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Never Make Predictions, Especially About The Future: What TRIZ Tells Us About Sustainability In 2030

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Despite multiple professions devoting their working lives to the task, meaningful prediction of even the short-term future remains a largely elusive goal. If progress is to be made, at least three core issues need to be addressed:

1) Even taken at a very localised level, the world is complex and as such, 'the future' is essentially emergent and subject to Butterfly Effect phenomena, wherein certain apparently trivial perturbations occurring today can result in highly non-linear effects tomorrow;
2) Change in the real world does not occur in a linear fashion. All systems are subject to the dynamics of the 's-curve', wherein things tend to change slowly then, once virtuous cycles appear, quickly, then, once inevitable vicious cycles appear, increasingly slowly again. This inherent property dooms any prediction model predicated on assumptions of linear change
3) In a similar fashion, any future prediction based on extrapolation of existing trends fails to acknowledge the inherent interactions *between* trends. In complex systems, it is not so much the trends that determine how the future will emerge as it is the relationship between trends, and particularly situations where one trend begins to conflict with another one. In such situations, it is the resolution – or failure to resolve – such trend conflicts that determine how the emergence process unfolds.

The 21st Century evolution of the Soviet-originated problem-solving methodology, TRIZ, takes all three of these problems into account so users can build more meaningful future scenario predictions. Since its inception, TRIZ has offered a powerful means of informing users *what* is going to happen in the future. It has done this by looking across all walks of human endeavour and in so doing has identified a series of universal evolution step-change principles that will sooner or later transfer from one domain to others. Knowing *what* will happen in the future is an important step forward in our ability to predict the future, but it misses the vital other part, which is knowing *when* things will happen. It is this timing issue that has served as much of the focus of the efforts to evolve TRIZ into the complexities of the 21st Century. The first half of the paper will describe the science behind this evolution of the methodology, and how it has then been successfully used in a number of societal future scenario-based innovation projects over the course of the last decade.

The second half of the paper then shifts the focus to the use of the methodology to make a series of predictions about the world in 2030 with a specific focus on sustainability and environmental factors. A quartet of scenarios will be presented that can be expected to bracket the range of future scenarios, from a worst-case in which societal crises take a sharp upward turn and technological innovation is largely blocked by multi-national organisations with a vested interest in locking-in today's technologies, through to a best-case in which major renewable energy innovation occurs and the social-media-driven contradiction of connecting-everyone-into-antagonistic-tribes is successfully resolved to create a more harmonious societal order. In so doing we will demonstrate the inherent fallacy of a number of currently in-vogue predictions for the future to show that:

- There will be no technology singularity
- 'Autonomous vehicles' will be little more than a niche technology by 2030
- The global patent and intellectual property protection system will be largely dismantled
- Crime detection, education and healthcare domains will be substantially transformed
- Renewable systems will be the dominant source of energy

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Accurate predictions, even for as little as twelve years into the future are still fraught with uncertainty. Experience shows, however, that they do at least offer meaningful insight into the sorts of Butterfly Effect activities that can be purposely instigated in the short term in order to trigger the right kind of non-linear impacts in the medium and longer term. The paper will conclude with a list of such sustainability-oriented 'Butterfly Effect activity' opportunities for the sustainability sector.