
Editorial

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Most of my research colleagues in the so-called ‘combustion community’ (some of them being invaluablely precious teachers or tireless collaborators whose knowledge I envy) usually base their thesis on the importance of our discipline on two main arguments. First, its persistence over time (since Prometheus stole fire from the ancient Greek gods...), and second, its dominance in what we generically refer to as ‘power generation’, with a tacit implication that this connects strongly to ‘quality’ of life. I have waited until this moment to express a so far concealed question as to whether these (undoubtedly true) facts are sufficient to generate ‘good research’, that is, to challenge the limits of human intelligence and creativity. To illustrate this point, let us think of a discovery perhaps equally old and significant for human well-being, namely the wheel, whose re-invention has become the proverbial paradigm for intellectually futile efforts. Not to talk about the fact, that even the philosophically most naïve individual, should be able to see that the main point of the ancient myth of Prometheus *is not* combustion...

In my view, what instead propels combustion science is its continuous relation to innovation, its continuous capability to expand in directions that are drastically different from the contemporary uses of this indeed ancient technology. From the moment that James Watt realised the possibility of work production from a process then mainly used to cook food and warm-up humans (and, equally importantly, according to the famous anecdote on Watt’s inspiration: tea), to its application to loco- and automotion, to jet propulsion, rocketry and synthesis of nano-materials, combustion research has always been related to spectacular innovation. This, combined with the perhaps deceiving simplicity of the fundamentals of these strongly exothermic, entropy generating chemical processes that rely on really few and simple mechanisms for their transport, is what has intrigued the human intellect and produced some indeed fine pieces of research. I would not like to be misunderstood as underestimating the importance of the underlying societal needs and the significance of the societal benefits that ensued, I simply propose that the elegance of the related intellectual contributions is drawn from somewhere else.

With this special issue, our main purpose is to show that this relation of combustion science and technology to innovation is still very much active and productive. One of the first issues of a journal that includes the word ‘alternative’ in its title seemed a very appropriate venue for this. The questions with which the researchers of the field are currently faced are perhaps as well known as they are sometimes pressing. From sustainable, environmentally benign power generation, to safety and security issues, to the exploration of either the planetary system or the micro-cosmos, we are sure that every reader of the *International Journal of Alternative Propulsion* has had at least some exposure to the current challenges for combustion science and technology. What we hope the reader will find novel, is the discoveries, as well as the theoretical and experimental methodologies, with which the research community has responded to those challenges. This will include an impressively broad range of findings from the invention of micro-combustion engines to advanced laser diagnostics and novel results of applied mathematics that bestow to the study of this technology, whose origins

are lost somewhere at the dawn of civilisation, an admirable degree of novelty and intellectual excitement.

Needless to say, that the sample of 'innovative' combustion-related contributions the reader will be exposed to neither aspires to be exhaustive nor claims to be the 'selected' one in terms of quality. It will simply attempt to convey to a broader audience a small specimen of the fascinating ways in which an old but always challenging and refreshing technology is currently evolving.