

# The Psychopathological Fabric of Time: Its Phenomenology and Geometry

Metod Saniga<sup>1</sup> and Rosolino Buccheri<sup>2</sup>

<sup>1</sup>Astronomical Institute, Slovak Academy of Sciences, 05960 Tatranská Lomnica, Slovak Republic

<sup>2</sup>Istituto di Astrofisica Spaziale e Fisica Cosmica, CNR, Via Ugo La Malfa 153, 90146 Palermo, Italy

## EXTENDED ABSTRACT

Time is undoubtedly one of the deepest mysteries science has ever faced. Indeed, one would hardly find something that is, on the one hand, so intimately connected with our experience and yet, on the other, so difficult to come to grips with. Nothing, perhaps, can better illustrate this point than a large group of phenomena that are collectively referred to as the *psychopathology* of time, that is, all ‘anomalous/peculiar’ experiences of time as invariably encountered and reported in various mental psychoses, drug-induced states, deep meditative and mystical states as well as in many other ‘altered’ states of consciousness. For this peculiar fabric of psychological time comprises, as we shall demonstrate in great detail in the first part of our contribution, such bizarre, paradoxical and mind-boggling forms as ‘eternity, everlasting now,’ ‘arrested/suspended’ time, time ‘going backward,’ and even ‘disordered/fragmented’ time, to mention the most pronounced of them.

Up to date, there exists no acceptable psychological/neurological model capable of properly dealing with these fascinating time constructs and underpinning any logical classification of them. The reason why this is so rests, in our opinion, upon the following two facts. First, these extraordinary experiences of time (and, of course, space as well) are inherently participatory, non-reproducible and subjective and, so, seriously at odds with current methodologies/paradigms of science, which strives for reproducibility and objectivity. Second, the most pronounced departures from the ‘consensus’ reality are so foreign to our ‘waking’ mind that their properties defy our common sense logic and cannot be adequately communicated in words; an interested scholar has to go through a large number of relevant first-hand accounts/narratives and acquire the ability to read between the lines in order to spot an(y) underlying conceptual pattern. We are therefore convinced that further progress in our understanding of these phenomena will be possible only if 1) entailing a serious shift in the corresponding scientific paradigms, 2) involving inter- and multi-disciplinarity as an essential feature, and 3) being accompanied by the increasing use of sufficiently abstract mathematical concepts to properly grasp their qualitative properties.

Our study of psychopathological (space-)times has, from the very beginning, been pursued in accordance with this strategy. The geometrical model of the psychopathology of time, discussed in the second part of the contribution, thus features not only a fairly high level of abstraction, but it also poses a serious challenge to some generally accepted dogmas in natural sciences. Formally, it employs advanced geometrical concepts, like a projective space and/or Cremona transformations. Conceptually, it relies on a daring and far-reaching assumption that the anecdotal, first-person descriptions of extraordinary states of consciousness are *on a par with* standard observational/experimental evidence in natural sciences. It is this ‘abstract geometrization of the first-person perspective’ that gives our approach a remarkable unifying and predictive power and makes it a very promising conceptual step towards the ultimate unveiling of the riddle of time. The presentation will be focussed on conceptual issues rather than mathematical technicalities, the latter being reduced to the extent that also the reader with a comparatively slight mathematical background can easily follow the main line of reasoning.

## References

- Buccheri, R. (2003) The intelligibility of nature, the endo-physical paradigm and the relationship between physical and psychological time, in R. Buccheri, M. Saniga and W.M. Stuckey (eds.), *The Nature of Time: Geometry, Physics and Perception* (NATO ARW), Kluwer Academic Publishers, Dordrecht–Boston–London, pp. 403–416.
- Buccheri, R., and Saniga, M. (2003) Endo-physical paradigm and mathematics of subjective time, *Frontier Perspectives* **12**, 36–40.
- Cutting, J., and Silzer, H. (1990) Psychopathology of time in brain disease and schizophrenia, *Behav. Neurol.* **3**, 197–215.

- Ebin, D. (ed.) (1961) *The Drug Experience*, Orion Press, New York, p. 295.
- Fischer, F. (1929) Zeitstruktur und Schizophrenie, *Zeitschr. ges. Neurol. Psychiat.* **121**, 544–574.
- Hartocollis, P. (1983) *Time and Timelessness, or the Varieties of Temporal Experience*, International Universities Press, New York.
- Howe, L. (1999) *Time and space relationships in non-ordinary states of consciousness*, private communication.
- Huber, G. (1955) *Akasa, der Mystische Raum*, Origo-Verlag, Zürich, pp. 45–46.
- Jaspers, K. (1923) *Allgemeine Psychopathologie*, Springer-Verlag, Berlin.
- Kloos, G. (1938) Störungen des Zeiterlebens in der endogenen Depression, *Nervenarzt* **11**, 225–244.
- Melges, E.T. (1982) *Time and the Inner Future: A Temporal Approach to Psychiatric Disorders*, John Wiley and Sons, New York.
- Minkowski, E. (1933) *Le Temps Vécu – Études Phénoménologiques et Psychopathologiques*, Gauthier, Paris.
- Muscatello, C.F., and Giovanardi Rossi, P. (1967) Perdita della visione mentale e patologia dell'esperienza temporale, *Giorn. Psychiatr. Neuropatol.* **95**, 765–788.
- Saniga, M. (1998a) Pencils of conics: a means towards a deeper understanding of the arrow of time?, *Chaos, Solitons & Fractals* **9**, 1071–1086.
- Saniga, M. (1998b) Unveiling the nature of time: altered states of consciousness and pencil-generated space-times, *International Journal of Transdisciplinary Studies* **2**, 8–17.
- Saniga, M. (1999) Geometry of psycho(patho)logical space-times: a clue to resolving the enigma of time?, *Noetic Journal* **2**, 265–273.
- Saniga, M. (2000) Algebraic geometry: a tool for resolving the enigma of time?, in R. Buccheri, V. Di Gesù and M. Saniga (eds.), *Studies on the Structure of Time: From Physics to Psycho(patho)logy*, Kluwer Academic/Plenum Publishers, New York, pp. 137–166.
- Saniga, M. (2001) Cremona transformations and the conundrum of dimensionality and signature of macro-spacetime, *Chaos, Solitons & Fractals* **12**, 2127–2142.
- Saniga, M. (2003) Geometry of time and dimensionality of space, in R. Buccheri, M. Saniga and W.M. Stuckey (eds.), *The Nature of Time: Geometry, Physics and Perception* (NATO ARW), Kluwer Academic Publishers, Dordrecht–Boston–London, pp. 131–143; also physics/0301003.
- Saniga, M. (2003) Geometry of psychological time, in S. Albeverio and Ph. Blanchard (eds.), *The Direction of Time. The Role of Reversibility/Irreversibility in the Study of Nature*, Cambridge University Press, Cambridge, to appear; also physics/0302075.
- Saniga, M., and Buccheri, R. (2003) The psychopathological fabric of time (and space) and its underpinning pencil-borne geometries, *The Journal of Mind and Behavior*, submitted.
- Tellenbach, H. (1956) Die Raumlichkeit der Melancholischen. I. Mitteilung, *Nervenarzt* **27**, 12–18.