Value Engineering in the FIDIC construction contract[1]

The great pole vaulter Sergei Bubka became famous in 1983 when, still under 20, he got the gold medal in the World Championship in Helsinki with a mark of 5,70 meters. After this early victory, he went on to win the six following championships, remained the leading male pole vaulter in the world for more than two decades and broke his own world record as many as 35 times. In July 1985 he broke through the 6 meter barrier. His best indoor mark ever was in 1993, at 6,15. The following year, already 30, he jumped 6,14 outdoors. These remained unassailable world records for more than two decades, until February 2014, when a French pole vaulter jumped 6,16.

The remarkable thing was that, when achieving each new world record, Bubka seemed to fly well above the bar and left people with the impression that he could have easily improved that mark. Had he tried, he might have improved on his 1993-1994 records and achieved heights which might probably remain still unsurpassed. It was the same with his female compatriot pole vaulter Yelena Isinbayeva, who in 2005 was the first woman to jump 5 meters and four years later jumped 5,06, still the world record today.

Why did Bubka and Isinbayeva not exhaust their full potential while at their prime?

Such behavior can be easily explained by the economic incentives they faced: both pole vaulters were paid a cash bonus every time they broke the world record and, so, were interested in breaking gradually their marks, step by step, so as to leave some slack for new records and maximize their cumulative income. When age dented their vigour and the decline in their perfomance set in, they were no longer physically able to improve the records set at their peak.

Drawing on that experience, professor Justin Lewis[2] described as the *Bubka principle* the deliberate process of gradual limited improvements that some incentive systems bring about, a principle which he sees at work in many innnovation-intensive industries –like telecommunications or automobiles- where technological progress is gradual and innovations follow a pattern of

[1]Manuel Conthe's contribution to "International Construction Law" (Second Edition), by Lukas Klee, editor , iley&Son, 2018.

[2] Justin Lewis, "Beyond Consumer Capitalism: Media and the Limits to Imagination*" Polity Press*, 2013. See also Tim Harford, "The Logic of Life. Unconvering the New Economics of Everything", *Little Brown*, 2008.

“planned obsolescence”, so that firms are able to sustain consumers’ interest in their products over the long haul.

Thus, the incentive system offered to Bubka and Isinbayeva was probably the best to enhance people’s interest in sports events and make sure that they resulted in new world records, but not the optimal one to induce the two pole vaulters to try their very best every single time.

That incentives influence behaviour and should be wisely crafted, so that they achieve their goal and do not backfire , was also nicely illustrated in soccer in September 2017’s *penaltygate*, when during a match in the French league between Paris Saint German (PSG) and Lyon a public spat broke out on the field between PSG forwards Cavani and Neymar as to who was to kick a penalty against Lyon. The problem was that, as in previous seasons, Cavani had been offered a $1 million bonus if he achieved again the title of top goalscorer in the French league. Hence, he had a big incentive to preserve his traditional right to take the penalties. But a few weeks before the match, during the summer of 2017, Neymar had just signed for PSG, in the most expensive deal ever, and felt consequently entitled to become the club’s penalty-taker. Unconfirmed rumours have it that in a bid to settle the dispute and avoid a looming crisis, PSG president Nasser Al-Khelaifi approached Cavani with an $1 million offer if he allowed Neymar to kick the penalties.

In construction projects, the Employer’s objective is not to get the Contractor to achieve world records or score goals, but to find potential variations which result in cost reductions while maintaining, or even improving, the quality of the works ,as envisaged in Sub-clause 13.2 of the FIDIC model contract on “value engineering”. Here the right precedent is the incentive system set up by President Lincoln during the American Civil War to prevent price gouging by unscrupulous army suppliers who were in the habit of selling to to the Army decrepit horses and mules in ill health, faulty rifles and ammunition.

The remedy was found in the 1863 *False Claims Act*, inspired in the *qui tam* private suits of medieval England (so called because of the Latin motto *qui tam pro domino rege quam pro se ipso in hac parte sequitur* i.e. "he who brings a case on behalf of our lord the King, as well as for himself"). The Law granted significant bounties to those private citizens who could demonstrate that the Army had been overcharged by one supplier, with the resulting cost savings for the Army been shared with the private claimant. The law was softened during the Second World War, but tightened up again in 1986, during Ronald Reagan’s presidency, when a public scandal

broke out about the outrageous prices charged by some defense contractors (most notably for the infamous $700 toilet cover).

Under the current version of the law, suits lodged by private individuals (so called *relators*) against public suppliers are communicated to the Department of Justice. If the US Government endorses the suit and it is successful, the relator gets between 15% to 25% of the Government's gain. If the Department of Justice does not support the claim but the relator continues with the case and eventually prevails, he or she is entitled to somewhere between 25% to 30% of the Governments' win.

In recent years the *qui tam* approach has been extended beyond public procurement. So, for instance, the 2010 Dodd-Frank Law authorized the Securities and Exchange Commission (SEC) to pay bounties –normally between 10% and 30% of the fine- to anyone providing critical information leading to the imposition of sanctions in excess of $ 1 million.

In the case of construction contracts the point is not so much to prevent fraud in suppliers, but to reward the discovery of potential design "variations" which, while maintaining quality, reduce the works' cost. The difficulty is that if the Contractor comes up with a potential improvement but cost reductions benefit only the Employer, the former will lack any incentive to look for improvements and communicate them to the latter.

Hence the wisdom of Sub-Clause 13.2 of the FIDIC contract, which grants the Contractor the right to submit proposals for variations that may accelerate the works, reduce the cost of their completion, maintenance or operation, improve their efficiency or value, or otherwise benefit the Employer.

If the engineer approves the proposed variation, the Contractor is entitled to 50% of the net savings of the Employer, a percentage which is more generous than the 30% envisaged for the Contractor in the UNOPS model contract and higher also than the typical incentives in the *qui tam* mechanisms described before.

In my view, there is logic in the 50% percentage in the FIDIC contract, as this is the most common standard of fairness, as borne out by the results of experiments with the so-called *ultimatum game*, in which a *proposer* offers a *respondent* how to split a certain sum, with the respondent being only

able to accept or reject the offer and both parties getting nothing if the offer is rejected.[3]

A purely rational analysis of the game would indicate that proposers should suggest very favourable terms for themselves, as the alternative for respondents is to get nothing if they reject the offer. Experience shows, however, that respondents systematically reject unbalanced offers out of a sense of grievance and lack of fairness. As a consequence, to avoid such risk of rejection, or maybe as a result of their own sense of fairness, proposers typically offer respondents somewhere between 40% and 50% of the amount to be split.

The same may apply to the variations of a project which are conceived by Contractor but benefit the Employer. The cost reduction may be seen as the equivalent to the amount to be split in the ultimatum game, with Employer playing the role of proposer and Contractor of respondent. If the latter does not consider fair how the prize is to be split, he or she will refuse to cooperate and, in our case, will not communicate to the Employer the cost-saving design variation.

To conclude, Sub-clause 13.2 of the FIDIC contract reflects well human psychology and common standards of fairness when it foresees that the benefits resulting from the Contractor's suggested variation are equally shared between Contractor and Employer.

[3] Joseph Henridh, Colin Camerer et al., "Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*", Oxford University Press*, 2004.