

# Interview with Dr. Marcial Losada

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## ***What is the “Losada Line”?***

The "Losada Line" represents a set of measures that include the "Losada ratio." The Losada ratio is equal to three positives for every negative feedback. This is the minimum necessary to achieve high performance. But in addition to the P/N ratio, we need to measure the team's

- Probability of negative responses
- Percent of disconnection
- Kinetic energy level
- Percent of gain or loss in the interaction processes
- Expected performance, given the above measures.

At the Losada line, the probability of negative responses has to be **.25**, the percent of disconnection has to be **24.24%**, the level of kinetic energy has to reach **50%**, the gain should be **16.23%**, and the expected performance should be **.82** (this means the team has only 18% more to go before reaching the top). When a team reaches these metrics, we can say it has crossed the threshold of high performance.

The Losada line was found initially by establishing the isomorphisms between the *normalized Rayleigh number* in the Lorenz model (a nonlinear model widely used in science) and the level of connectivity in teams. The normalized Rayleigh number is basically a measure of the ratio of expansion to contraction in fluids. Similarly, connectivity is basically driven by processes of positive feedback (expansion) as compared to negative feedback (contraction). By observing when the normalized Rayleigh number leads to symmetric convection processes in fluids, I found the equivalent number in connectivity and its associated P/N ratio. This number is 2.9013. We validated this measure with Barbara Fredrickson and published the results in the *American Psychologist* in 2005.

Later, I utilized a different procedure to find the Losada line. I used the *principle of least action* as measured by the *Lagrangian*, which basically is the kinetic minus potential energy in the emotional field produced by the team's interaction processes. This procedure gave a P/N ratio of 3 (very close to 2.9013). This represents another important validation of the Losada ratio.

## ***How did you develop this model?***

This model was developed after observing hundreds of teams at two laboratories of the Center for Advanced Research in Team Interaction (CFAR) at Ann Arbor, Michigan, and Cambridge, Massachusetts. We observed three pairs of bivariate variables: inquiry-advocacy, positive feedback-negative feedback, other focus-self focus. These, together with the control parameter of the model, **connectivity**, turned out to be critical for performance in teams. They alone explain .91 of the variance in performance. We looked at the structural characteristics of the time series generated at the labs (their amplitude, frequency and phase) and then modeled these using nonlinear differential equations. These equations have the same mathematical structure as the Lorenz model. My model, the *Meta Learning* model, is a special case with different initial and boundary conditions than the Lorenz model.

The key about the Lorenz model is that it provides a very powerful representation of processes where **symmetry** is important. Symmetry is at the foundation of mathematics and physics. Phil Anderson, a Nobel prize in physics, said that “it would be slightly overstating the case, to say that physics is the study of symmetry.” There is a famous theorem, known as *Noether's theorem* that links symmetry with conservation laws in physics (like the conservation of energy, for example). Einstein thought highly of Emmy Noether, a German mathematician who crowned the developments initiated by Galois and Lie (among many others) in *group theory*, a fertile mathematical field closely related to symmetry.

I have come to the conclusion that **symmetry is also at the foundation of interaction processes** in teams and marriages. When teams and marriages achieve symmetry between their self-interests and the interests of others (spouses, other team members, their clients, and so on) and they also achieve symmetry between trying to persuade others on what they think is right with asking questions about what the others perceive is right, we can say there is a symmetry between advocating and inquiring as well as self- and other-focus. Low performance teams are great at advocacy, but very deficient at asking good questions. The best teams are able to balance advocating with inquiring. When you ask generative questions, you are a much better advocate. Advocacy by itself only takes you where you already were. Good questions lead you to new territory. When Colon discovered America it was because he asked a good, daring, question: what lies beyond the Atlantic ocean? We'll never know what lies beyond ourselves if we don't ask good questions and become as much interested in others as we are on ourselves.

## How can it be used in business?

I have been using it for many years, in many countries, with great success. The average increase in productivity after I train the team is **27%**. In addition, we know that the results are sustainable because productivity has been measured **4 years after** the training and the high performance level does not decrease. We are so confident of these results, that we actually guarantee them in writing.

In order to use my model with teams, the first step is to diagnose the interaction processes of the team. This is a *sine qua non* condition. No team can be properly trained to become high performance if you don't diagnose first their interaction processes. It's like going to the doctor: You cannot indicate the right treatment unless you do a good diagnosis first. In order to do this, we go to the organization and diagnose the interaction processes of the strategic teams (generally, the CEO and its direct reports, as well as their direct reports). We observe a typical meeting of the team and then we give them the following results:

- 1) *P/N ratio*
- 2) *Probability of negative responses*
- 3) *Level of disconnection*. This is critical because connectivity is the control parameter of my model
- 4) *Kinetic energy level*. This tells how much energy the team has available to achieve its objectives. Strategic objectives require long-term effort
- 5) *Gain or loss* in the interaction processes. Are the team members subtracting each other or are they multiplying their talents?
- 6) *Expected performance*
- 7) *Level of symmetry in other vs. self focus*
- 8) *Level of symmetry in inquiry vs. advocacy*
- 9) *Magnitude of the emotional field* generated in the interaction
- 10) *Level of resilience* that the emotional field is able to sustain.

We call these 10 measures, the *decatalogue of team interaction*. A few minutes after our observation of the team's interaction processes, we show them these ten measures. This always produces a big impact on teams. For the first time, they can actually **see** what is going on with them. Then, and only then, we can present a reasonable training program that takes into account these results by indicating the **type** as well as the **duration** of the training. The average team needs a couple of 2-day workshops plus 3 months of practice, low performance teams need 4 two-day workshops with three months of practice between workshops. We will measure the interaction processes again **after each workshop** in order for the team to see its progress and exactly where they need to focus their efforts in

order to increase their performance.

**All teams, without exception, can become high performance teams.** We have trained many of them, initially diagnosed as low performing teams, and so far we have managed to bring all the teams above the Losada line, where high performance begins.

A fundamental part of the training in order to achieve sustainable results is to train the team in **nonverbal interaction**. This part of the training is in charge of Dr. Geralda Paulista who did her Ph.D. thesis on the nonverbal aspects of the *Meta Learning* model. It is not enough to use the right language. This is comparatively easy to do, but for that language to be convincing it has to be accompanied by the corresponding nonverbal expressions. **There has to be coherence between what I say with words and what I say with my body.** The highly respected journal *Science* published in October 2010 an article where it was shown that a key factor in high performance teams is the ability to read nonverbal cues correctly and to act on them accordingly.

**Can you mention a couple of case histories to make us understand better?**

I left academia more than 32 years ago and went to work with industries. Academia alone doesn't give you all the tools necessary to help low performing teams reach high performance. This is an extremely complex process that requires first-hand knowledge of what goes on in teams inside organizations. So I chose to fully dedicate myself to training teams in business organizations become high performing teams. I am a practical man, research only interests me as long as it can help improve the performance of teams. Otherwise, for me, it is merely academic.

I have trained teams from all types of businesses by now and, without exception, they all were able to reach and **sustain** high performance; i.e., to surpass the Losada line. I have many successful case histories, actually every team we train is a successful story, but I will focus on two now.

The first is a financial institution that has become a model in their field. This is a bank in Chile known as *Bci*. I have permission to talk about them. Their CEO, Lionel Olavarría, has a degree in engineering as well as in business administration. He is a visionary man led by hard numbers. *Bci* has won every prize in the industry, including prizes in innovation and best management as well as social and environmental responsibility. Dr. Paulista and I have trained all their strategic teams. When we began with them, their average P/N ratio was 1.97,

they now have a P/N of 4.49 on average. Their percentage of disconnection was 33.32 and now it is less than half of that, 15.02. Initially, they had a loss of 3.4% in their interaction processes, now they have a gain of 34.07% on average. That is a net gain of 37.47% which translates into similar increases in productivity. Their best team has reached a P/N ratio of 5.71, the highest we have observed so far from Finland to the Patagonia. When that team started, their P/N ratio was 1.75, which corresponds to a medium-low performance team.

This outstanding result was achieved after 3 two-day workshops separated by two periods of 3-month practice of the model in their day-to-day operations among themselves and with their clients. They have not only reached all their tough financial targets, but have surpassed them consistently. This team has incorporated my model not only among themselves, but also with their reports and, most importantly, with their clients. They have even managed to practice the model with their families. Remember that my model is a model of human interaction that not only applies to teams, but also to marriages, and actually to any interaction process, such as those that occur in sports teams, for example.

Similar results were obtained in the mining industry, where all the strategic teams of one of the world's largest mining companies were able to surpass the Losada line and become high performance teams. The increase in productivity was proportional to the gain in their interaction processes. This is always the case, because the interaction processes are key to any complex operation which requires high coordination of efforts, such as those in the mining industry. Talents are not enough, we have to train those talents to interact productively among themselves and with the people outside their own teams.

Instead of giving more numbers, I will briefly quote the words of the CEO of this mining company where he refers to the training process with my model, the *Meta Learning model*, and the results obtained:

*"The team experimented a notable transformation. You untied knots that imprisoned us: today we look at each other differently, we trust each other more, we learned to disagree without being disagreeable. We care not only about our personal success, but also about the success of others. Most importantly, we obtain tangible results. There are a few landmarks in one's life; this meta learning training was one of them."*

You can find more on Dr. Losada's work at [www.losadalineconsulting.net](http://www.losadalineconsulting.net)