

# Gowers' memory

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In his delightful biography<sup>1</sup> of Gowers, Macdonald Critchley compares him to a naturalist (Gowers indeed wrote a small monograph on mosses):

Gowers brought to the bedside all his skill as a natural historian. To him the neurological sick were like the flora of a tropical jungle, and his keen eye and collector's flair enabled him to identify, arrange and classify. . . . To his botanist's bent he added the virtues of diligence and orderliness, probably to an obsessional degree.

And, of course, an extraordinary memory, as is obvious to anyone who reads his great *Manual*.<sup>2</sup> But exceptional though this was, Gowers felt it important, even crucial, to supplement it with extremely full (indeed verbatim) note-taking—and to this end devised a shorthand system that would enable him to write three times as much as one could in long-hand, to record the actual words of his patients, the minutest details of their experiences, as well as all his own observations. The very act of writing, Gowers felt, reinforced memory, impressed things on the mind. Thus supplemented, he thought, memory should be near infallible—as infallible as the records of photography and phonography. He was enthusiastic to the point of evangelism about the use of shorthand (which, confusingly, he called phonography).<sup>\*</sup> In this way, he felt, he could transcend some of the deficiencies of perception and memory.

Models comparing the operations of memory to those of mechanical recording go back to antiquity—the brain was conceived as receiving impressions like soft wax, then hardening like adamantite to hold them permanently—and were particularly popular in the late 19th century, when they may have drawn some of their force from the spectacular development of photography and phonography at the time. Thus it is not surprising that Gowers, when he came to write his *Manual*,<sup>2</sup> accepted such ideas, and sought to see

them in anatomic and physiologic terms. Memory, for Gowers, resided in structural changes in the brain, and he describes learning in almost Hebbian terms:

There is a physical side to memory as to other mental processes. All functional action of nerve-elements is attended by molecular changes in them. . . . A state is left, for a time, in which the same functional action occurs more readily; there is a diminution of resistance in the combination of nerve-elements concerned, and this residual disposition is increased by repetition. This constitutes the basis of motor training. . . . A similar condition appears to constitute the physical basis of memory, properly so called. (*Manual*, Volume II, p. 99)

"Recollection," for Gowers, involved ". . . a revival of the original activity. . . [a revival] of a past image." Such brain traces, he conceived, like photographic ones, were in their essence fixed and permanent, sitting in the brain, inertly, until "revived" by recollection. It is therefore intriguing and ironic that Gowers, who was so firm a believer in fixed memory-traces, on at least one occasion (and perhaps more) was to publish strikingly *different* versions, or recollections, of his own clinical experiences.

I came across such a disparity wholly by chance recently, when I had occasion to re-read his descriptions of a most unusual complex seizure given in the 1881 edition of his *Epilepsy*<sup>4</sup>:

The patient was an intelligent man, twenty-six years of age, and all his attacks began in the same manner. First there was a sensation in the left hypochondriac region 'like pain with a cramp'; then, this sensation continuing, a kind of lump seemed to pass up the left side of the chest, with a 'thump, thump,' and when it reached the upper part of the chest it became a

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\* In December 1894, Critchley<sup>1</sup> notes, Gowers founded (and became the first president of) the Society of Medical Phonographers, and most of Gowers' writings between 1894 and 1902 were published, in shorthand, in the *Phonographic Record*, its journal (where, Critchley adds, "[they] have since remained concealed from the general medical public.").

Foster Kennedy, one of his pupils, tells the following story<sup>3</sup>:

Gowers was once seen—and it probably happened often—to stop his coachman in crowded Southampton Row, having fastened his eye on a likely-looking young man hurrying on his lawful occasions along the pavement. Gowers climbed out of his carriage, white beard waving, stumbled up to him—his gait was unsteady—clutched him by the arm, and glaring at him with his frightening flaming fierce blue eyes said, "Young man, do you write shorthand?" To which the shocked man answered, "No, I don't." Whereupon Gowers dropped his arm, saying bitterly, "You're a fool, and will fail in life." He then clambered abruptly back into his carriage.

'knocking,' which was heard as well as felt. The sensation rose up to the left ear, and then was like the 'hissing of a railway engine,' and this seemed to 'work over his head.' Then he suddenly and invariably saw before him an old woman in a brown-stuff dress, who offered him something which had the smell of Tonquin beans. The old woman then disappeared, and two great lights came before him—round lights, side by side, which got nearer and nearer with a jerking motion. When the lights appeared the hissing noise ceased, and he felt a choking sensation in the throat, and lost consciousness in the fit, which, from the description, was undoubtedly epileptic. He also had attacks of petit mal, which consisted of a vision of a dull-red ball to the right, in the lower part of the field.

The unusualness, the richness, the exotic flavor of this seizure caused it to stick in his mind, and 23 years later (in his 1904 *Subjective Sensations of Sight and of Sound*<sup>5</sup>) he retells the story of the Tonquin seizure:

One strangely complex aura, which preceded every fit the patient had, deserves mention. It began in a simple form. First the beating of the heart was felt, and this ascended the chest to the head, where it seemed to become audible as a sound; then two lights appeared before the eyes and seemed to approach by jerks, synchronous with the pulsation. The lights then disappeared, and were replaced by the figure of an old woman in a red cloak, who offered something that had the smell of Tonquin beans; then consciousness was lost.

But now, we see, various differences have appeared. Some of these differences are trifling, but one is fundamental: the vision of the old woman, in the 1881 account, *precedes* the jerking lights, whereas, in the 1904 account, it *follows* them. Indeed Gower emphasized this in his two accounts—commenting (in 1881) that "a visual sensation of very high specialization—a visual idea. . . gives place to a much less elaborate sensation"; but (in 1904) "the interesting fact that the more elaborate sensation, the vision of the woman, *followed* the more simple one, the two lights" (his italics). Moreover, where the beating sounds precede the jerking lights in the 1881 description, the two have become "synchronous" by 1904.

What are we to make of this striking difference between these accounts?

First, it is incompatible with the notion of fixed memory traces in the brain—if recollection consisted merely of the reactivation of these, it would be more reliable, it would not "slip" in this categorical way. But Gowers' memory *did* alter in the course of a quarter-century. His later memory, clearly, is not a reproduction; it has been transformed—it is, manifestly, a *reconstruction*. And, one must add, an un-

conscious reconstruction—there is no evidence that Gowers himself was aware of the change.

This indeed is what happens when remembering stories—they get changed, for better or worse, with each repetition. It was experiments with such serial storytelling, and with the remembering of pictures, that convinced Bartlett, in the 1920s and 1930s, that there is no such entity as "memory," but only the dynamic process of "remembering" (he is always at pains, in his great book *Remembering*, to avoid the noun and use the verb). He writes<sup>6</sup>:

Remembering is not the re-excitation of innumerable fixed, lifeless and fragmentary traces. It is an imaginative reconstruction, or construction, built out of the relation of our attitude towards a whole active mass of organized past reactions or experience. . . . It is thus hardly ever really exact. . . . and it is not at all important that it should be so.

This sort of imaginative construction, or reconstruction, determined in part by attitude, forces us to think of remembering in terms very different from those of fixed traces and their revival. It forces us, instead, to think of remembering as inherently dynamic, and as determined by the individual's attitudes or "values" at the time. (This view of remembering now finds the strongest support in Gerald Edelman's neuroscientific work,<sup>7</sup> his demonstration of the brain as a ubiquitously active system where a constant shifting is in process, and everything is continually "recategorized" and updated.)

Gowers, one fancies, would have been fascinated by this later work—he died relatively young, sadly, just at the time when Sherrington and Head were revolutionizing neurology—but might have taken umbrage at Bartlett's saying that it was not important for remembering to be really exact. Certainly, in the case of the Tonquin seizure, while it was of no importance whether the old woman was wearing a cloak or dress, or whether it was red or brown, it was extremely important to know whether she appeared before or after the two lights. And it is precisely here that the two descriptions, the two recollections, are in contradiction. Which of the two accounts, one wonders, is the more accurate, the more reliable? Which is the closer to "truth" or "reality"? The 1881 story, or the story of 23 years later? One might at first suppose the original to be closer, especially if Gowers took shorthand notes. But this is not what we see. The second description has no loss of detail or information (as with the fading of a photograph); it is as sharp as the original—but it is *different*: different not just in detail, but in orientation, and in concept. And different, probably, *because* of orientation and concept.

But can one maintain that the first description is exempt from these influences, independent of any orientation or concept? Perceptions themselves are categorizations or constructs—there is no way of apprehending reality *except* by "constructing" it, and

constructing it in accordance with one's views and values at the time. (This, indeed, must apply to the patient's own account and memories. Perhaps indeed in the confusion of his seizure, the patient himself never knew what came first—the hissing, the jerking lights, the old woman, the smell of beans.)

My own guess is that the second account is closer to the truth—partly because in the intervening years there was a change in Gowers' attitude. He was in a fierce, Jacksonian mood in 1881, intent on perceiving all pathology as “dissolution,” as descent from higher to lower. He was much more unbuttoned, less dogmatic, 23 years later—perhaps, therefore, under less pressure to distort the truth. But more to the point, it *sounds* more plausible, in terms of the likelihood of seizure foci and seizure spread. I have presented the two accounts to several colleagues, and most of them, after reflection, come to the same conclusion. Orrin Devinsky (personal communication) hypothesizes three possible seizure routes: seizure spread from a primary occipital focus (this is suggested by the simple partial visual seizures also present); spread from a primary insular and mesial temporal focus (the rising epigastric sensation at the start of the seizure); or from a cortical region lying between these—all of which could lead to the symptom pattern described in 1904. It is less easy to account for the symptom pattern Gowers described originally.

What is certain is that Gowers' revision followed years of deepening experience and reflection (he was 36 years old when he published *Epilepsy*, and in his 60th year when *Subjective Sensations* came out) and that, not just here, but throughout his life and works, he revised, reconstructed, recategorized, to the end. It is this that gives his works their charm and unexpectedness, their sense of novelty and freshness, even (or especially) when he returns, as he loves to, to the observations of his early years. Such revision, such reconstruction, is of the essence in living memory, and what distinguishes it from any mechanical device.

One has to wonder how Gowers himself would have responded if someone (for example, Hughlings Jackson) had confronted him with his two discrepant versions. He would have been taken aback, for a moment, I think, then laughed—it would not have surprised him; it might indeed have released a flood of anecdotes about the continual entrance of imaginative elements into all of his own memories, and those of his patients and colleagues too. At a human level, as a clinician, Gowers knew this well and would have been more and more prepared to ac-

knowledge it, to accept it, as he grew older. But even as a younger man writing the *Manual*, echoing his generation's notions about fixed memory traces, he indicates (in one of the most stunning of his contradictions) that a radically different idea of memory is also hovering in his mind. Thus in the very paragraph where he talks about “molecular changes” in nerve “elements,” he seems to turn against all notions of memory as a thing-in-itself, and writes “there is probably no special faculty of memory, physical or psychical, apart from the general cerebral and intellectual processes.”

Here, then, surrounded by sentences that contradict it, is a thought that is startling, and original, and new—indeed radical in the context of the mechanistic physiology of his time. For Gowers, if we are not misinterpreting his words, is here seeing memory as part of an ongoing and evolving inner life, and, as such, an activity that is anything but permanent and fixed, but one that will change, reorganize, reconstruct, endlessly, in the light of new experience, new needs. We see a glimmer here, a premonition, of what Edelman means, when he writes, “Perception is creation, memory recreation,” and sees all remembering as recategorization.<sup>7†</sup> But such a thought was not to become explicit for a century.

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† There is a parallel here with the young Freud, who while writing (in his *Project*) about memory in much the same terms as Gowers, was also writing (to Fliess) about *Nachträglichkeit* (“retranscription”). Freud's concept of *Nachträglichkeit*, and its relation to Edelman's notion of memory as “recategorization” has been explored by Arnold H. Modell.<sup>8</sup>

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