# The Nature of Processes

Clearly, though ***Constructive Positive Feedback*** is a crucial component in the History of Reality, it is at the same time, both uncommon, and constitutes a very demanding and transforming element. For it significantly changes its own producing environment. It is therefore vital in those episodes where significant Qualitative Change dominates and transforms Reality.
But it is also quite rare.

The usual and enormously more common processes are characterised by definitely not changing the status quo, and hence can be grouped together as the processes of Stability, though even these, and in that relatively static environment, are accompanied by forms of Positive Feedback, which are always destructive, and which are what might well be termed "downhill" or dissolutory contributions. For these take place a great deal more easily, and usually occur without any major demands on their environments. For example they may well be exothermic, as distinct from endothermic processes (delivering energy, and hence moving to a state requiring less energy to maintain it, rather than one requiring energy to take place, and hence boosting the situation up to one involving more in-built energy as a result.

So, it turns out that such processes occur everywhere, constrained only by the necessary availability of resources, but they will always be dissolutory, and generally turning a measure of in-built Order directly into the dissipation of Heat.
Indeed, if we were to try to characterise the vast majority of natural positive feedback processes, these would have to be the ones that we would choose.
They do not produce Order, but dismantle it, and scientists have encapsulated the overall effect of these in their generalist ***Second Law of Thermodynamics***, which is variously described as being perhaps the only law that illustrates Times Irreversible Arrow, and the Inevitability of universal Decay.

And there can be no doubt that such processes will indeed be very common.
Indeed, if we were to also consider Negative Feedback processes too, we would find that the combined, comprehensive set would constitute a very significant part of all processes, and indeed demonstrate the real holistic nature of Reality not only in its comprehensive interaction of all things, but even in Feedback – where a process also affects ***itself***!

The interesting thing is that the dissolutory processes do NOT "cooperate". I a totally random mix of entirely unrelated processes, they may predominate, but there can be NO positive feedback in such processes: they are generally insidious and imperceptible [***Rust never sleeps*** as they say], and to falsely declare that they rule the roost, and determine the inevitable future of Reality is a wilfully incorrect reading of the History and indeed, the Evolution of Matter. For that History is full of examples of the opposite kind – processes, which are generally "uphill", yet find Stability there.

> [NOTE: For those who might be interested, Murray Gell-Mann (the physicist) devised what he called a Fitness Slope to "explain" Evolution. In his counter-intuitive way, he had "fitness" as downhill – the opposite of how we might describe it. And on this slope small depressions "up the slope" could occasionally "catch" random agitations of species-defining materials (as his version of Variation), so that some would end up in what were "less-fit" positions on the Fitness Slope. (Remember, to him "down " was considered to be "more fit"). But such frigs are the usual stuff of mathematicians "explaining" evolving Reality. And the determining process in such cases would then be ***negative*** feedback. So, as is usual for mathematicians, he didn't ***explain*** anything, but only found another formal way of ***describing*** it!

Now, ***our*** idea of "downhill" processes do not ***create*** new circumstances, they ***dismantle*** old ones, and any temporary joint action with other similar processes, though they may accelerate dissolution, cannot be called ***mutually conducive cooperation*** can they?

Yet such cooperation can occur between some processes and can be crucial.
All it takes is for processes to complement one another – whether in products-as-resources, or in exchange of heat (exothermic / endothermic relations). And, as in dissolutory processes avalanches can occur, but they can also be ***crucially*** **uphill**!
And surprisingly in circumstances where such mutually conducive processes do come together and have sufficient resources, they cannot only accelerate, but also totally out-compete dissolutory or mutually contending processes dramatically.

Though they will never totally eliminate the permanent dissolutory processes, they can indeed our-perform them and in so doing create new situations.
In a dissolutory avalanche of positive feedback – **rocks only beget rocks**, and **no** real change in the environment is produced. But in positive feedback with conducive partners, the situation itself can be totally transformed, and new products can quickly dominate a situation. And when collections of these come together, the once dominant decay processes (though still there) will be well sidelined.

Now, the objective of this short paper is merely to kick into touch the ***Second Law of Thermodynamics*** as the claimed primary producer of an inevitable and maximally dissociated future. Such pessimism is wholly unjustified,
Indeed, the whole History of Reality as far as we can understand it, is one long ascent towards increasing Order, and certainly NOT as a temporary freak happening, but retrospectively as the predominant overall process.

Of course, any idea of ***permanent*** development is as artificially conceived of, as is ***permanent*** decay!
The actual History of Reality seems to alternate between long periods of **Stability**, and very short episodes compounding cataclysmic dissociations with revolutionary creations in what we term **Emergences**.

Now, the main gains in Mankind's efforts to understand Reality have been mostly confined to the situations occurring in periods of Stability, with the only evident "transformer" being the processes of dissolution, but what must be the future of Science has to be the extension of its aegis to include **Emergences**, wherein both mammoth dissolution and significant creation can take place, and these considerations of positive feedback quite clearly are crucial in this demanding and relatively new area of Science.

(990 words)