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VAN GOGH AND STARRY SKY

V. MILOŠEVIĆ-ZDJELAR and S. SAMUROVIĆ
Public Observatory, Gornji Grad 16, Kalemegdan, 11000 Belgrade, Yugoslavia
E-mail vesnamz@afrodita.rcub.bg.ac.yu
E-mail srdjanss@afrodita.rcub.bg.ac.yu

The mankind has a rare opportunity to meet the most intimate vision of life, nature and art of one of the greatest artists in the history, Vincent van Gogh, through a strange diary in a form of a remarkable collection of letters written to his brother Theo and friends like Paul Gauguin. Fully describing the painter's life and thoughts, Vincent van Gogh's "Letters" had been an inspiration to us as astronomers to inquire the starry sky motifs that had drown attention of this great 19th century painter (van Gogh 1985).

Vincent Willem van Gogh, born on March 30, 1853, in Netherlands, after a joyful childhood in a little Dutch village in a colorful countryside. At the age of 16 had walked into the artistic world through his uncle's art dealers company Goupil, that led him further to Paris and London. Disliking being the art dealer, he became dedicated to his father's profession as a preacher, but his mind disputed the Christian doctrine. Doing a missionary work in Belgium coal mines, not being able to accept the poverty and meaningless of human destinies, he lost faith and self confidence. Van Gogh had suffered from the first serious mental crisis around 1880, and after that he dedicated himself to the mankind through art, choosing to live on his brother's allowance only for food and paints.

After studying drawing at the Brussels Academy, van Gogh evolved very fast as a painter, and from 1881 to 1890 made his almost entire opus. His mental illness had, during all that time, been progressive, but the fact is that van Gogh had only shorter or longer periods without self-control - between the "attacks" he showed his extreme sensitivity and ingenious mind (Encyclopedia Britannica 1997). We took a liberty to believe (based on his own writings) that the mental disorder he had suffered from, did not influence the way he had painted the actual order of the celestial objects (very often the mirror- like symmetry, like in the "Starry Sky", and "Road with Cypress and a Star"), but it stressed his sensitivity to colors. The changes in the landscape could be attributed to the artist's composition of a painting itself, to gain the balance that the actual landscape surrounding the constellation he wanted to paint couldn't provide.

Big cities had exhausted van Gogh, and in February 1888 he went to Arles (the southeastern France) to, as he said, "look at nature under a brighter sky". As one of the examples of all of our statements, let us see the quotation from a letter referring to his masterpiece "Starry Night on the Rhone":

Arles; September 1888

My dear Theo,

... Enclosed a little sketch of a square size 30 canvas, the starry sky actually painted at night under a gas jet. The sky is greenish-blue, the water royal blue, the ground mauve. The town is blue and violet, the gas is yellow and the reflections are russet-gold down to greenish-bronze. On the blue-green expanse of sky the Great Bear sparkles green and pink, its discreet pallor contrasts with the harsh gold of the gas.

Vincent[1]

We do not need a Planetarium simulation to see that September nights (around 11:00 p.m.) have the Great Bear (Big Dipper) in exactly the same position as in the painting. What is different from the actual landscape is the motif under the constellation. The Great Bear is above the northern horizon at that time, but probably because the poor landscape in that direction, van Gogh decided to paint the southwest view of Arles (Whitney, 1985).

But a Planetarium simulation becomes very useful for determining the aspects of another masterpiece – "Road with Cypress and Star".

After few months of working with Gaugain, from October 1888, in their community "Impressionists of the South", van Gogh had one of the strongest "attacks" of his illness, on the Christmas Eve 1888, and went to the hospital. From May 1989 he asked for a medical care in the asylum in Saint Rémy-de-Provence, when he realized that he had been more and more often disabled to work. Coming to that hospital, assured him that his illness could leave him enough time to work. There, in the landscape and colors of southern France, he started to paint, or, to be more precise, he tried all the time to express the real nature of olive trees and cypresses, yellow summer grass, and a sky. In a letter written to Gaugain a month after he left Saint Rémy on May 16, for Paris and Auvers-sur-Oise, van Gogh described "Road with Cypress and Star" in detail.

Auvers-sur-Oise; June 1890

My dear friend Gauguin,

Thank you for having written to me again, old fellow, and rest assured that since my return I have thought of you every day...

...I still have a cypress with a star from down there, a last attempt - a night sky with a moon without radiance, the slender crescent barely emerging from the opaque shadow cast by the earth - one star with an exaggerated brilliance, if you like, a soft brilliance of pink and green in the ultramarine sky, across which some clouds are hurrying. Below, a road bordered with tall yellow canes,

[1] URL: http://van-gogh.org/docs/letters/p543.html

behind these the blue Basses Alpes, an old inn with yellow lighted windows, and a very tall cypress, very straight, very somber.

On the road, a yellow cart with a white horse in harness, and two late wayfarers. Very romantic, if you like, but also Provence, I think.

I shall probably etch this and also other landscapes and subjects, memories of Provence, then I shall look forward to giving you one, a whole summary, rather deliberate and studied...

Vincent[2]

The peculiar scene of the Moon and two stars intrigued astronomer Charles Whitney from Harvard, and Albert Boime, art historian from the University of California, to do a research on what these objects could be.

We have done similar calculation using various computer program that all gave results that are in accordance with the data obtained by Whitney and Boime (Olson and Doescher 1988). There exists plenty of programs for personal computers that can be used for performing such a task. We mention here just few examples of astronomical programs that we used: (1) program *Skyglobe* that belongs to pre "Internet expansion" epoch, very quick and useful DOS shareware program that can be run on the old machines (i.e. 286 and up) with old graphic cards (i.e. Hercules) but also on the latest hardware, (2) program *SkyMap*[3] works on MS Windows (both 3.1 and 95 versions) and is also shareware – we performed most of operations for this paper using this program, (3) Unix X-windows Motif based program *xephem* made by Elwood Charles Downey[4] that is free and can be used for the most sophisticated professional astronomical needs. We also mention a scripting language *AstroScript* developed Peter Duffet – Smith (1997)

In the Figure 1 we plotted the positions of the Moon, Venus, Mercury and stars for April 20, 1890 for St. Rémy (longitude 4°50′ E and latitude 43°47′ at 40 minutes after sunset, i.e. 7:10 p.m. Visual magnitudes were: for Venus −3.90, for the Mercury −1.2 and for the Moon −5.8. The landscape van Gogh had painted, besides crescent Moon, following his own description in a letter, had "one star with an exaggerated brilliance..." Such a position of a very thin Moon and a bright "star" visible at a night time before the date he had left St. Rémy was found closely after sunset on April 20, 1890, when bright Venus, and extremely bright Mercury formed the same, but reversed like in a mirror, configuration.

No other appearance of the crescent Moon on the dates back when van Gogh arrived to St. Rémy was followed by such a composition with two extremely bright stars or planets. D. Olson and R. Doescher from the Southwest Texas State University even found the same event mentioned in Camille Flammarion's magazine *l'Astronomie* – very thin Moon in conjunction with a brilliant Venus and a close by Mercury on April 20. Our planetarium simulation showed that the Sun had set at 6:30 p.m., and the

[2] URL: http://van-gogh.org/docs/letters/p643.html

[3] URL: http://www.skymap.com

[4] URL: ftp://iraf.noao.edu/contrib/xephem/xephem_3.0/.

trio was in the exact position as on the painting around 7:10 p.m. Comparing the landscape on a painting, it is clear how van Gogh could use a reversed position to make such a refined balance of the painting.

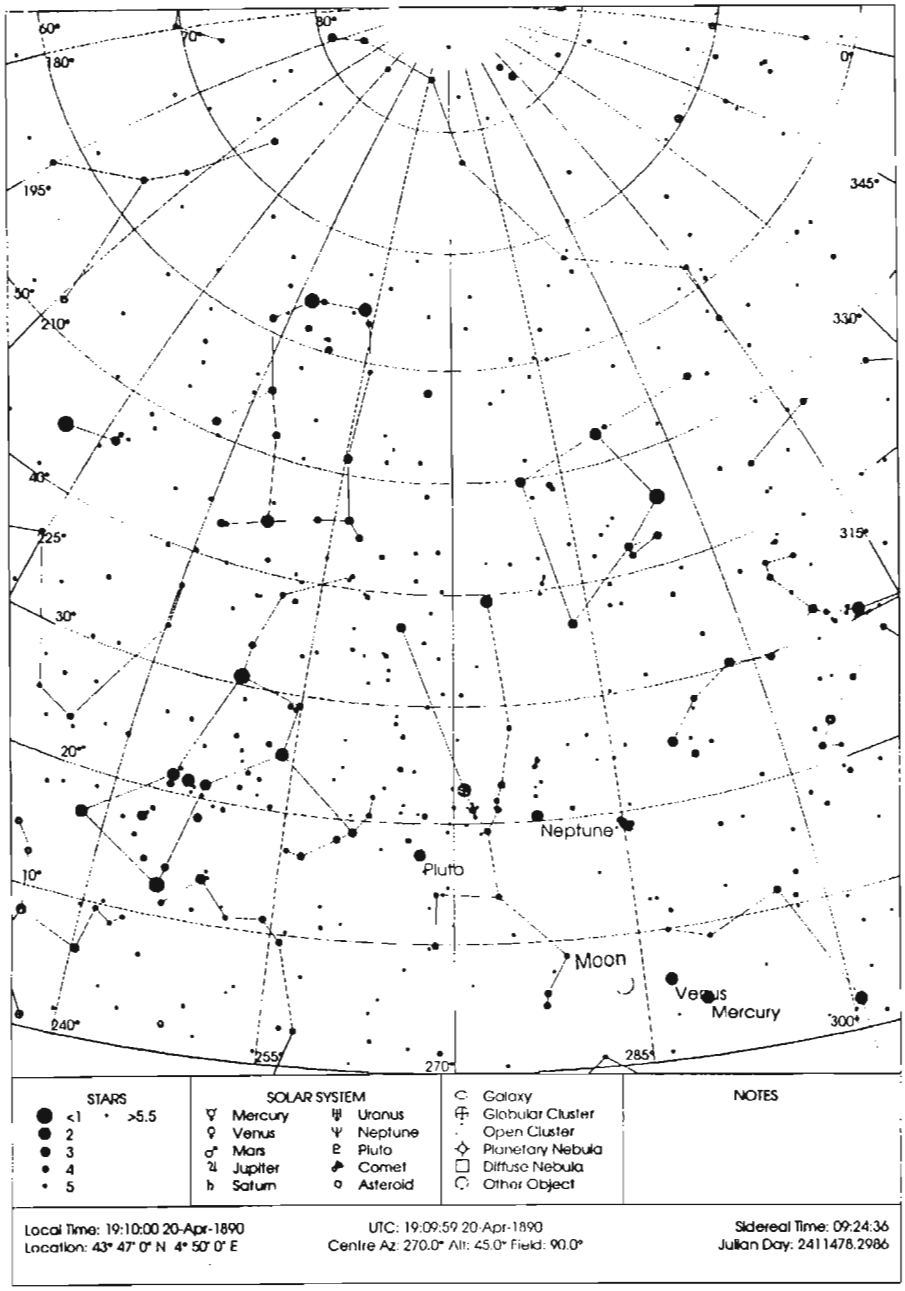

Fig. 1. Positions of the Moon, Venus and Mercury among stars as seen from St. Rémy on April 20, 1890 at 7:10 p.m.

Besides his paintings van Gogh himself described a consolation he used to find in a starry sky.

> *...And it does me good to do difficult things. That does not prevent me from having a terrible need of – shall I say the word? – of religion. Then I go out at night to paint the stars...*
>
> *Vincent*[5]

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[5] URL: http://van-gogh.org/docs/letters/p543.html