

# The Illness of Vincent van Gogh

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## ABSTRACT

Vincent van Gogh (1853–1890) was a wonderfully accomplished artist whose work is now widely appreciated. He created a great number of masterpiece paintings and drawings in just one decade devoted to art. His productivity is even more remarkable when considered in the context of his debilitating illness. He suffered from medical crises that were devastating, but in the intervening periods he was both lucid and creative. He left a profound, soul-searching description of his jagged life in his correspondence, which provides the basis for the present analysis. An inherited metabolic disease, acute intermittent porphyria, accounts for all of the signs and symptoms of van Gogh's underlying illness. On this 150th anniversary of the birth of Vincent van Gogh it is appropriate to revisit the subject and to analyze the lack of organized skepticism in the popular media about other diagnoses.

**Keywords:** Vincent van Gogh, inherited disease, acute intermittent porphyria, medical crises, absinthe, alcohol, thujone, camphor, pinene

Vincent van Gogh was born in the presbytery of the Dutch Reformed Church of Zundert, in the southern region of The Netherlands, at 11:00 am on March 30, 1853. The obstetrician did not have far to run – the office of Dr. Cornelis van Ginneken was right next door. There were no problems on that day. They would tumble out later. An eventful life was underway and it would last just thirty-seven years and four months.

Today, van Gogh is on everybody's list of outstanding artists and in every catalog of creative people. He continues to find an appreciative audience of young and old, novice to connoisseur, all untrammelled by differences in cultural background or artistic education. It was not always so, at the time of his suicide in 1890

the accomplishments of Vincent were acknowledged by only a small cadre of friends and followers. No more than a handful of critics had put pen to paper. Formal recognition during his life was restricted to exchanges of paintings with other artists, gifts to friends and doctors, acceptance of canvases toward financial obligations, three sets of commissions, a drawing sold in The Hague, a few items sold in Paris, a self-portrait sold to a London dealer in 1888, and one sale from an influential *Les Vingt* exhibition (1890) in Brussels.<sup>1</sup> He died still writing of hopes for future recognition, but indeed it was a deep disappointment for an artist who had been confident enough to follow the precedents of Michelangelo Buonarroti, Raphael Santi, and

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<sup>1</sup>The sale of van Gogh's artwork during his lifetime was obviously meager, but this list should replace the popular misunderstanding that Vincent "sold only one painting."

Rembrandt van Rijn by using his first name alone for professional purposes.<sup>2</sup>

Posthumous praise for his creations roused attention but surely it has been the complementary interest in extraordinary aspects of the person, especially his underlying illness, that has made Vincent van Gogh a household name. His jagged life was marked by early years of uncertainty, interludes of luckless love affairs, wrenching episodes of self-mutilation, and crises of debilitating illness. Creative people who have shaken the world a bit are generally surrounded by popular contemplations about their physical and mental health. And in the visual arts the individual who makes the advance is all too often suspected of some individual abnormality, as if there were a need to invent an exotic explanation for the novelty. But in the case of van Gogh there were certainly enough unusual episodes to raise the question of mental derangement even during his lifetime. Given the extraordinary influence of the man on succeeding generations there are ample justifications for serious studies on whether medical problems affected his life or his artwork.<sup>3</sup>

## THE PROBLEM

Superficial interest and comment on van Gogh's illness grew with every exhibition of his work. It became an industry with its own history. As a result, the typical newspaper article or exhibition essay declared that there were one hundred and one diagnoses on van Gogh's illness!<sup>4</sup> Six or seven examples were proffered, all embraced with equal weight by the reporter and without the benefit of a word of evaluation. Hopes of finding a better perspective in journal articles and books have not always been filled because the majority of the authors promoted pet ideas with selective

inclusion of what they believed to be supporting data. I believe, axiomatically, that any reasonable working hypothesis must address all of the medical information; this includes family history and the artist's lifestyle, as well as the underlying illness. The interaction between congenital disease and exacerbation factors is central to our argument.

After Dr. Loretta Loftus and I published our working hypothesis of acute intermittent porphyria for Vincent and discussed the differential diagnosis (Loftus & Arnold, 1991) we were surprised to find that some critics, who did not offer any assessment of the facts we presented, were quick to respond with undocumented personal preferences in newspaper stories or letters-to-the-editor. Their epistles promoted alternatives that they claimed were "more easily understood" or "more common disease entities," as if poor Vincent should become a poster-boy for the disease currently in vogue for creative people. Some made passing comparisons with other famous persons but usually without data on any of them. In some quarters the same weight was given to an opinion as to a well-referenced analysis.

A large section of my subsequent book (Arnold, 1992) was devoted to van Gogh's underlying illness. Therein I produced tables of Vincent's own references (from his letters) organized by particular medical signs and symptoms, thus offering future scholars the benefit and convenience of a concordance. In the chapter "Other Hypotheses" I started with the assumption that all the authors were sincere but found that only a few advanced the field. It was also apparent to me that so many of those suggestions were loosely conceived and poorly documented, but they landed in the literature and in some cases had been widely quoted and requoted (errors to the third degree) without benefit of common sense. A blatant example is the silly claim of digitalis poisoning as a *cause* of van Gogh's underlying illness.

Art historians and others were quick to remark upon van Gogh's occasional "high yellow" palette. This was hardly a revelation because the artist himself had written about his exaggerated use of yellow pigments and had coined the phrase. Vincent's fondness for yellow can be gauged from his letters in the 1887–1890 period wherein he mentions the yellow of his surroundings more

<sup>2</sup>The paintings he signed (a small fraction of the total) were simply inscribed *Vincent*. I will use Vincent, van Gogh, and Vincent van Gogh interchangeably.

<sup>3</sup>Some commentators, mostly from the art history ranks, have denied the necessity to explore these questions. The possible reasons are analyzed later.

<sup>4</sup>I have encountered no more than a dozen serious proposals, but within each category there have been numerous renditions and rediscoveries.

than any other color (Arnold, 1992). But Lee (1981) was bold enough to propose that van Gogh suffered from a xanthopsia, wherein the patient has a reversible view of the world as if through a yellow filter, and that Vincent had been overexposed to digitalis, as a decoction of the foxglove plant. There is no doubt that too much digitalis will have this effect; the observation dates from the original dissertation (Withering, 1785); but there is no evidence that van Gogh ever took the drug, and artistic preference is still the best working hypothesis for the high yellow canvases (Arnold & Loftus, 1991). Also, and more important in the present context, it is absurd to include digitalis poisoning in lists of possibilities to explain all his neurologic and psychotic problems that culminated in suicide.

The goal of the present review is fourfold: to evaluate our current understanding of van Gogh's illness; to analyze some of the cultural and social aspects that impinge on (and interfere with) this field of van Gogh scholarship; to recommend a higher level of organized skepticism; and to promote the operational concept that the canons of proof associated with the hard sciences should also be applied to biography.

## THE IMPORTANCE OF THE LETTERS

Theo van Gogh (1857–1891), who provided the emotional and financial supports for his brother's final decade, had realized the value of Vincent's correspondence as a rich source of artistic and human interest. But he died the next year after Vincent's suicide, and it took Theo's widow, Johanna van Gogh-Bonger (1862–1925), another twenty-four years to decipher, translate, and arrange the letters before the first reasonable compilation appeared. In the preface, Johanna gave an additional reason, "It would have been an injustice to Vincent to create interest in his personality ere the work to which he gave his life was recognized and appreciated as it deserved." (van Gogh-Bonger, 1978, xiii)

The decision by Johanna van Gogh-Bonger to publish in English was based on her insightful anticipation of a world-wide audience for both Vincent the man and the huge amount of artwork

that she inherited. She was well versed in the language and was also assisted in English phrasing and idiom by Helen Apel Johnson (Johnson, 1934). For many years the only edition of the letters that approached completeness was in English, and that had a profound effect upon the history of van Gogh scholarship.

Vincent's namesake nephew, V.W. van Gogh (1890–1978), identified as "Vincent the Engineer," followed his mother in the activities of preserving the art work of his Uncle and organizing the copious correspondence, for which he anticipated the research potential by stating in his introduction that, "the letters . . . are the only genuine source of details on his [Vincent's] life" (van Gogh, 1978, xi). During our 1990 conversation, Dr. Albert Lubin, professor of psychiatry and a van Gogh commentator (Lubin, 1972), made a special point about Vincent's nephew being very much the "amateur psychologist" and a supporter of this type of enquiry. Unfortunately, in my opinion, Vincent the Engineer also endorsed some of the more mystical interpretations of the artist's life.<sup>5</sup>

The three volumes of letters, memoirs, and editorial comments (van Gogh, 1978) are an important social, medical, cultural, and literary compilation. The descriptions of illness by the patient himself are central to our subject.<sup>6</sup> In this review all references from *The Complete Letters*

<sup>5</sup>Dr. Humberto Nagera, another psychiatrist with direct contact, recently spoke to me about the Engineer being at odds with Paul-Louis Gachet (1873–1962), the son of Dr. Paul-Ferdinand Gachet (1828–1909). The father was Vincent's last attending physician. Paul-Louis was a seventeen-year-old eyewitness commentator on Vincent's final months in Auvers-sur-Oise, whereas the Engineer had to rely on information that was at best second-hand. One wonders whether the enmity of van Gogh's nephew for young Gachet encouraged a splinter group that found fault with Dr. Gachet's management of Vincent's case and later criticized the whole Gachet family for exploitation of his art legacy. Their argument remains unconvincing and flies in the face of the generous donations (in 1949, 1951, and 1954) of van Gogh paintings to the state by Paul-Louis Gachet and his sister Marguerite (1869–1949).

<sup>6</sup>Most van Gogh commentators will not argue in public about the necessity of reading *The Complete Letters*, but it is no small undertaking (1,809 pages in all) and one may wonder how many have.

will be noted, parenthetically, by letter numbers as they appear in the English edition of 1978. They overshadow the brief notes and register entries (Tralbaut, 1981) that have survived attending physicians in The Hague (unidentified hospital-doctors), Eindhoven (Dr. Van der Loo), Antwerp (Dr. Cavenaille), Paris (Drs. Rivet and Gruby), Arles (Drs. Rey and Urpar), St. Rémy (Dr. Peyron), and Auvers (Dr. Gachet). It seems inconceivable that Dr. Paul Gachet (1828–1909) kept no records, yet no journal or diary of patient visitations has been forthcoming from his office in the home at Auvers-sur-Oise.<sup>7</sup> Biographical notes on all of the above physicians, as well as the influence of the home-remedies of Francois-Vincent Raspail (1794–1878), have been published (Arnold, 1992).

#### MEDICAL SUMMARY

Vincent's ailment was characterized by episodes of acute mental derangement and disability which were separated by intervals of lucidity and creativity. Moreover, attending physicians, family, friends, and the artist himself were all surprised and encouraged by the rapidity of the recoveries after each crisis (van Gogh-Bonger, 1978). His serious illness developed late in the third decade, as evidenced by his concern with "the possibility that [my] family might take steps to deprive me of the management of my affairs and put me under guardianship" (letter 204). There was a family history of mental illness (Lubin, 1972; Tralbaut, 1981; Arnold, 1992). His underlying complaint was characterized by frequent gastrointestinal problems (letters 448, 530, B4, etc.), and at least one bout of constipation that required medical intervention (Tralbaut, 1981, pp. 177-8). The

condition caused fits with hallucinations, both auditory and visual, (letters 592, W11, etc.) and evoked partial seizures (Tralbaut, 1981, p. 276). Periods of incapacitating depression and physical discomfort were severe and grave enough to provoke self-mutilation and eventual suicide (van Gogh-Bonger, 1978). Some of his bouts of sickness may have been associated with fever (letter 206) and sexual impotence (letter 506). His ailment was exacerbated by overwork (letter 173), malnutrition and fasting (letters 440, 571), environmental exposure (letter B15), excessive ingestion of alcoholic beverages (letter 581, etc.), especially absinthe (letter A16), and a proclivity for camphor and other terpenes (Arnold, 1988). The symptoms were palliated during institutionalization with better diet, alcohol restriction (letters 595, 599), and administration of bromide therapy (letter 574). In spite of their severity he did not experience any permanent, functional disability after any attack (Lubin, 1972; Tralbaut, 1981; Arnold, 1992). The reader is referred to Arnold (1992) for a much fuller treatment. In the paragraphs that follow I shall emphasize and explain specific aspects of van Gogh's illness that are central to our working hypothesis and also dismissive of so many other hypotheses from the past.

#### AGE OF ONSET

In 1882, Vincent entered the city hospital at Brouwersgracht (a section of The Hague, in The Netherlands) with a gonorrhoeal infection, for an anticipated stay of no more than 14 days (letter 206). However, the hospital register (Tralbaut, 1981) indicated that Vincent was admitted June 7 and was not discharged until July 1 (a total of 25 days). To the surprise of his doctors, things took a turn for the worse after about 14 days, and Vincent complained by letter on June 22, of a "dreadful weakness" and wondered "if there had been some complication that would make things worse" (letter 208). He was moved to a new ward. The symptoms were only briefly described by Vincent but it extended his stay in the hospital for another 11 days. Was it a complication or a paroxysm?

<sup>7</sup>Son and daughter maintained the residence after the doctor's death in 1909, and they were renowned for the care with which they preserved their father's medical instruments and memorabilia. They had no children and were survived by distant relatives. Rumor has it that somewhere along the way all of Dr. Gachet's records were intentionally destroyed "to protect the privacy of his patients." His views survive only in the form of interesting anecdotes, and indirect reports with poor documentation of time or place.

There was a bizarre supplement. Van Gogh claimed that the attending physicians were willing to attest to his sanity (letter 206) if it were challenged again by his father. This statement is startling at first encounter but information taken from other letters indicates that his father had considered having him committed to an asylum in 1880 and again in 1881 (Arnold, 1992; letter 204; and letter 158 as amended by Hulsker, 1990). The hospitalization in The Hague took place when van Gogh was 29 years old. First indications of neuroses and psychoses occurred at age 27 (according to his father's assessment). First expression of serious mental problems thus occurred late in the third decade of Vincent's life.

### SIX MAJOR CRISES

The last two years of van Gogh's life included six well-documented medical crises with serious mental problems. The period under discussion, October 1888 to July 1890, is shown in Figure 1, which depicts calendar months (center line), sequential locations (bottom line), and the crises (stippled rectangles above the time line). Van Gogh's suicide is marked with a Roman cross.

The utility and power of the graphical presentation derive from the multiplicity of facts depicted and, in addition, from the visual summary (the Gestalt). Thus we can see that the durations of the crises are variable (days, weeks, or months) and there is no discernible trend (the succeeding crises neither shorten nor lengthen in a regular manner). The five periods between major attacks show neither consistency nor trend. Their lengths were 38, 148, 116, 21, and 26 days.

The range is large; the mean happens to be 70 days (standard deviation = 58 days).

Vincent was a patient (voluntary inmate) at Saint Paul de Mausole Asylum at St. Rémy for just over a year (May 8, 1889 to May 16, 1890), although the initial plan had been for only three months. The attending physician, Dr. Théophile Peyron (1827–1895), made occasional, spare notations in the register. Towards the end he wrote that "the patient [van Gogh] . . . experienced during his stay in this institution several [medical] attacks with a duration of two weeks to a month." In reality, during the St. Rémy period with Dr. Peyron, the durations were 45, 7, 7, and 65 days in chronological order. The discrepancy suggests that Dr. Peyron was writing from memory, at some distance from the events. Van Gogh himself had not kept accurate records.

In letter 631 Vincent wrote to brother Theo, "I pointed out to [Dr. Peyron] that such attacks . . . have always been followed by three or four months [i.e. 90–120 days] of complete quiet. I want to take advantage of this period to move [from St. Rémy to Auvers]" The actual numbers were  $70 \pm 58$  days (see above). His last crisis at St. Rémy ended April 29, 1890. It is remarkable that a safe period of three months (Vincent's intuitive but unsupported prediction) would literally terminate on July 29, 1890! The suicidal act (possibly inspired by an impending crisis) was committed on July 27.

Each crisis had an abrupt onset and, at the end of days or weeks, a swift resolution. In some cases the artist even used words with the following implications "one day fine – the next day, down with sickness" and "yesterday I was too sick to write – today I pick up the pen." It is worth

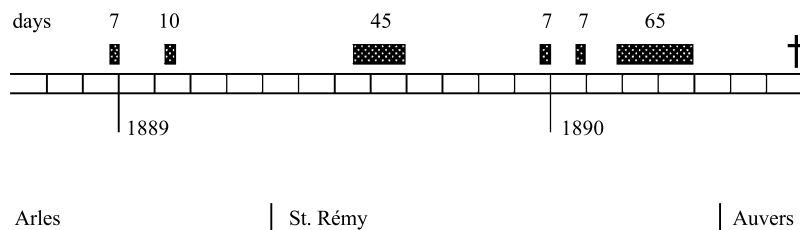


Fig. 1. Time course of six major crises suffered by Vincent van Gogh. Details are given in the text.

recalling how desperate the early prognosis about the December 1888 crisis had been. After Augustine Roulin (1852–1930) visited the hospital at Arles on the 27th, Vincent had increasing neurologic problems. The following day her husband Joseph Roulin (1841–1903) was unable to see him because van Gogh was suffering from aphasia. And then, on the last day of December, to the pleasant surprise of doctors and friends, the patient made a recovery so rapid and complete that Rev. Salles could report that he found him “calm, in a state which revealed nothing abnormal” (van Gogh-Bonger, 1978, xlvi). By the first week of January Vincent was moving around the hospital and conversing freely with Roulin and others, and even cautioning Theo not to alarm his mother and sister Wil. unduly (letter 569). On January 7, he returned to his home in Arles (made famous by his painting “The Yellow House”) and that day declared to his mother and sister that “there is a chance that there will be nothing the matter with me for a long time to come” (letter 569a).

The periods between major attacks were remarkably normal. The lucidity with which the patient comprehended and wrote letters, discussed his condition with physicians, weighed the possibilities for the future, and maintained the quality of his art work, are all evident. From all indications (van Gogh, 1978; Tralbaut, 1981;

Pickvance, 1984, 1986; Arnold, 1992), Vincent did not write letters and did not paint during crises. Unfortunately, this did not prevent future romantics (see for example Schnier, 1950; Navratil, 1959) from *seeing disease* in his art work!

Potential precipitants of eight crises are summarized in Table 1; documentation will be provided later.

The course of van Gogh’s illness is very instructive in approaching a retrospective diagnosis. The features are a guide to a working hypothesis that can then be either strengthened or challenged by further data. Hence any reasonable suggestion must first accommodate the kinetics and time course of van Gogh’s illness, and I would encourage organized skepticism in examining how poorly the observed data fit with ideas from the past. For example, we may ask whether a proposed medical entity usually presents with rapid (of the order of twenty-four hours) onsets and resolutions, or does the patient with the syndrome under discussion tend to drift through days or weeks into a debilitating episode and then later slowly emerge? Are the intervening periods marked by complete lucidity and impressive productivity or is there an indication of a cumulative neurological deficit and a mounting struggle to perform? Are the observed periods of

Table 1. Precipitating Factors According to Arnold (1992).

Date of crisis	Location	Precipitants
1880	The Borinage (Belgium)	Fasting or general neglect of nutrition are possibilities <sup>a</sup>
June 1882	The Hague (Holland)	Gonorrheal infection <sup>b</sup>
December 1888	Arles (France)	Alcohol (especially absinthe)
February 1889	Arles (France)	Camphor, fasting, alcohol (especially absinthe)
July–August 1889	St. Rémy (France)	Alcohol (especially absinthe) consumed in Arles during a social visit
December 1889	St. Rémy (France)	Exposure to turpentine <sup>c</sup>
January 1890	St. Rémy (France)	Alcohol (especially absinthe) consumed in Arles during a social visit
February–April 1890	St. Rémy (France)	Alcohol (especially absinthe) consumed in Arles during a social visit. This crisis actually started in Arles

Note. <sup>a</sup>Poorly documented, but related to the concerns of van Gogh’s father.

<sup>b</sup>We refer to the “complication” that followed the primary infection.

<sup>c</sup>Expression of a pica (Arnold, 1988) for terpenes and terpenoid compounds: camphor, pinene (in turpentine), thujone etc. from absinthe.

pronounced illness for van Gogh compatible with a candidate disease, or would one expect minutes or hours – months or years? With any of these other proposals, would attacks be precipitated by seemingly unrelated factors such as fasting, microbial infection or xenobiotics? All the while we must bear in mind that Vincent's organized care during the medical crises of the last two years was practically limited to bed rest, one prescribed drug (potassium bromide), good nutrition, and restriction of alcoholic beverages. During van Gogh's hospitalizations the attending doctors, nuns, and other attendants were essentially engaged in sympathetic nursing and patient-protection, in response to observation and concern.

### THE ROLE OF ABSINTHE

Artists painted and poets personified; men and women embraced the ritual of presentation as well as the appearance, taste, and excitement of the liqueur called absinthe. Some of the most creative people of the nineteenth century were included. The aesthetics of absinthe drinking contributed to its popularity. Nevertheless, one looks beyond ethanol to the mood-altering chemicals that were unique to this alcoholic beverage in order to rationalize the volumes consumed in some quarters (Arnold, 1989). There was a fifteen-fold per capita increase in France from 1875 to 1913, when the national annual consumption attained a massive 9.7 million U.S. gallons. Whenever you have this many people imbibing a particular beverage, there must be more to it than poetry and attractive colors. In the department of Bouches-du-Rhône, which includes van Gogh's southern venues of Arles and St. Rémy, the annual consumption was an impressive 2.45 liters per head, which was more than four times the national average (Schmidt, 1915).

### VINCENT VAN GOGH AND THE INDIVIDUAL RESPONSE

Some years ago, while perusing the letters of Vincent van Gogh, I was intrigued by the chemical connection between absinthe constituents

(such as the toxic compound called thujone) and some other terpenoid compounds in his life. These exposures involved Vincent's use of massive amounts of camphor to combat insomnia, an attempt to drink essence of turpentine (pinene), and references to his nibbling at oil colors (mixed with turpentine). The possibility of an interaction became more compelling when I read Sollmann (1948) on thujone and camphor, wherein he remarked that the convulsions induced in experimental animals are antagonized by bromide, while the threshold is lowered by nicotine. While institutionalized in Arles, van Gogh's crises were ameliorated by taking bromides and decreasing smoking. Accordingly I suggested that van Gogh had developed an affinity or a pica for terpenes, the documented examples being thujone, camphor, and pinene (Arnold, 1988).<sup>8</sup> This would help to explain some of the strangest of van Gogh's acts during his last two years – his attempts to eat his paints and to drink turpentine and kerosene – which were previously regarded as absurdities and unrelated.

The response to any drug or xenobiotic depends upon a variety of factors not least of which the nutritional status of the subject. For example, an increased toxicity of camphor and related compounds is noted during fasting and is attributed to a compromise in glucuronic acid formation (Sollmann, 1948).<sup>9</sup> Infections and underlying illness also play critical roles in determining the individual's response to drugs.

There are several indications in his letters and in painted objects that Vincent developed an "affinity" for absinthe. He painted *The Night Cafe* on the spot, staying up three nights in a row and sleeping during the day (letter 533). It is tempting to speculate that he had a glass or two during the execution of this painting; he certainly had access, and the landlord was apparently pleased with the whole event. Apart from the

<sup>8</sup>Pica comes from the Latin for magpie, a bird who carries away odd objects. In medical terminology it refers to compulsive eating of non-nutritive substances and has been ascribed to various disorders including malnutrition.

<sup>9</sup>Camphor is secreted in the urine as hydroxycamphor glucuronide.

possibility of this special case, we do not imply that van Gogh painted while intoxicated.

There has been much discussion on the *amount* of absinthe (and other alcoholic beverages) consumed by Vincent in Paris, Arles, St. Rémy, and Auvers. At one extreme we have Jan Hulsker who steadfastly maintained that “Vincent was not a drinker” (Hulsker, 1990). In an earlier publication (Arnold, 1988) I described a pastel by Toulouse-Lautrec and mentioned that it depicts Vincent “partaking of a glass” of absinthe. Hulsker (1990, pp. 401–404) objected to “partaking” and insisted on the static message that Vincent only sits before the glass. That Toulouse-Lautrec chose to depict Vincent with a glass of absinthe suggests to me that it was a common enough circumstance, and that Vincent drank absinthe. We feel that van Gogh was not in the habit of simply decorating his table “with a glass of absinthe in front of him” as Hulsker would have it (Hulsker, 1990, p. 322). That commentator maintains the isolated position that there is no evidence that van Gogh was fond of absinthe, and he also denies all the statements and anecdotes about his drinking problem. Alas, Hulsker defeats his own hypothesis in several places, not least of which when he suggests that Vincent’s lack of recall of the ear-cutting episode was “because drinking had caused him to black out” (Hulsker, 1990, p. 322).

At the other extreme we have those *reporters with a list* who would include absinthe abuse as a free-standing explanation for all of Vincent’s problems. Other commentators, who had been told that their initial hypotheses didn’t accommodate all of van Gogh’s signs and symptoms, subsequently invoked absinthe as a rider. I provided a concordance on Vincent’s references to alcohol, including letters in which he expressed fear of becoming an alcoholic (Arnold, 1992, p. 79).

Paul Gauguin (1848–1903) lived with van Gogh during the two months running up to Vincent’s first crisis in Arles. Anecdotes suggest that Gauguin consumed at least as much absinthe as van Gogh, but he did not exhibit the same medical problems. If so many were drinking absinthe, why did his neighbors (letter 579) regard Vincent’s behavior as so bizarre? The

explanation that has escaped most reviewers is that Vincent was abnormally sensitive to absinthe, even in the amounts associated with social drinking, because of his congenital illness. Absinthe is but one factor in the “environmental” impact on Vincent’s underlying illness; it also comes under the category of “lifestyle.” Hemphill (1961) deserves much credit for being the first to consider absinthe as an external chemical influence on van Gogh. Vincent himself seemed to be approaching this idea when he wrote, “it seemed to be caused more by some outside influence than by something within myself” (letter 605). Loftus and Arnold are convinced that it was the underlying illness of acute intermittent porphyria that made Vincent so sensitive to absinthe and malnutrition.

#### ACUTE INTERMITTENT PORPHYRIA (AIP)<sup>10</sup>

AIP is one member of a class of metabolic abnormalities, the porphyrias, which are characterized by the excessive production of porphyrins, or related compounds (Waldenström, 1957; Kappas et al., 1989). Individuals who suffer from these diseases are prone to excrete elevated concentrations of these same compounds in their urine and feces. The abnormal excretion per se is of no intrinsic medical import but it is a reflection of elevated concentrations circulating within the body, and therein lies the potential for cutaneous photosensitivity (due to porphyrins), neurological abnormalities (due to porphyrin precursors), or both. In the case of AIP, all of the symptoms are neurological and the specific, overly-produced compounds are  $\delta$ -aminolevulinic acid and porphobilinogen. These are intermediates in the metabolic pathway to porphyrins, which in turn are used in the biosynthesis of the heme of hemoglobin, and other heme-containing proteins. “Acute” refers to the rapid onset, and abrupt cessation, of expressed symptoms. (The underlying cause of AIP is present from birth, so in that sense it is chronic.)

<sup>10</sup>Please consult my book (Arnold, 1992) for a much fuller discussion of acute intermittent porphyria. Only the most salient primary references will be given here.



“Intermittent” refers to the periodicity, which is typical, and emphasizes the distinct periods of normalcy which intercede between the episodes of illness.

Symptoms rarely occur before puberty; the peak decade for onset of symptoms is from age 20 to 29 (somewhat later for males than females) but the disease sometimes remains latent throughout a lifetime (Waldenström, 1957). Tabulations of the most common hallmarks emphasize abdominal pain and other gastrointestinal complaints, symptoms referable to the peripheral and central nervous systems, and signs of autonomic neuropathy including tachycardia and hypertension. Porphyrin-induced hypertension can cause early-onset renal failure (Laiwah et al., 1983). Bladder dysfunction may result in urinary retention (Laiwah et al., 1983; Kappas et al., 1989). Effects on optic nerves or the occipital lobes have been documented for AIP cases (Ridley, 1969). Sexual impotence (Kappas et al., 1989) has occasionally been reported. Premonitory symptoms include restlessness and irritability; attacks develop rapidly; resolution may occur in days or sometimes weeks, in an unpredictable fashion. Seizures do not always attend severe crises, but when they do many antiseizure drugs, with the notable exception of bromides, may adversely affect the outcome (Bonkovsky et al., 1980; Moore, 1980).

The unpredictable nature of the disease with respect to both onset of crises and outcome makes an acute attack of AIP particularly treacherous. It can be one of the most terrifying experiences imaginable. Patients can become almost completely paralyzed in severe cases. They are unable to breathe, swallow or communicate properly, yet remain conscious for some time, all the while suffering pain, being aware of their plight, and wondering if it will ever end. The most common cause of death from AIP is respiratory paralysis.

Most importantly, the expression of neurological and other symptoms depends upon lifestyle and exposure to precipitating factors. Early examples of AIP were revealed as a response to new drugs; initially the hypnotic Sulfonal (2,2-bis(ethyl sulfonyl) propane), later barbiturates; and subsequently many other drugs, alcohol, and sundry organic compounds (Moore, 1980). Some steroid metabolites precipitate attacks, and endog-

enous changes may account for some crises at puberty and the earlier onset with females. Other exacerbating factors include infections and malnutrition (Kappas et al., 1989). Low-carbohydrate and low-protein diets are especially detrimental (Welland et al., 1964) and fasting can precipitate an attack of porphyria (Knudsen et al., 1967). A study in Scotland indicated an association between smoking (nicotine is metabolized via cytochrome P450) and the induction of repeated attacks in patients already diagnosed with AIP (Lip et al., 1991). Even an excess of coffee may be a problem because caffeine is also porphyrogenic (Moore, 1980).

#### VINCENT VAN GOGH AND AIP

All of the hallmarks of Vincent’s illness can be accommodated within this overview of AIP. The most important and well documented are the gastrointestinal complaints, neurological disturbances, age of onset, jagged time course, and the exacerbations caused by inadequate nutrition and absinthe abuse. Other aspects such as sore throats, eye problems, fevers, a bout of aphasia in the Arles hospital, and impotence, have other possible causes but are all compatible with underlying AIP. Van Gogh’s smoking habit may have contributed to recurrent attacks. Vincent’s urinary tract infection in The Hague may have precipitated an AIP crisis leading to the “complication” and extended hospitalization at that time. It is also possible that his urinary retention recorded at that time was exacerbated by an AIP attack.

Arnold (1988) suggested that van Gogh’s fondness for absinthe developed into a pica for terpenes, the documented examples being thujone, camphor, and pinene. It is worth noting that 1,8 cineole, a constituent of crude camphor and wormwood oils, is a proven precipitating agent for AIP (Bickers et al., 1975). Van Gogh used reckless doses of camphor oil against insomnia (letter 570) and absinthe contained a variety of essential oils including wormwood. Bonkovsky and Arnold have shown that camphor, thujone, and pinene are porphyrogenic (Bonkovsky et al., 1992). The combination of overexposure to camphor, absinthe abuse, and fasting or

malnutrition would be injurious for anyone, but devastating for someone with AIP.

Loftus and Arnold (1991) believe that all recorded signs and symptoms of Vincent's illness can be accommodated by acute intermittent porphyria. Arnold (1992) presented cases of AIP from the 20th century that had analogies to the illnesses of Vincent, Theo, and their sister Wil. (1862–1941). It behooves proponents of other hypotheses to provide similar case histories, complemented with the diagnostic insights of modern medicine, to either support or damage their alternatives.

### THE BIOCHEMICAL LESION IN AIP

Almost any cell in the human body can engage in synthesis of heme because it is not only vital to hemoglobin but also for the cytochromes involved in so many aspects of metabolism. The biochemical pathway to heme consists of eight enzymes and an exquisite control mechanism. A partial deficiency (about half of normal) of enzyme (catalyst) number three (porphobilinogen deaminase) in this sequence is the underlying cause for the manifold derangements of the AIP patient under crisis. The organ of primary concern for this inherited disease is the liver, where two thirds of the heme that is produced is incorporated into the various types of cytochrome P450. An even larger proportion attains during the induction of P450's, which attends the liver's encounter with xenobiotics. The AIP patient has a vulnerable heme pathway. The neurological problems associated with medical attacks are a consequence of upsetment of the heme pathway and the toxic accumulation of two intermediate compounds,  $\delta$ -aminolevulinic acid (ALA) and porphobilinogen.

Because porphobilinogen deaminase is not rate-limiting to the overall pathway, 50% of normal is sufficient for unstressed AIP patients. This explains the lack of symptoms for latent AIP patients and the intervening periods of normalcy for patients who have experienced periods of sickness. It is the first enzyme in the pathway, ALA synthetase, that is normally rate-limiting. Therein lies the major control feature because heme (the end product of the pathway) causes both a repression and an inhibition of ALA synthetase. When the heme

concentration of liver cells is depleted, the effective amount of ALA synthetase may be increased over ten-fold. Under those circumstances the "partial road block" at enzyme number three for AIP patients is felt, and toxic levels of the preceding compounds are produced.

Ingested compounds that are metabolized via cytochrome P450's in the liver deplete the heme pool and induce the synthesis of ALA synthetase. These include alcohol, many drugs, and many xenobiotics (Moore, 1980). The van Gogh terpenes (camphor, thujone and pinene) can be added to that growing list (Bonkovsky et al., 1992). On the other hand, synthesis of ALA synthetase can be decreased by high glucose intake, thus helping to explain the ameliorating effect of a high carbohydrate diet on AIP attacks and the adverse effect of malnutrition or fasting (Kappas et al., 1989).

More extensive discussions of the heme pathway are given elsewhere (Kappas et al., 1989; Arnold, 1992) and further pursuit of the biochemistry is not appropriate to this review. However, I would like to offer an hydraulic model of the control mechanism to assist the non-chemical reader. The diagram on the left of Figure 2 represents each intermediate compound (a,b,c... heme) as a solution in a cylinder being acted upon by an enzyme (exit tube) as it passes on to the next vessel. The AIP patient has about half the normal amount of the third enzyme (exit partly closed by the bold arrow). But the overall flow is steady thanks to regulation of the first enzyme (the float mechanism senses the level of the heme pool). The diagram on the right depicts the consequence of depleting the heme pool (pulling the plug): the activity of the first enzyme increases greatly (increased drop-size in the model) and now the partial block at the third enzyme (in the AIP patient) comes into play. Compounds c and d accumulate and will spill-out (X).

Only under a crisis does the AIP patient excrete large amounts of  $\delta$ -aminolevulinic acid (compound c) and porphobilinogen (compound d) in the urine. Even then the freshly voided urine is of normal color, but with time these compounds polymerize to form porphobilin which imparts a brown or red (the color of porphyry) pigmentation to aged specimens. The final color is influenced by concentration, pH, light, oxygen and temperature.

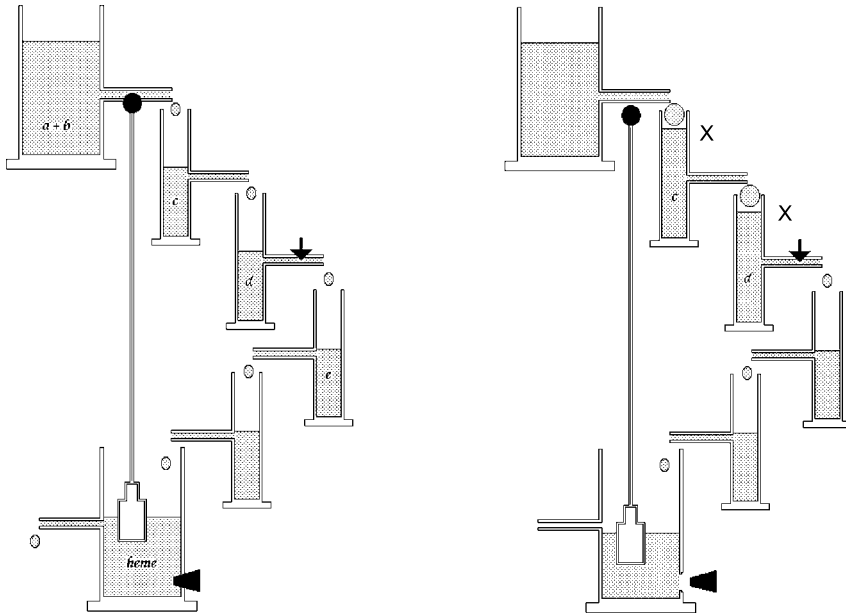


Fig. 2. An hydraulic model for the control mechanism in the heme pathway. Details are given in the text.

The propitious availability of a porphyric urine sample together with the low-tech “windowsill test” can be very instructive in the diagnosis of AIP.

Urine which has aged internally due to bladder dysfunction may already be discolored when released with a catheter, although the color is sometimes mistaken for urinary tract bleeding. In contradistinction to the claim that “port wine urine” is the faithful telltale sign of AIP, it is worth emphasizing that many 20th century carriers with documented medical attacks have never remarked upon abnormally colored urine because it was either not saved or not aged. Dark or red urine is not mentioned in the published van Gogh letters but this really does no damage to the AIP hypothesis.<sup>11</sup>

<sup>11</sup>Critics of the AIP hypothesis for Vincent have occasionally pretended that this was a serious deficiency. It is negative evidence at best but can be rationalized. Vincent’s accommodations were often primitive by today’s standards; for example, the “Yellow House” in Arles had no toilet and he used the facilities at the hotel next door (letter 480). He relieved himself in the field while painting. Moreover, even if he encountered reddish urine he may well have attributed it to blood, given his experiences with catheters and bougies at The Hague (letter 209).

Barker and Estes (1912) were the first to note that AIP runs in families. The extensive studies of Waldenström (1937) in Sweden firmly established the inherited nature of the disease. The disease follows an autosomal dominant pattern of inheritance; if one parent is a carrier then on the average 50% of the children will bear the defective gene (Kappas et al., 1989). However, the penetrance is variable, so that in some families only a fraction of the carriers actually express signs and symptoms of the disease (Gates, 1946).

Vincent’s mother died at 88, having led a seemingly healthy life. His father, the Reverend Theodorus van Gogh, died at 63; his studies for the church had been interrupted by serious illness; he was judged not to have been in very good health most of his life (Tralbaut, 1981). It is believed that he died from a stroke and, because hypertension is present in over half of AIP patients (Goldberg, 1985), this underlying disease would be one of many possibilities compatible with that cause of death. Of Vincent’s parents the father may be the more likely (obligate) carrier of AIP, but this is little more than an educated guess. He led a careful and balanced life in his “post in the wilderness” (Tralbaut, 1981) and may have avoided the

precipitating factors that affected three of his six children.

There were numerous exchanges between the brothers concerning their “nervous” problems. It is not clear whether Theo’s serious illness at age 19 was related to the expression of AIP-like symptoms, but certainly by December 1886 (age 29) according to his future brother-in-law, Andries Bonger, he had “serious nervous complaints, so bad that he could not move” (Hulsker, 1990, p. 455). Theo seems to have been in reasonable health at the time of Vincent’s funeral. But two months thereafter Theo suffered further leg pains and also hallucinations (partly in response to an unspecified medicament for his cough), became very irritable and occasionally violent, muttered with difficulty in mixed languages, experienced urine retention, and was totally unconscious with a barely detected pulse before he died (aged 34) (Rewald, 1986, p. 69; Hulsker, 1990, p. 455). Leg pains, mental illness, and paralysis would all support a diagnosis of AIP, and the violent reaction to a new drug and renal failure would be in accord with AIP (Arnold, 1992). On the other hand the reversibility of the leg pains does not support the diagnosis of neurosyphilis offered by Dr. Frederik van Eeden.<sup>12</sup>

Vincent’s youngest sister, Wil., spent the latter half of her 79 years in an asylum for psychiatric cases. She may also have suffered from AIP, although the lack of further documentation makes her case much more speculative. The youngest brother, Cor, died at 33 in South Africa from an accident while feverish; it may have been a suicide. Again, the medical history is scant. His other sisters, Elizabeth and Anna, lived 77 and 75 years respectively, without any indication of medical crises (Arnold, 1992).

Loftus and Arnold (1991) and Arnold (1992) discussed the differential diagnosis of Vincent van Gogh in favor of acute intermittent porphyria. We hoped that the facts would speak for themselves

and that informed readers would have no difficulty in rejecting other hypotheses.<sup>13</sup> In the decade that followed there was no new hypothesis, but we encountered ongoing competition from several old ones, whose authors were occasionally quite vocal via the popular media. It is beyond the scope of this review to look back on more than a selection of these.

#### VINCENT AND EPILEPSY?

Epilepsy is defined as a paroxysmal (sudden and recurring) transient disturbance in brain function that is manifested by episodic impairment or loss of consciousness, abnormal motor phenomena, psychic or sensory disturbances, or perturbation of the autonomic nervous system. The derivation of the word is Greek; it means seizure. Accordingly, the term *epileptic seizures* is redundant, but common parlance. Another basic term is *convulsion*, which means a violent involuntary contraction, or series of contractions, of the normally voluntary muscles. Niedermeyer (1983) emphasized that epilepsy is not a disease but rather an abnormal reaction of the brain due to numerous causes. Several diseases and conditions are complicated by seizures and convulsions. They may accompany withdrawal from alcohol or barbiturates and attend uremia. Other acute illnesses which present with seizures include hyponatremia, thyrotoxicosis, the acute porphyrias, and hypoglycemia. Lead and arsenic are the most frequently encountered metallic intoxications which cause convulsions.

Tonic-clonic convulsions were not described by Vincent or his doctors, so *grand mal* seizures have never received much diagnostic support. *Petit mal* or absence seizures (a brief lapse in

<sup>12</sup>Theo died at Willem Arntsz Stichting, near Utrecht, on January 25, 1891. The local diagnosis was neurosyphilis. This item was discovered 100 years later by Dr. A. Pietersma, Archief Dienst Gemeente, Utrecht.

<sup>13</sup>“Informed readers” turned out to be a bigger assumption than anticipated. A fatuous example came from an East-Coast psychiatrist who wondered if the subsequent lack of reference to our work “is related to it being published in *The British Medical Journal*, a journal that is *not widely read in the U.S.* and your main thesis being published in a *monograph*” (private correspondence).

consciousness usually no longer than twenty seconds) are certainly not indicated. Thus the classical sorts of epilepsy, which were well understood in Vincent's time, were hardly indicated. For this reason I agree with Tralbaut (1981) that Dr. Peyron's unqualified diagnosis of "epilepsy" in the St. Rémy register was based upon the patient's preconceived, ill-informed view.<sup>14</sup>

If indeed Drs. Rey and Urpar (Arles), and Peyron (St. Rémy) were convinced that Vincent van Gogh had some sort of epilepsy, then why wasn't he treated for it?<sup>15</sup> Admittedly the available therapy was meager, but Vincent was not even treated symptomatically at St. Rémy, and no advice along those lines was passed on to Paris when Vincent departed. Contrast Vincent's case with that of Fyodor Dostoevsky (1821–1881) who wrote, on June 17, 1863, "I go to Paris and Berlin . . . only for consultation of specialists (Trousseau in Paris, Romberg in Berlin) for my epilepsy" (Voskuil, 1983, p. 665). If they really thought he had epilepsy, it is curious indeed that Vincent, a quarter of a century later, was not referred to an epilepsy specialist at Montpellier or Paris!

As early as the 1870's, Hughlings Jackson had described certain hallucinations with seizures that he related to a pathologic condition of the temporal lobe (Jackson, 1931). Later, so-called "psychomotor" seizures were well described (Gibbs et al., 1937). In the 1950's the anatomical adjective "temporal lobe" was again preferred, even though some other parts of the brain were sometimes involved (Penfield & Jasper, 1954). Today, these are all lumped under complex partial seizures (Gastaut, 1970). Dr. Edgar Leroy, who worked at St. Rémy Asylum, albeit many years after van Gogh's sojourn, and Dr. Victor Doiteau considered that Vincent was epileptic but found no evidence of aura or frank convulsions and

suggested temporal lobe epilepsy (Doiteau & Leroy, 1928). See also Vinchon (1960).

A diagnosis of temporal lobe epilepsy might explain Vincent's hallucinations, the episodic nature of his illness, and the interictal periods of normalcy. However, the usual duration of minutes or hours that attends the various forms of complex partial seizures does not fit the days and weeks of Vincent's crises. More importantly, epilepsy does not accommodate the numerous gastrointestinal complaints. Likewise, some of the factors which exacerbated his illness such as malnutrition and fasting are not noted for inducing temporal lobe epilepsy.

Drug therapy in the 1880's was limited, but Vincent's fits and confusion (letter W11) seem to have been controlled in Arles by bromide (letter 574), which would be indicated for absinthe intoxication or acute intermittent porphyria, but not for temporal lobe epilepsy. Bromides are effective against grand mal and simple partial seizures but not for complex partial seizures (Hemphill, 1961; Niedermeyer, 1983). Monroe (1978, 1992) noted that the limbic system is exquisitely sensitive to stress and external toxins including alcohol, and he remarked on Vincent's affinity for absinthe. This was rediscovered by Blumer (2002), who was adroit in avoiding all the data on van Gogh that did not fit temporal lobe epilepsy.

#### MANIC-DEPRESSIVE ILLNESS (BIPOLAR AFFECTIVE DISORDER)?

The assumption made by some commentators that manic-depressive psychosis was unknown in Vincent's day is incorrect. Falret (1854) had described so-called "circular" insanity in which mania and melancholia alternated at regular intervals. Note that the term melancholia was still used, but the meaning was by then approaching a modern definition of depression.<sup>16</sup> The same

<sup>14</sup>Tralbaut felt that the doctors at Arles and St. Rémy were sympathetic to van Gogh's suffering but not particularly interested in taking a complete medical history. My impression is that they were completely baffled by Vincent's illness.

<sup>15</sup>Claims (Gastaut, 1956) that Felix Rey (a young intern still in training) was ahead of his time, and that his friend Aussouliet was a local expert on "masked epilepsy," are not convincing.

<sup>16</sup>The first good description of a relationship between mania and melancholia came from the Englishman Thomas Willis (1621–1675), who mentioned that "one can change into the other . . . this cyclic disorder is like a burning object, one that can produce smoke or flame" (Willis, 1672; Finger, 2000).

year, Baillarger (1854) also wrote about these two states, and also included an intercalated period of normalcy as an integral part of the syndrome. It should be mentioned in passing that Dr. Paul Gachet attended lectures by both Falret and Baillarger.<sup>17</sup> A protracted dispute over priority ensued, although it would seem that Baillarger's "double-form" disease was closer to our present concept (Kräpelin, 1921) of manic-depressive psychosis or bipolar disorder.

The French Academy of Medicine had major meetings on the subject starting in 1880. How well it was recognized, received, or dealt with in Arles and St. Rémy in 1889 and 1890 is an open question, especially as to the intent of Drs. Urpar and Peyron when they used the term *acute mania*. I am inclined to think that they were referring to the December 1888 events in and around the ear-cutting incident and Vincent's first hospitalization, and then the complaints of neighbors about Vincent's drinking sprees which led to his readmission to the Arles hospital in 1889. If that is true then it was "old fashioned" mania *a la Pinel*.<sup>18</sup> By 1900 *mania* had assumed its present psychiatric meaning of a mood disorder characterized by expansiveness, elation, agitation, hyperexcitability, hyperactivity, and increased speed of thought and speech (flight of ideas).

Up until the beginning of the 19th century, the prime meaning of melancholia was intensity of idea, the image of the mind being strongly fixed on, and frequently returning to, a single set of ideas, to an extent that was deemed unhealthy. The connotation of sadness was not always present, and many forms of behavior that have little relationship (from our perspective) were included in the general class of melancholia. Not surprisingly there was even a "productive melancholia" that today might be more akin to intense, creative,

concentrated thinking directed at a particular problem, while excluding all day-to-day distractions (monomania). Thus melancholia moved through monomania to depression and it is difficult to gauge how far Dr. Peyron had progressed.<sup>19</sup>

Perry was probably the first to discuss manic-depressive psychosis as a diagnosis for Vincent van Gogh; her expression was "cyclothymic personality with episodes of depression and mania" (Perry, 1947, p. 171). In the opinion of Hemphill, "van Gogh was a manic-depressive who developed confusional episodes and fits in the last two years of his life due to the toxic action of thujone, the active agent of absinthe" (Hemphill, 1961, p. 1084). Hemphill's contribution was twofold; he was the first to correctly refer to Vincent's "epilepsy" as a disorder rather than a disease, and he stressed the evidence for a toxic psychosis. He supposed that the gastrointestinal complaints came from the absinthe abuse alone, whereas Arnold and Loftus stress van Gogh's *sensitivity* to absinthe (and other xenobiotics) due to the underlying disease of acute intermittent porphyria. Other writers have marched Vincent down the bipolar trail but have discovered nothing new since Hemphill (1961).

Manic depressive illness is widely diagnosed today and a significant part of the pharmaceutical industry is devoted to discovering further chemical assists for the sufferers. These patients are rarely aware of their states and ordinarily do not check themselves into hospitals. Their disorders do not have acute onsets and offsets and the time course of van Gogh's illness certainly does not fit that syndrome. However, it is common enough for artists and museum patrons to know, or think they know, something about the syndrome and someone in their immediate circle who has it. Proponents of this working hypothesis exploit this statistical swell even though they should be arguing about the illness of just a single individual, Vincent van Gogh.

<sup>17</sup>The title of Dr. Gachet's thesis was *Étude sur la Mélancolie* (Gachet, 1858). The work was written in 1858, in the middle of this transition period in terminology. His thesis was really a compendium of principles for moral treatment of the insane, spiced with a philosophical vitalism that he encountered at the Montpellier Medical School (Fabbri, 1966).

<sup>18</sup>In Pinel's book (1818), mania was a disorder of one or more faculties with sad, gay, extravagant or raging affect, but *always included blind aggression*.

<sup>19</sup>Théophile Peyron (1827–1895) made his first medical career in the navy and then settled in Marseille as an oculist. His appointment as director at the asylum of St. Rémy may have been a semi-retirement position, as Vincent hinted (letter 593).

A course of regular cycling between mania and depression, which is popularly held, is rarely observed (Sarwer-Foner, 1966). On the average there are nine to ten depressive episodes for every manic event. A histogram of overall frequency versus age-of-onset for manic-depressive patients [ $n=898$ ] peaked with the 15–19 year group, and was closely followed by the 20–24 year group (Goodwin & Jamison, 1990). Notwithstanding considerable searching, biochemical and genetic markers for bipolar affective disorder have yet to be found.

It has been widely observed that many creative people had illnesses that were serious, debilitating, and sometimes limiting to their productivity. The majority opinion is that these men and women were successful in spite of illness, and not because of it. It is also true that many creative people enjoyed robust and healthy lives.<sup>20</sup> During the 18th and 19th centuries there lived an unfortunate philosophy relating the fevers of tuberculosis to activities on a higher plane. This romantic notion has now fallen by the wayside, but during the last twenty-five years manic depressive psychosis has popped up and down as a fashionable *disease of association* with creativity.

Andreasen (1987) evaluated 30 faculty members, over a 15-year period, at an American university workshop for creative writing. She claimed that the writers had a substantially higher rate of mental illness compared with 30 control subjects matched on sociodemographic grounds. A higher rate of affective disorders, especially manic depressive psychosis, was reported for the so-called creative group as well as their first-degree relatives. Jamison (1989) reported that 38% of a British group consisting of 39 writers and 8 artists, which she deemed outstanding, had sought treatment for some form of affective disorder, especially manic depressive psychosis, compared with lifetime prevalence rates in that nation of about 6%. Her attempts to link hypomanic episodes and seasonal mood swings with

productivity were unconvincing. Rothenberg (1990) criticized both the Andreasen study and the Jamison follow-up on the grounds that little consideration was given to the subjects' reasons for participating in the studies, and the criteria for judging them creative were left unexplained. Furthermore, Andreasen's self-reliance on evaluation of relative mental health was potentially biased because the subjects and controls were already known to her. And Jamison built her case on the subjects' own reports of seeking medical treatment.

Goodwin and Jamison (1990) came up with a list of people they judged to have been creative together with an indication (opinion) that they suffered from manic depressive illness. The cautious message from all of this should be that such a debilitating condition is still compatible with creativity, but in some circles there has been an inference of causality.<sup>21</sup> For example, Jamison's book on manic depressive illness and the artistic temperament (Jamison, 1993) certainly leaves the reader with the indication that the creative are more susceptible to manic depressive illness than the normal run of people, and the impression that a sort of Faustian bargain is at play.

## SCHIZOPHRENIA?

Progressive changes in content and style have been observed in the work of artists who are deemed to have schizophrenia (Prinzhorn, 1972). The reverse – namely to see the psychosis in unknown artists by looking at their work – is obviously more difficult, but not sufficiently daunting to inhibit the proponents of schizophrenia for Vincent van Gogh. Such was the approach of Jaspers (1922), who is still quoted under this heading.

Vincent had hallucinations, and he also had at least one episode of paranoia when he thought that neighbors were trying to poison him in Arles, but these are not specific for schizophrenia. The progressive deterioration of the untreated

<sup>20</sup>There have been some futile attempts at constructing ratios. My friend Don Goodwin accused them of playing a "floating" game – as they found more candidates to be healthy they would add others to the numerator by sticking them with illness labels.

<sup>21</sup>There is also some overlap here with Dr. Gachet's thesis list of outstanding individuals who suffered from melancholia (Gachet, 1858, pp. 9–22).

schizophrenic is lacking in van Gogh. Perry remarked that “[Vincent] did not withdraw from the world; he was cast out because of his behavior” (Perry, 1947, p. 162). The schizophrenic has a decrease in affect whereas Vincent’s letters and pictures were surcharged with emotion. Hemphill (1961) saw no sign of schizophrenia in the artist and emphasized that there was never any fantasy formation, and that his letters were lucid and logical. There is no case for schizophrenia (Arnold, 1992).

### NEUROSYPHILIS?

Syphilis can be acquired either congenitally or, most often, by sexual contact with an infected individual. The primary stage is remarkably free of systemic signs, the patient is entirely well and usually free of fever but, at about 1–12 weeks after contact, 50% of females and 70% of males develop a primary lesion (chancre) at the site of infection by the spirochete *Treponema pallidum*. In the secondary stage, at 2–12 weeks after the primary stage, a skin rash appears. Constitutional symptoms that may accompany secondary syphilis include fever, weight loss, malaise, and anorexia. There follows an asymptomatic latent stage that may last decades. About 30% of untreated patients go on to develop tertiary lesions, but clinical disease occurs in only half of these cases; this fraction is 15% overall. About 80% of the tertiary lesions affect the cardiovascular system, 10% are chronic focal inflammations (gummas) in the liver and other sites, and up to 10% involve the central nervous system (neurosyphilis), i.e. 1.5% overall (Robbins, 1957).

The major clinical categories of symptomatic neurosyphilis are meningovascular and parenchymatous syphilis. The latter includes tabes dorsalis, characterized by degeneration of the posterior columns of the spinal cord and posterior spinal roots. The interval from infection to expression of symptoms is about 27 years. Another form of parenchymatous syphilis, general paresis of the insane, is associated with direct invasion of *T. pallidum* into the brain. For unknown reasons the syndrome is more common in males. The average interval from infection to onset of general

paresis is 20 years. The course of the untreated disease is inexorably progressive (Goodman & Karakuis, 1988).

Neither the gamut of his symptoms nor the time course of his crises fits neurosyphilis. Vincent was treated for gonorrhea in The Hague in mid-1882 at age 29. He may have had a recurrence in Antwerp in 1885–86, at age 32. Even if he had contracted syphilis in The Hague, the major crises in Arles (age 35) would have been extraordinarily early for the onset of neurosyphilis, and his lengthy remissions from illness also negate the possibility. Mercury treatments were used at Arles and St. Rémy for syphilis, but Doiteau and Leroy (1928) found no indication that Vincent received mercury.

### LEAD POISONING

About one-third of patients with excessive exposure to lead suffer colicky, abdominal pain. Fatigue, joint pains, headache, and irritability are also quite common. Impotence, constipation, vomiting, diarrhea have all been observed to some extent. Subtle effects on personality, memory, and learning ability are frequently associated with chronic lead poisoning. However, seizures and confusional states are less common, especially in adults (Dagg et al., 1965; Ellenhorn & Barceloux, 1988).

Lead may be the oldest recognized chemical toxin; reports of occupational lead poisoning date to ancient Greece, and toxic levels have been found in Egyptian mummies. Artisans of lead-glazed pottery and stained glass were particularly susceptible to intoxication until better conditions were adopted in the workplace. The ingestion of paints containing lead pigments has, even in recent times, presented a serious health hazard for children. Artists and craftsmen were exposed in the past because of their habit of wetting brushes orally and their accidental ingestion of lead-containing pigments from their tools and hands.

Lead has an affinity for functional sulfhydryl groups in enzymes generally and a particularly sensitive example is  $\delta$ -aminolevulinic acid dehydratase. This is enzyme number two in the heme



biosynthetic pathway and its inhibition accounts for excessive excretion of  $\delta$ -aminolevulinic acid in the urine of lead-intoxicated patients. The last enzyme in the pathway, ferrochelatase, which catalyzes the incorporation of iron into protoporphyrin to form heme, is also inhibited by lead and this also contributes to the observed anemia (Ettenhorn & Barceloux, 1988). The excessive production of  $\delta$ -aminolevulinic acid in lead poisoning is similar to that found in acute intermittent porphyria, but note that porphobilinogen does not accumulate in lead poisoning. The similarity in neurological symptoms between AIP and lead poisoning may be referable to  $\delta$ -aminolevulinic acid.

Abdominal pain, constipation, vomiting, paralysis, or paresis are very common in both AIP and lead poisoning. Neuropsychiatric symptoms are sometimes observed with lead intoxication, but much less frequently than in acute intermittent porphyria (Sassa, 1978). There was no chelation therapy for lead poisoning in Vincent's time, and if his ingestion of lead salts (from his pigments) had been chronic, then the time course of such an illness would have been relentless and not episodic, as is well documented for van Gogh.

## ALCOHOLISM

The extent of Vincent's drinking is difficult to define, but we do know that he admitted to excesses. It is assumed that the hospital in Arles and the asylum at St. Rémy endeavored to restrict alcohol consumption; how successful they were is open to question; we do know that Theo paid a little extra at St. Rémy so that his brother could have wine with meals. I am convinced that Vincent engaged in "social" drinking when he visited friends in Arles, but this was for a relatively short time of a day or so. The time course of his illness, and the duration of some of the crises in the asylum, do not fit alcohol withdrawal syndrome per se.<sup>22</sup> I believe it was more of a sensitivity to

alcoholic beverages than an extraordinary dose. Alcohol is an exacerbating factor for acute intermittent porphyria. Alcoholism and lead poisoning are reasonable suggestions but not stand-alone syndromes for van Gogh – it is even less likely that the medical problems of Theo and sister Wil. would find much accommodation here.

## MÉNIÈRE'S DISEASE

In 1861, Prosper Ménière published several papers relating his observations on afflictions of the inner ear which caused nausea, vomiting, and vertigo. The disease was subsequently named after him and is characterized by hearing loss, vertigo, and tinnitus (ringing in the ears), and is usually unilateral (Harker & McCabe, 1980). During an attack of vertigo the patient is completely oriented to his surroundings and has no neurologic deficit such as paresthesia, diplopia, loss of consciousness, weakness, or paralysis. Sounds are distorted in the affected ear and are perceived as "tinny." Loud sounds are intolerable or even painful, and hearing acuity gradually declines.

Yasuda (1979) wondered in print, "Was van Gogh suffering from Ménière's disease?" The twelve page article was published in Japanese, but contains a full two pages of introduction and summary in English, more than enough to grasp the author's thrust. Those speculations received little support twenty years ago, because the diagnosis of Ménière's disease was based on a limited selection of symptoms. This dubious diagnosis was a sincere attempt, but it received little attention subsequently, except to be recorded in the most comprehensive bibliographies.

The *Journal of the American Medical Association*, during the week of the centenary of Vincent van Gogh's death, declared that, "Van Gogh had Ménière's disease and not epilepsy" (Arenberg et al., 1990). It was wrong on both counts; there is no case for Ménière's disease and epilepsy was no longer even the diagnosis of merit. A Colorado ear specialist and his colleagues had rediscovered Yasuda's hypothesis and rewrote it as a definitive diagnosis. Their conclusion was based on a limited selection of symptoms, the pretense that

<sup>22</sup>Alcoholic seizures (rum fits) and delirium tremens occur after a heavy drinking bout. It is the signs that attend withdrawal that have some overlap with Vincent's illness.

epilepsy was the only viable alternative, and their propensity for construing certain complaints as hallmarks of the ear disease. Thus van Gogh's gastrointestinal problems were taken to be strictly nausea and vomiting, several references to hearing voices were relegated to tinnitus, and the psychosis that was grave enough to cause self-mutilation and eventual suicide was underplayed. Their claim that van Gogh severed the lower half of his left ear to relieve tinnitus must surely strike readers, if not the editors of *JAMA*, as misplaced surgery.<sup>23</sup>

## TOKENS

There are many other working hypotheses by authors who are distinguished more by their conviction than common sense. Call-in talk shows on the radio are frequently their birthplace. Shortly after the publication of my book I encountered "borderline personality disorder" for van Gogh, which may be the exemplar for this type of offering. I thought that the title was enough to give the concept away but, to my astonishment, literature searches now turn it up in the form of published papers. The "replacement child" sentiment is another one in the same vein.<sup>24</sup> I would continue to encourage organized skepticism as the first test.

<sup>23</sup>I have only one pleasant memory of this fiasco. While in Brisbane, Australia, as a guest for their van Gogh art exhibition in 1994, I was taken by a friend I have known since primary school to a beer garden. There he insisted on introducing me to everybody, eventually including a fellow in short pants and a singlet who was bouncing from table to table selling lottery tickets. "Dr. Arnold is here for the big van Gogh affair, he is going to lecture tomorrow on van Gogh's illness." We were both surprised by the smile of hidden wisdom and, "I know mate, it's Ménéière's disease, my uncle had it." Alas, the misplaced power of immediate experience – others have seen this in connection with manic depressive illness.

<sup>24</sup>The facts do not support the thesis (Arnold, 1995). However, it is even more bizarre to read that this sort of thing has been projected in some quarters as the crux of van Gogh's underlying illness.

## THE CHARM OF THE PAST

There is an informal group that is keen to applaud the diagnostic skills of Vincent's attending physicians. "The old guys had it right after all" is their banner. In their sea of indecision (sincere or deliberately compounded) this affords an island of safe haven blessed with nostalgia.<sup>25</sup>

Some have said that Dr. Rey (Arles) was brilliant and insightful. Their circular argument goes as follows: Rey embraced "epilepsy" without evidence of a full-fledged case; the commentators believe temporal lobe epilepsy (described many years later) is an attractive possibility; therefore they say Rey was ahead of his time. I join those who have judged Dr. Peyron as naive and trained in the wrong specialty, yet others have embraced as gospel his terse statements in the St. Rémy register. Tralbaut (1981) felt that the physicians of the south were overly influenced by the police reports in Arles, and by the patient's own statements about a family history of epilepsy on his mother's side. If so, then the circle was indeed completed when Vincent wrote to Theo, "as far as I can make out, the doctor here [Dr. Peyron] is inclined to consider what I have had [was] some sort of epileptic attack" (letter 591).

Theo van Gogh died in a mental institution in Den Dolder on January 25, 1891. Some of their medical records were released to Dutch newspapers in 1990, by a local archivist. The story, which covered the 38 days from Theo's move out of Paris to Den Dolder until his death, ends dramatically, "the final diagnosis was dementia paralytica [general paresis, a form of neurosyphilis]." At last the answer was out! Perhaps Vincent had the same thing?<sup>26</sup>

Dementia paralytica was described by Bayle, as early as 1822. Quincke is credited with introducing the lumbar puncture procedure together

<sup>25</sup>In another setting the same group would supposedly be happy enough to acknowledge the laboratory developments that have advanced 20th century medicine.

<sup>26</sup>For reasons that still escape me the art politicians of Holland act as if the label of syphilis for the van Gogh brothers carries less social stigma than say alcoholism, let alone an inherited metabolic disease. Is this a misplaced attempt to "protect" the van Gogh family?

with examination of the cerebral spinal fluid for spirochetes, in 1892. Today, a definitive diagnosis would be based on serology of the cerebral spinal fluid, but this technology was not available until well into the twentieth century. General paresis was overly diagnosed in the nineteenth century. The psychiatric and neurological symptoms recorded from Theo's case are far from definitive. An autopsy examination could have provided confirming evidence but apparently was not performed. In any event, the time course of Theo's illness makes the case for neurosyphilis highly unlikely (Arnold, 1992).

Dr. Paul Gachet also inherited his share of golden admiration. His ideas about Vincent's illness are supposed to have included "turpentine poisoning and the effects of too intense sun on a Nordic brain" (Beer, 1935, p. 40). I have not been able to confirm the attribution to Dr. Gachet but I assume some verbal anecdote that slipped into the van Gogh literature. Vincent himself remarked upon being "dazed with the sun" (letter 512) that "beats down on one's head...[and] makes one crazy" (letter B15). Vincent may have been a bit reckless in his exposure but there was certainly more to his illness than heatstroke. The time course and the rest of the symptomatology cannot be accommodated under this heading.<sup>27</sup>

Rey, Peyron, and Gachet did their best to protect and rehabilitate the artist during those demanding two years. My observations within this section are not intended to disparage the van Gogh physicians but rather to make an appeal for placing their relative merits in perspective. They had the advantage of being there, but they were without benefit of the biochemical tools that we now take for granted.

## RESISTANCE FROM ART HISTORIANS, CURATORS, DEALERS, AND THE STATE MUSEUMS

The art world harbors some people who deny any interest in van Gogh's underlying illness. This position, albeit at odds with the public, takes various forms. Thus a catalog essay may either skip over the subject or be content with "he died by his own hand in 1890." During the months of one blockbuster exhibition the museum's education department managed to dodge a public lecture on Vincent's medical problems in favor of one recounting the provenance on the painting that fetched the best price at auction.

Moreover, the vehemence with which so many art curators and dealers resist scientific enquiry suggests an unwholesome desire to maintain the mystique in order to protect the art.<sup>28</sup> They do an injustice by assuming that the "consumer" of art needs "protection." On the contrary, I believe that an explanation of Vincent's underlying illness and the role of the environment will enhance rather than diminish genuine interest in van Gogh's creations.

The commercial interests of dealers and the ambitions of museums with regard to van Gogh foster the titillating connection between creativity and madness. Even if they are privately persuaded otherwise, they are reluctant to change something that they think is "working." Newspaper and television journalists are reluctant to engage them on that turf and surely that is part of the reason for perpetuating the lengthy lists of possible van Gogh illnesses. They want to keep the subject vague in order to maintain the mythology.

## CONCLUDING REMARKS

The house of Dr. Paul Gachet in Auvers-sur-Oise was recently opened to the public to coincide with

<sup>27</sup>I do not mean to defeat the message of this section but consider the following from an AIP expert, "exposure to oil-based paints and solvents will, in some porphyrics, produce symptomatology including psychosis, colic, seizures, and neuropathy. Very rarely in acute porphyria, extreme exposure to sunlight may provoke an attack" (Peters, 1986). Bonkovsky and I showed that pinene (turpentine) is porphyrogenic – but sunlight! Was the good Doctor Gachet blessed?

<sup>28</sup>A curator at the Boston Museum of Fine arts once told me that he could not understand why anyone was interested in van Gogh's illness. I ventured that at least it had something to do with his premature demise. No response, so I volunteered that Picasso and Matisse could have been contemporaries with Vincent if he had enjoyed a predicted lifespan of about 66 years – how wonderful it would have been to have those three guys in the same room? "Van Gogh painted lots of pictures anyway."

the 150th anniversary of the birth of his most famous patient. Willem van Gogh, a great-grandnephew of Vincent van Gogh, was in the crowd and he said he was touched to be present (New York Times, April 1, 2003). For those of us interested in round numbers it is also a propitious time to review the medical problems of the artist.

A careful review of data from the artist's letters and other contemporary sources indicates that Vincent suffered from an inherited disorder manifested by severe and manifold neurological problems, ranging from gastrointestinal pains to fits with hallucinations. His condition was exacerbated by his *modus vivendi*, which was marked by inadequate nutrition, abuse of alcoholic beverages, chronic smoking, environmental exposure, and the development of an abnormal affinity (pica) for terpenes. The intermittent nature of his illness, the sudden onset of crises, and the rapid return to normalcy after each episode, are all notable. The gamut of symptoms is best explained by a toxic psychosis. Within that category, the disease entity which most closely fits all of the data is acute intermittent porphyria [AIP], which was adopted by Loftus and Arnold (1991) and Arnold (1992) as a working hypothesis for Vincent's underlying illness. This retrospective diagnosis has been compared and contrasted with other suggestions in the literature. The first case was described in a Dutch medical journal (Stokvis, 1889). AIP was not understood in Vincent's time; even today it tends to be under-diagnosed. I am convinced that a toxic psychosis such as acute intermittent porphyria remains the best working hypothesis.

Vincent van Gogh was not a "mad" artist, but rather an exceptional man who suffered from an inherited disease. He was wonderfully creative because of intelligence, talent, and hard work. He was a genius in spite of his illness – not because of it. This reality enhances wholesome admiration for van Gogh's creations.

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