon Martin. The author calls him “great” and describes his book as “remarkable.”
- Guide students to recognize that Martin’s quotation means that one area “in the brain,” or “higher authority,” is in charge, or the “controller” of the body; that our body parts—legs, arms, etc.—aren’t acting independently from each other of their own will or volition.

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¶ 22 The most profound (and most practical) studies of such integrations—and of their singular disintegrations in Parkinsonism—were made by the great Purdon Martin and are to be found in his remarkable book *The Basal Ganglia and Posture* (originally published in 1967, but continually revised and expanded in the ensuing years; he was just completing a new edition when he died recently). Speaking of this integration, this integrator, in the brain, Purdon Martin writes “There must be some centre* or “higher authority” in the brain . . . some “controller” we may say. This controller or higher authority must be informed of the state of stability or instability of the body.”

*British style/spelling*
### “On the Level”

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<td><em>(Q4)</em> <strong>What are the three parts of the “threefold contribution” to standing or sitting upright, or “the maintenance of a stable and upright posture”?</strong></td>
<td>123 In the section on “tilting reactions” Purdon Martin emphasises* the threefold contribution to the maintenance of a stable and upright posture, and he notes how commonly its subtle balance is <strong>upset</strong> in Parkinsonism—how, in particular, “it is usual for the labyrinthine element to be lost before the proprioceptive and the visual.” This triple control system, he implies, is such that <strong>one</strong> sense, <strong>one</strong> control, can compensate for the others—not wholly (since the senses differ in their capabilities) but in part, at least, and to a useful <strong>degree</strong>. Visual reflexes and controls are perhaps the least important—normally.</td>
<td><em>not easily noticed</em></td>
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- Help students recognize that the “labyrinthine element” is a reference to the “labyrinth” of the inner ear that controls balance (paragraph 21), the “proprioceptive” element is the “muscle sense” or the body’s awareness of the “relative position of trunk and limbs” (paragraph 12), and the “visual” means what one can see.
- Prompt a volunteer to identify that the three parts of the “threefold contribution” are balance, “muscle sense,” and sight.

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*British style/spelling*
### Small Group: Text-Based Questioning

#### (Q5) Think (Write)-Pair-Share How does the “threefold contribution” work in a healthy person? What is one effect Parkinson’s disease can have on it?

- Provide sentence starters:
  - In a healthy person, the “threefold contribution” ____ (keeps a person “stable and upright” and one element can “compensate for the others . . . in part . . . to a useful degree” in some situations, such as when we close our eyes and remain “perfectly stable”)
  - One effect of Parkinson’s disease is that ____ (the “threefold contribution” does not work as it should and the elements do not compensate for each other as they should; e.g., “Parkinsonian patients sitting in the most grossly tilted positions, with no awareness that this is the case.”)

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#### Text

23 continued So long as our vestibular and proprioceptive systems are intact, we are perfectly stable with our eyes closed. We do not tilt or lean or fall over the moment we close our eyes. But the precariously balanced Parkinsonian may do so. (One often sees Parkinsonian patients sitting in the most grossly tilted positions, with no awareness that this is the case. But let a mirror be provided, so they can see their positions, and they instantly straighten up.)

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#### Definitions

relating to the vestibules or enclosed spaces in the ear and having to do with balance
**“On the Level”**

**Lesson Overview:**
- **Whole Group:**
  - Have students silently read paragraphs 24–25. *(5 minutes)*
  - Read paragraphs 24–27 aloud to students. *(15 minutes)*
- **Small Group:**
  - Lead discussion about paragraphs 24–27, using Guided Questions 1–6. *(20 minutes)*
  - Use Think-Pair-Share and Think (Write)-Pair-Share to encourage active participation by all students.

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<tr>
<td><strong>Revisit the text.</strong></td>
<td>• Remind students of the title and author of the text.</td>
<td>¶24 Proprioception, to a considerable extent, can compensate for defects in the inner ears. Thus patients who have been surgically deprived of their labyrinths (as is sometimes done) to relieve the intolerable, crippling vertigo of severe . . .</td>
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<tr>
<td>• Use the <strong>Summary Routine</strong> or ask a volunteer to summarize what they read the previous day.</td>
<td>[read the intervening text]</td>
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<tr>
<td>Provide sentence starters:</td>
<td><strong>¶27</strong> He thought again deeply, frowning in concentration—then suddenly his face cleared, and lit up with a smile. “I’ve got it!” he exclaimed. “Yeah, Doc, I’ve got it! I don’t need a mirror—I just need a level. I can’t use the spirit levels <em>inside</em> my head, but why couldn’t I use levels <em>outside</em> my head—levels I could see, I could use with my eyes?” He took off his [glasses], fingering them thoughtfully, his smile slowly broadening.</td>
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<tr>
<td>o In yesterday’s section, Dr. Oliver Sacks describes <strong>how _____</strong>.</td>
<td><em>One important detail he includes is _____.</em></td>
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<tr>
<td>o One important detail he includes is _____.*</td>
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<tr>
<td><strong>Have students read independently.</strong></td>
<td>• Ask students to read paragraphs 24–27 silently.</td>
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<td>• Point out that definitions are provided for underlined words and phrases.</td>
<td><strong>Read aloud the text.</strong></td>
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<tr>
<td>• Read paragraphs 24–27 aloud to students or have a confident student reader read the paragraphs aloud.</td>
<td>• Ask students to follow along as you read the text aloud.</td>
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<td>Small Group: Text-Based Questioning</td>
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<tr>
<td><strong>(Q1) Think-Pair-Share</strong>  What happens to most patients who have the labyrinths of their inner ear surgically removed?</td>
<td>Proprioception, to a considerable extent, can compensate for defects in the inner ears. Thus patients who have been surgically deprived of their labyrinths (as is sometimes done to relieve the intolerable, crippling vertigo of severe Meniere's disease), while at first unable to stand upright or take a single step, may learn to employ and to enhance their proprioception quite wonderfully; in particular, to use the sensors in the vast latissimus dorsi muscles of the back—the greatest, most mobile muscular expanse in the body—as an accessory and novel balance organ, a pair of vast, wing-like proprioceptors. As the patients become practised,* as this becomes second-nature, they are able to stand and walk—not perfectly, but with safety, assurance, and ease.</td>
<td>§24 Proprioception, to a considerable extent, can compensate for defects in the inner ears. Thus patients who have been surgically deprived of their labyrinths (as is sometimes done to relieve the intolerable, crippling vertigo of severe Meniere's disease), while at first unable to stand upright or take a single step, may learn to employ and to enhance their proprioception quite wonderfully; in particular, to use the sensors in the vast latissimus dorsi muscles of the back—the greatest, most mobile muscular expanse in the body—as an accessory and novel balance organ, a pair of vast, wing-like proprioceptors. As the patients become practised,* as this becomes second-nature, they are able to stand and walk—not perfectly, but with safety, assurance, and ease.</td>
</tr>
<tr>
<td>- Provide a sentence starter:</td>
<td></td>
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<td>o Most patients who have had their inner ear surgically removed _____. (are “unable to stand upright” at first; “learn to employ . . . their proprioception,” or “muscle sense,” and are able to “stand and walk” eventually)</td>
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<td>- Prompt a volunteer to identify the sentence that sums up this idea and is, in fact, the main idea of the paragraph (the first sentence—“Proprioception, to a considerable extent, can compensate for defects in the inner ears.”).</td>
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<td><strong>(Q2) What is the meaning of “novel” as used in paragraph 24?</strong></td>
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<td>- Have students identify that the author uses “novel” in reference to “balance organ” in a paragraph about one sense compensating for another.</td>
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<td>- Help students recognize that the “muscles of the back” are part of the “proprioception” element, not the “labyrinth”—or balance—element. So using the back muscles as a tool for balance is unusual.</td>
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<td>- Assist students in concluding that “novel,” as used in the paragraph, means “unusual or new.”</td>
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* British style/spelling
Small Group: Text-Based Questioning

(Q3) **What does the author admire about Purdon Martin, particularly in relation to his patients?**

- Help students identify that the author admires Martin for being “endlessly thoughtful and ingenious,” always learning “from his patients,” being someone who felt that “patient and physician were coequals.” He admires how Martin fulfills his role as the doctor in the doctor/patient relationship.
- Have students review paragraphs 1–11 and guide them to recognize that the same descriptions could be made about how the author interacts with his own patients—the author is a lot like Martin, and probably sees him as a mentor, or guide, for how he should interact with his patients.

(Q4) **What, to the author’s “knowledge,” had Martin never “devised”?**

- Guide students to identify that, to the author’s “knowledge,” Martin had never “devised a prosthesis for the correction of” the tilting that sometimes results from Parkinson’s disease.
- Help students determine that the author makes this statement as a way to segue to the next part of the text, where his patient comes up with the idea of a prosthesis; and as a way to emphasize how ingenious or clever his patient’s idea was—even a brilliant doctor such as Martin hadn’t thought of it.

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Text

25 Purdon Martin was endlessly thoughtful and ingenious in designing a variety of mechanisms and methods that made it possible for even severely disabled Parkinsonians to achieve an artificial normality of gait and posture—lines painted on the floor, counterweights in the belt, loudly ticking pacemakers—to set the cadence for walking. In this he always learned from his patients (to whom, indeed, his great book is dedicated). He was a deeply human pioneer, and in his medicine understanding and collaborating were central: patient and physician were coequals, on the same level, each learning from and helping the other and *between them* arriving at new insights and treatment. But he had not, to my knowledge, devised a prosthesis for the correction of impaired tilting and higher vestibular reflexes, the problem that afflicted Mr MacGregor.
“On the Level”

Small Group: Text-Based Questioning

(Q5) What does the author say that Mr. MacGregor did in paragraph 26? Why does he include this description?

- Assist students in identifying that the author describes how Mr. MacGregor “tilted his head” and “asked for a mirror” to see how he moved.
- Help students understand that the author is “showing” the reader how Mr. MacGregor arrived at his idea for a prosthesis; he is showing the patient behaving “quizzically, experimentally,” and acting like a scientist, researching his own experiences with the disease.
- Be sure students have determined by this point that “prosthesis” means “an artificial body part.”

(Q6) Think (Write)-Pair-Share What two ideas about the doctor/patient relationship expressed in previous paragraphs are represented in the scene described in paragraph 27?

- One idea represented in the scene is ____. (“the therapeutic moment” the author loves “to see”—the patient seeing “what is wrong” and “what there is to be done”—paragraph 14)
- Another idea represented in the scene is ____. (the “patient and physician . . . each learning from and helping the other,” one of the qualities the author admires in Martin—paragraph 25)

Text

©26 “So that’s it, is it?” asked Mr MacGregor. “I can’t use the spirit level inside my head. I can’t use my ears, but I can use my eyes.” Quizzically, experimentally, he tilted his head to one side. “Things look the same now—the world doesn’t tilt.” Then he asked for a mirror, and I had a long one wheeled before him. “Now I see myself tilting,” he said. “Now I [can] straighten up maybe I could stay straight . . . But I can’t live among mirrors, or carry one round with me.”

©27 He thought again deeply, frowning in concentration—then suddenly his face cleared, and lit up with a smile. “I’ve got it!” he exclaimed. “Yeah, Doc, I’ve got it! I don’t need a mirror—I just need a level. I can’t use the spirit levels inside my head, but why couldn’t I use levels outside my head—levels I could see, I could use with my eyes?” He took off his glasses, fingered them thoughtfully, his smile slowly broadening.

Definitions
“On the Level”

Lesson Overview:

Whole Group:
- Have students silently read paragraphs 28–29. (5 minutes)
- Read paragraphs 28–31 aloud to students. (15 minutes)

Small Group:
- Lead discussion about paragraphs 28–31, using Guided Questions 1–6. (20 minutes)
- Use QuickWrite and Think (Write)-Pair-Share to encourage active participation by all students.
- Assign writing homework.

Whole Group: Reading

Revisit the text.
- Remind students of the title and author of the text.
- Use the **Summary Routine** or ask a volunteer to summarize what they read the previous day. Provide sentence starters:
  - Yesterday, we read how the author _____.
  - We also learned that his patient _____.

Have students read independently.
- Ask students to read paragraphs 28–29 silently.
- Point out that definitions are provided for underlined words and phrases.

Read aloud the text.
- Read paragraphs 28–31 aloud to students or have a confident student reader read the paragraphs aloud.
- Ask students to follow along as you read the text aloud.

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Text

28 “Here, for example, in the rim of my glasses . . . This could tell me, tell my eyes, if I was tilting. I’d keep an eye on it at first; it would be a real strain. But then it might become second-nature, automatic. Okay, Doc, so what do you think?”

[read the intervening text]

31 . . . several other patients with Parkinsonism who also suffered from impairment of tilting reactions and postural reflexes—a problem not only hazardous but also notoriously resistant to treatment. Soon a second patient, then a third, were wearing Mr MacGregor’s spirit spectacles, and now, like him, could walk upright, on the level.”

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“On the Level”

Small Group: Text-Based Questioning

(Q1) QuickWrite What does the author think is a “brilliant idea”?

- Provide a sentence starter:
  - The idea that the author thinks is brilliant is ______. (Mr. MacGregor’s idea to attach a level to his “glasses” as a way to make a prosthetic “labyrinthine” sense)

- If students have difficulty answering, help them understand that paragraph 28 is a continuation of the conversation detailed in yesterday’s reading of paragraphs 26–27 in which MacGregor arrived at his idea of using a level “outside” his head.

(Q2) How does the author switch his use of pronouns in paragraph 30?

- Have students scan paragraphs 1–29, and help them identify that in those paragraphs the author uses “I” to refer to himself and “him” and “he” to refer to Mr. MacGregor—they are two separate entities, not a unit.

- Guide students to recognize that the author uses only “we” in paragraph 30, and now refers to himself and Mr. MacGregor as a unit, or two people working together.

Text

¶28 Here, for example, in the rim of my glasses . . . This could tell me, tell my eyes, if I was tilting. I’d keep an eye on it at first; it would be a real strain. But then it might become second-nature, automatic. Okay, Doc, so what do you think?”

¶29 “I think it’s a brilliant idea, Mr MacGregor. Let’s give it a try.”

¶30 The principle was clear, the mechanics a bit tricky. We first experimented with a sort of pendulum, a weighted thread hung from the rims, but this was too close to the eyes, and scarcely seen at all. Then, with the help of our optometrist and workshop, we made a clip extending two nose-lengths forward from the bridge of the spectacles, with a miniature horizontal level fixed to each side. We fiddled with various designs, all tested and modified by Mr MacGregor.

¶30 continued on next page
**Small Group: Text-Based Questioning**

(Q3) **Why does the author compare Mr. MacGregor to a “steersman eyeing the binnacle (control panel) of his ship”?**

- Help students understand that a “steersman” steers, or directs the route, of a ship.
- Have students discuss how Mr. MacGregor is now the “steersman,” of his own body; in the same way that a steersman steers his boat, Mr. MacGregor is now in control of how he walks.

(Q4) **The author states that using the glasses became an “unconscious” effort. What else has the author described as “unconscious”? What is the effect of using the word again here?**

- Help students find the author’s use of “unconscious” to describe the “secret senses” in paragraph 12.
- Guide students in recognizing that by repeating the word here to describe Mr. MacGregor’s use of his glasses, or prosthetic “labyrinthine” sense, the author emphasizes that the prosthetic works well; using it is an “unconscious” effort, just as how our bodies use the “secret senses” in an “unconscious” way.

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<table>
<thead>
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<th>Definitions</th>
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<td>an early model used to test the design of something</td>
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¶30 continued In a couple of weeks we had completed a prototype, a pair of somewhat Heath Robinsonish spirit spectacles: “The world’s first pair” said Mr MacGregor, in glee and triumph. He donned them. They looked a bit cumbersome and odd, but scarcely more so than the bulky hearing-aid spectacles that were coming in at the time. And now a strange sight was to be seen in our Home—Mr MacGregor in the spirit spectacles he had invented and made, his gaze intensely fixed, like a steersman eyeing the binnacle of his ship. This worked, in a fashion—at least he stopped tilting; but it was a continuous, exhausting exercise. And then, over the ensuing weeks, it got easier and easier; keeping an eye on his “instruments” became unconscious, like keeping an eye on the instrument panel of one’s car while being free to think, chat, and do other things.
Mr MacGregor’s spectacles became the rage of St. Dunstan’s. We had several other patients with Parkinsonism who suffered from impairment of tilting reactions and postural reflexes—a problem not only hazardous but also notoriously resistant to treatment. Soon a second patient, then a third, were wearing Mr MacGregor’s spirit spectacles, and now, like him, could walk upright, on the level.
### Informational Essay

Review the text. Then write an informational essay explaining one of the following key ideas developed in the book excerpt:

- How Dr. Sacks interacts with his patient
- How our senses keep us standing upright
- How Parkinson’s disease can affect our senses’ ability to keep us standing upright

Begin your essay with a controlling idea that makes your point about the topic. Include three relevant facts, examples, or data from the book excerpt to support your controlling idea. Use a fact or example from the Workshop Readings if possible.

End your essay with a conclusion that follows logically from the details and explains why the topic is important.

### Argument Essay

Review the text. Then write an argument essay telling whether you think Dr. Sacks considers Purdon Martin to be a role model for how he interacts with patients and handles his own career.

Start your essay by making a claim about the issue. Support your claim with three convincing reasons or relevant data from the book excerpt. Point out a weakness in an opposing argument.

End your essay by restating your claim and making a recommendation to readers.
## “On the Level”

### Extension Reading

Have students go to the library and look up books and articles about other people who have suffered from Parkinson’s disease.

If students have difficulty finding people to read about, suggest books and articles about:

- Muhammad Ali, boxer
- Salvador Dali, artist
- Michael J. Fox, actor
- Brian Grant, basketball player
- Janet Reno, Attorney General

Ask students to compare how Parkinson’s affected the people they read about in their library sources to how it affected Mr. MacGregor.

### Extension Research

Point out to students that tilting is only one symptom—or effect—of Parkinson’s disease.

Have students research Parkinson’s disease. Direct them to use multiple print and digital sources to find information about:

- who it affects
- typical symptoms
- treatment

Have students summarize their findings in a brief report that they present to the class.

### Extension Project

Remind students that Oliver Sacks is both a writer and a well-known and successful doctor in the field of neurology.

Have students create a biography of Dr. Sacks, including where he grew up, his education, some of the topics of his books, and some of the cases he has worked on.

Encourage students to use visuals in their biographies.

Have students present their projects—either in digital or print form—to the class.