

▶ of having killed 100,000 sharks, and specializes in hunting the biggest he can find. As he tries to satisfy the fishing needs of his clientele, you begin to see through his business-oriented eyes. Yet any appreciation soon disappears when Eilperin notes his propensity for targeting a thresher shark birthing ground, or his desire to catch and kill pregnant hammerheads because they are larger.

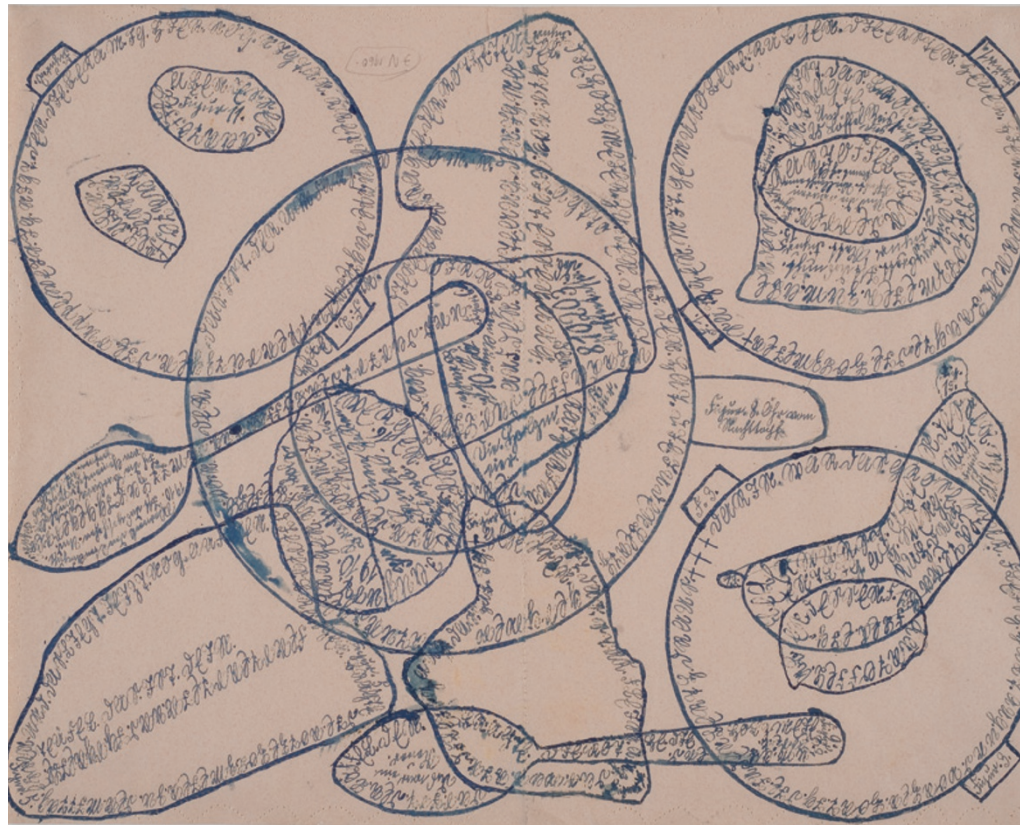
In one of the most insightful chapters — the best I've read on the subject — Eilperin describes how the burgeoning demand for shark-fin soup in Asian markets is a leading cause of the shark's global population decline. Many sharks are now caught and killed solely for the value of their fins — up to US\$2,000 per kilogram. The edible yet less-valuable carcass of the still-living shark is sometimes simply thrown back into the water. Eilperin meets elusive fin buyers and sellers, who state that if the sharks disappear from the sea altogether, "there's nothing we can do about it".

With up to \$57,000 being paid for a single basking shark fin, this is big business. Sampling the fabled Chinese wedding soup, the author pulls a tasteless fin strand out of her bowl and concludes that the expensive delicacy is a scam. The chefs she interviews agree, admitting that the fin has no culinary value. A dish that is about style, not substance, may be leading to the demise of entire species.

Although *Demon Fish* is more about people's attitudes to sharks than fish biology, Eilperin cleverly introduces science into her account. She describes the advocacy positions taken by some marine biologists attempting to stop recreational shark fishing, and relates sometimes-comical first-hand observations of biologists trying to tag sharks. Curious by its absence, however, is any wider discussion of the huge impact of accidental commercial by-catch on shark populations. The author makes the point that the most effective conservation efforts are now being made by market forces such as ecotourism, rather than through abstract environmental idealism.

From the ethics surrounding shark fishing to the delightfully creative methods of shark-conservation groups, including auctioning off naming rights for new species, *Demon Fish* captures most of the key issues affecting sharks today. ■

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Barbara Suckfüll's 1910 ink drawing incorporates words describing her life as a psychiatric patient.

PSYCHOLOGY

Asylum art

The Prinzhorn museum shows how psychiatric patients' works have inspired artists, finds **Giovanni Frazzetto**.

During 1919–21, in a psychiatric clinic in Heidelberg, Germany, the young psychiatrist and art historian Hans Prinzhorn collected more than 5,000 works of art created by about 400 patients. Forgotten for more than 50 years after being condemned as 'degenerate art' during the Nazi regime, the collection was catalogued in the 1980s and housed in a museum in the clinic in 2001.

This year the Prinzhorn Collection Museum celebrates its tenth anniversary, and the 125th anniversary of Prinzhorn's birth, with an exhibition. A selection of original pieces from the collection are paired with works by modern artists who have drawn inspiration from them — including Paul Klee, Ernst L. Kirchner and Max Ernst.

The responses comment on the creativity of the patients, the psychiatric establishment itself and past understandings of mental pathology. Some of the reactions do not quite compete with the authenticity of the original works; others are compelling and eloquent.

Von Kirchner bis heute (From Kirchner To Today)

Prinzhorn Collection
Museum and elsewhere,
Heidelberg, Germany.
Until 14 August.

Drawings and an installation by contemporary artist Peter Riek revive the story of farmer Barbara Suckfüll, who, at the age of 50, started to hear voices. In 1910, under their command, she began to draw outlines of dishes and cutlery. Writing along and in between the outlines, Suckfüll captures in words her everyday life in the Heidelberg asylum: what she thought, did or ate, her rows with the nurses and what the voices told her. Every word is followed by a full stop, resulting in a dense net of marks that dissolves into abstraction.

Also on show is a thoughtful series of drawings by Dorothee Rocke, one of the first artists to explore the collection when the museum opened in 2001. She dedicates her work to a 1912 sketch by inmate Hyacinth Freiherr von Wieser, in which

an uncertainly outlined face blends into a landscape annotated like a map. Rocke's drawings dismember the image and evolve into forms that recall elements of asylum life, such as the cells in which patients were held.

Prinzhorn saw the creations of the mentally ill, who were uninfluenced by shifting trends in the art world, as a raw depiction of an individual's condition and a valuable

way to externalize the psyche to the outer world. The exhibition is not an enquiry into the origins of mental disorders, but into their lived experience. Noticeable among the contemporary works is the absence of any reference to the brain.

At a time when psychiatry is undergoing huge change — the genetic revision of diagnoses, the search for biological markers

and the use of functional magnetic resonance imaging — this exhibition reminds us of the irreplaceable ability of personal narratives to enter the depths of the mind through doors that are not open to biological analysis. ■

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NEUROSCIENCE

Literary inspiration

Jorge Luis Borges' writings on memory foretell modern research, **Gabriel Kreiman** finds.

One of the most creative literary thinkers of the last century was Argentinian author Jorge Luis Borges (1899–1986). In his stories, Borges stretched the meaning and basic rules of space, time and infinity. He pondered instruments that could view the entire Universe, the effects of allowing one second to instantly become one year, infinite labyrinths and endless cyclic books. Borges was also intrigued by memory, its functions and its malfunctions.

A book in Spanish (English translation pending), *Borges y la Memoria* (*Borges and Memory*) by neuroscientist Rodrigo Quian Quiroga, eloquently links Borges' ideas with the latest research on memory. Focusing on the protagonist of Borges' 1942 essay, *Funes el Memorioso* (*Funes the Memorious*), and examining real experiments and consequences, Quian Quiroga offers a fascinating account of the connections between science and art.

The scientific study of memory often focuses on how we learn, how information is stored in circuits of neurons and how short-term memories are consolidated into long-term ones. Less attention is paid to the important ability to generalize and to forget. Borges explored both through the fictional character of Funes, who receives a brain injury after falling from a horse.

Because of his prodigious memory, Funes always knows the precise time without having to consult his watch, learns languages after merely checking a dictionary and can enumerate all the people he has ever met. Although these abilities seem admirable, there is a catch. Every leaf of every tree that he has ever seen remains in his mind. It disturbs him that a front view of a face is assigned the same identity as the profile view. He is almost incapable of understanding or creating abstract ideas.

NATURE.COM
For more on *Funes*
and *the Memorios*:
go.nature.com/5de4vm

Quian Quiroga re-examines Funes, and real people with similar amazing memory



Borges y la Memoria
RODRIGO QUIAN QUIROGA
Sudamericana: 2011 (in Spanish). Pp65 (US\$15)

capacities, from a modern neuroscientific perspective. We now know that the hippocampus has a crucial role in memory formation. In the 1950s, neurosurgeons observed that bilateral removal of the hippocampus for clinical purposes had profound effects on patients' abilities to establish memories. A landmark case study described patient H. M., who could easily recollect information from before his hippocampal surgery but had difficulty retaining subsequent experiences. He would meet a new person and hold a pleasant conversation, yet the next day he would have no recollection of what the person looked like or what they had spoken about.

Several important investigations ensued. Behavioural studies in rodents and

non-human primates characterized the effects of lesions in the medial temporal lobe and confirmed the central role of the hippocampus in learning. Listening in on the activity of neurons by inserting thin needles into rodents' brains revealed that hippocampal neurons can change their connection strengths in ways that correlate with learning and memory formation. Similar recordings in humans uncovered neurons in the hippocampus that showed sparse and invariant responses that are reminiscent of abstract elements of perceptions and memories.

Despite these breakthroughs, our scientific understanding of memory processes is in its infancy. We do not know how the hippocampus and cortical structures communicate to allow memory consolidation; how circuits of neurons store long-term information; whether there are capacity limits to human memory; or how to apply the properties of fault-tolerance, abstraction and speed so nicely implemented by the human brain to the design of other circuits.

Quian Quiroga's thoughtful book reminds us that elucidating the mechanisms that lead to generalization and abstraction constitutes a key step towards characterizing human intelligence. As Borges put it: "To think is to forget a difference, to generalize, to abstract". ■

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CORRECTION

Patricia Churchland's review (*Nature* **475**, 35; 2011) incorrectly stated that huskies run at a pace of more than 5 kilometres (3.2 miles) a minute. The pace should have been '3.2-minute miles'.



The mind's labyrinth intrigued Jorge Luis Borges.