



## **Preface and Acknowledgements of CMA4CH 2012 Meeting**

Dear colleagues and friends, in spite of the World crisis, we met for our fourth Mediteraneum Meeting edition allowing to exchange our experience in the field of “Advanced Statistical Methods”, “Environment” and “Cultural Heritage”.

Why we joint the three topics? The sentence that I always repeat summarise at the best: The world is multivariate! In order to be significant, data coming from diagnostic on Environment as well as on Cultural Heritage must be multivariate [1].

### **Environment and Cultural Heritage (CH)**

The increase of welfare, tied to the quick technological development, let to an indisputable increase of pollution. The constant raising of energy and goods consumption, crossing each other, has devastating effect in human lives and health due to the uprising of visible and invisible wastes; so, the welfare increase is only apparent. Luckily most of the people are aware of this risks and, hopefully, the trend could reverse or at least flat. It becomes really common to ear “Our future can be ensured only by zero wastes and clean energies”.

Our Cultural Heritage suffers of pollution no less than humans and also people not interested in them have to take into account the economic damage coming from the degradation of such patrimony. Furthermore, the heavy influence of pollution on the conservation state of CH lets to evidence the presence of pollutants so becoming an indicator of the quality of the environment where we live.

### **Multivariate analysis and chemometry**

Many normatives rule the presence of pollutants as well as civil and industrial processes and so on. The effects of new commercial products and/or their degradation products need long time to evaluate the long term effect and, as a fact, we are yet paying for past wrong evaluation (asbestos, CFC ...). The number of new technological materials increases and the need to control old and new pollutants at even more low levels carries a hard work and produce a huge mole of data.

As above said pollution is the main key in the CH degradation; so, a correct procedure for their conservation must start with a monitoring of their macro and/or microenvironment, at least for the main recognized compounds that impact on their health. Just as for humans, diagnostic on CH as well as the successive conservative interventions must take into account their oneness so rending the full itinerī very complicated and, also in this case, a huge mole of data must be treated.

It is evident that, in such cases, univariate methods cannot ensure significant information as requiring an almost impossible work; so, the use of advanced statistical methods could be imperative when approaching any analytical itinerī concerning Environment and CH.

In reality chemometry was born in order to solve problems bound to industrial processes with the goal of economic advantages that quickly speeded up their spreading. As a fact starting from the Sampling Design, passing to the process optimization and ending with a quick and reliable control, a quality increase and a cost decrease can be obtained.

As in the previous editions, this book presents some of the contributes to the fourth edition of our/your biannual Meeting.

Not all the abstracts include chemometric or multivariate treatment as, unfortunately, even if schools of chemometry are increasing worlwide (we also held our second edition during the

Meeting), their use is not so wide. Chemometry will be usual for all actual young researchers but very often, when I invite some colleagues to present her/his research at our conference I obtain such reply: *I am unable to use chemometry*. I always stress the need to look for cooperation with chemometricians that, in turn, often never treated data on Environment and CH, but a great deal of them doesn't agree. More, it is very important to encourage the meeting of all professional figures (theorists, researchers, professors, experts, technicians, archaeologists, restorers ...) involved in the protection of Environment and CH as everyone sees the problem from different points of view so that also the problem discussion is "multivariate"

Copying from the previous edition, I conclude:

Principal Components 1 of the conference is to favour the meeting of researchers, experts, connoisseurs and competents on chemometrics applied to Environment (environmetrics [2]) and Cultural Heritage (cultherimetrics [3]) so I suggest all the participants to read careful presentation looking for cooperation in international projects. Researchers using univariate methods or theoretical chemometricians are welcomed as surely looking for cooperation; may be the last look for juicy dataset and the first will be happy to avoid the very hard data evaluation of their data. Don't forget that chemometry [4] is today "under" any standard research, calibration, regression and data analysis, so, question yourself.

### Acknowledgements

First of all I (fig. 1) would like to thank all the authors for their participation at the Meeting and for the production of Abstract according to the format and Referee's suggestions. In my opinion this "Abstract Book" looks very nice and, even if in only 2 pages, each research is enough extensively outlined. Obviously, I hope, readers will also find high scientific content.

A very warm dutiful thank is for Referees, especially to PhD Federico Marini, pressed to work on more than one abstract received off of the deadline or very close to it!

A special thank is for the mainly young Organizing Committee, for their contribute aiming a successful result of the present Conference. In particular PhD Susanne H. Plattner.

Last, but not least, I warmly thank the Scientific Committee's members that stole away part of their time from didactic and research activities, aiming to successfully increase the notoriety of the Conference. In particular Prof. Richard Brereton give a great contribute looking for "prizes" and helping with Journal(s) contacts.

I cannot cite PhD Mariapia Sammartino, her multivariate contribute in all the editions has been essential.

I will wait for all of you and lots of your friends and colleagues in the next Meeting that probably will be held in an other (remember Ventotene and Sicily) beautiful island of Meditereneum at the end of May 2014.

### References

- 1) Donald D. Hester, Book Reviews of: Irwin Friend, James R. Longstreet, Morris Mendelson, Ervin Miller, Arleigh P. Hess Jr; Investment Banking and the New Issues Market, *The American Economic Review*, 58(4) (1968), 1023-1024
- 2) The term 'environmetrics' was first introduced in 1971 by Philip Cox in a proposal. submitted to the US National Science Foundation, S. Hunter, Environmetrics: An Emerging Science, in *Environmental Statistics*, G.P. Patil, C.R. Rao Ed. (1994) ISBN: 978-0-444-89803-6
- 3) G. Visco, Preface of M.J. special issue, *Microchem. J.*, 88(2) (2008) 95-96
- 4) G. Visco, What lies behind the Chemometry name?, <http://w3.uniroma1.it/chemo/metrics/chemom/mslide2.html> and [mslide3.html](http://w3.uniroma1.it/chemo/metrics/chemom/mslide3.html) at may 2012



Fig. 1; The Coordinator, Dr. Giovanni Visco, Appointed Professor for Chemometrics at Rome University