LOSADA

The Updated Meta Learning Model

The Meta Learning Model 5.0

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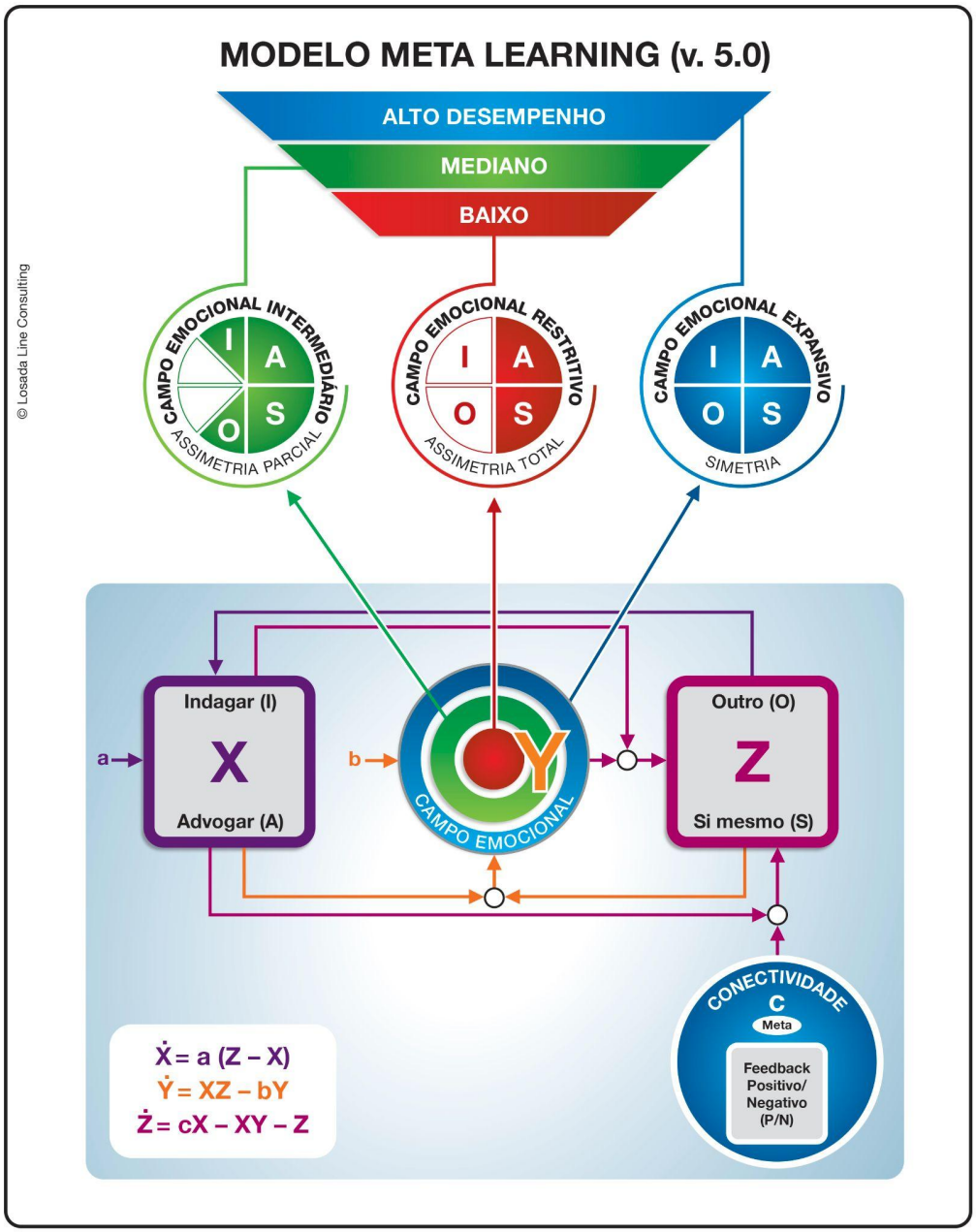

The Meta Learning (ML) model has now been successfully used in all five continents in a variety of fields such as business management, psychology, health, education, and sports.

As data have been collected over a period of 30 years, we now have the world's most extensive database on team interaction processes and performance. Based on these data, we have developed a more advanced version of the model.

I invite you to take a tour of the ML model, version 5.0. Let's start at the bottom right of the black rectangle. There we find a dome-shaped figure that contains Connectivity, Goal, and Positive/Negative Feedback. Connectivity is the control parameter of the model. The more connected a team is, the better its performance will be. If we are able to increase the connectivity of a team there is a high likelihood that we will increase its performance.

Think of a team sport like football, soccer, rugby, hockey, basketball or volleyball. A better connected sports team will, in the long run, achieve better results. You can have great individual talents, but if they are not well connected, another team with less talented players, but better connected, will have a good chance to beat them. Good leaders understand this and know that their main task is not just to recruit good talents, but to connect talented people. Good leaders know they have succeeded when talents achieve a multiplication effect; a mere sum is not enough for them, because anyone can do that. At the center of the connectivity dome we find the Goal. Unless a team has a goal it is not a team, but just a group of people. Teams connect having a goal in mind and, hopefully, in their heart. However, good leaders know that having a good goal is a necessary but not sufficient condition to generate strong and lasting connections within the team.

Below connectivity, at its foundation, we find the Positive/Negative Feedback ratio (P/N). Many strong and lasting connections are achieved through the appropriate proportion of positive to negative feedback. Much of this feedback is given regarding how much, how well, and how fast we approach the goal. Some feedback is given regarding the interactions processes of the team, independently of the goal. By "appropriate feedback" we mean a ratio that separates medium from high performance. This ratio has been found empirically for teams after more than two thousand diagnoses of teams in different countries and in a variety of organizations over a period of thirty years. The ratio is 3:1 (3 positives for every negative) and is known as the Losada ratio. The best team we have observed using the new, more complete, coding system that incorporates nonverbal expressions, has a P/N ratio of 5.71 (after 6 months training in ML); the worst has a P/N ratio of 0.75 (no training in ML). Dr. John Gottman, the world's top expert in marriages, has

found similar results: Lasting, harmonious, marriages have P/N ratios of more than 5 and marriages that usually end in divorce have P/N ratios of less than one, where negativity prevails.

We must always keep in mind that we give feedback not just with words, but also through nonverbal expressions. Most of the time, whether we are aware of it or not, we are giving feedback to people, even if we are not talking. The prestigious journal Science published an article in October 2010 where the authors show that a key factor of high performance teams is the ability to read nonverbal cues. We incorporate nonverbal expressions to determine the P/N ratio. The P/N ratio is a very powerful measure of human interaction. It tells much more than we expect. Numerous studies in different fields have shown its power, but few have addressed the reason for this power. I have come to the conclusion that the P/N ratio is powerful because it does much more than give **information** about how we are doing. It also generates **energy** and provides **control**. Information, energy, and control are the critical variables for any complex system to function efficiently. We give or take away energy by the P/N ratio we end up providing. We control other people's actions through positive and negative feedback. Other people can control our actions by the feedback they give to us. You can control simple devices, like a thermostat with negative feedback alone, but complex living systems require positive and negative feedback in the right proportion. It is well documented that many of the biological systems that sustain life depend on the adequate proportion of positive to negative feedback. Positive feedback alone is too much of a "good" thing and excess of negative feedback is too much of a "bad" thing. Neither is really good or bad per se; it's their proportion that counts.

If we continue our journey up the model, on the right hand side we find the bivariate variable *Other–Self*. Good teams are able to keep a dynamic balance between self-focus and other-focus. When connectivity is high, this variable will be balanced, it will tend to be symmetric. On the other hand, bad teams are self-centered and pay little attention to others, so they show asymmetry in this variable. Symmetry plays a fundamental role in the ML model. It shows up again in the variable on the left hand side of the model. This bivariate variable is *Inquiry–Advocacy*. Good teams are able to generate an approximate symmetry between these variables. Bad teams advocate most of the time. They don't ask questions and if they do, these questions are not generative; they don't provide an opportunity for people to show their knowledge in a way that contributes creatively to the task at hand. People have a need to show their best. Good inquiry allows them to satisfy this need. The best teams are good at asking generative questions. By asking good questions, they are able to advocate better. This is something every dedicated teacher, thorough scientist, good lawyer, or successful sales person knows and practices.

Notice that *Inquiry–Advocacy, Other–Self, and Positive/Negative Feedback* are all colored gray and have a rectangular shape. This means they have something in common: They are the behaviors

that we observe and code when watching a team. We give feedback to teams regarding these variables every time we have a workshop with them. Most teams go through three or four workshops, so they end up having extensive feedback on their progress. By paying attention to these critical variables and learning how to monitor them, teams are able to stop repeating behaviors that drain their energy. Most importantly, they learn to generate expansive emotional fields that provide the energy necessary to achieve long-term, strategic, goals. Once a team incorporates the ML training it will remain a high performance team for as long as the team lasts and practices the model. I use the term "incorporate" in its Latin root sense: "put it into your body." Putting things in your head is insufficient. Teams need to feel what they learn and be able to live their learning on a day-to-day basis. If they don't experience the good results of the training they will not incorporate the ML model.

At the center of the model, we have the *emotional field*. This is represented by a circle with three concentric rings colored blue, green and red. The radius of the circles represent the magnitude of the emotional field. The blue circle has the larger radius and, consequently, the greater magnitude, followed by the green circle, and finally the red circle which has the smallest magnitude. The colors were chosen to represent the different energy levels an emotional field can generate: blue is high, green is medium, and red is low. We chose this representation following the spectrum of these colors: the frequency of blue is higher than green which in turn is higher than red. We know from physics that the higher the frequency the greater the energy. Furthermore, an emotional field can be restrictive, expansive or intermediate; i.e., not too restrictive, but not expansive enough. An emotional field is expansive when we are able to generate symmetry in both other-focus and self-focus as well as advocacy-inquiry. These variables are asymmetric in low-performance teams and are partially asymmetric in medium performance teams; i.e., there is some transient inquiry and other-focus., but they don't last enough to balance the variables. Symmetry generates sustainable energy, asymmetry drains the energy of teams. Long-term, strategic goals, that require sustainable energy, cannot be achieved satisfactorily by low performance teams. We can already see that there is a causal chain that links symmetry, energy and performance.

Furthermore, expansive emotional fields are characterized by P/N ratios of at least 3:1; but no more than 6:1, because we might end up having excess positivity. Too much positivity can be damaging for learning. We need negative feedback to correct behaviors that are not desirable; but we must always keep in mind that excess negative feedback doesn't provide the energy to sustain desirable behaviors over time. That is why we need an appropriate ratio between the two. This ratio must fall within the so-called Losada zone; that is, it cannot be less than 3:1 nor more than 6:1. Expansive emotional fields open many opportunities for action. Restrictive emotional fields open less opportunities for action and are characterized by excessive self-focus and advocacy that impede

us to acquire new knowledge, closing the door to creativity and innovation that are so critical to survive in complex, competitive, environments.

Emotional fields are powerful because they affect the performance of a team or the wholeness of our relationships, as well as our own well-being . A low performance team usually generates restrictive, asymmetric emotional fields that have little energy. A high performance team generates expansive, symmetric, emotional fields that provide sufficient energy for the team to achieve long-term goals. It is not enough for teams to set goals, they must learn to generate expansive emotional fields that provide sustainable energy to achieve these strategic goals. Imagine an archer pointing her arrow to a target. The target is the goal, but for the arrow to reach the target you need energy, and if the target is far away you need a lot of energy. Without energy you cannot reach any worthy destination. Values are worthy destinations. All organizations have values, but what really matters is if these values carry enough energy for the people to be able to live them. If not, they are just statements of good intentions.

There are two additional parameters in the ML model that we have labeled *a* and *b*. Parameter *a* represents the organizational "*viscosity*" or resistance to change, i.e., how difficult it is to have things done within the organization to which the team belongs. Parameter *b* represents the *negativity bias*. This bias is well documented in the psychological literature and it refers to the tendency all humans have to give more weight to negative than positive events. This is probably due to an evolutionary advantage: Negative events can threaten our survival, so we need to pay more attention to them than to positive events which, even if helpful, don't threaten our survival. In order to overcome the negativity bias, but not suppress it, we need to generate P/N ratios of at least 3 to 1. Low performance teams have P/N ratios of about 1:1 on average and medium performance teams have ratios of 2:1 on average. These ratios are not enough to overcome the negativity bias. This explains why the *Losada ratio* was found to be 3:1. Notice that this ratio leaves room for negativity. Without negative feedback systems run amok and especially complex, living systems, like humans interacting with one another in teams or marriages, need to know when they are doing something that is not right so that they can improve their performance.

All these components of the model are linked by lines that represent the nonlinear differential equations that drive the model. We use matching colors for lines and equations to facilitate their understanding. The boundary conditions of the ML model are $18 \leq c \leq 33$, for $c = 18, 19, \ldots, 33$, where c stands for connectivity. These equations are able to portrait the different symmetry regimes that correspond to different levels of performance. Low performance teams operate within the range $18 \leq c < 20$ where asymmetry towards advocacy and self-focus is portrayed by the equations. Medium performance teams operate within $21 \leq c \leq 24$ where partial asymmetry is shown by the equations (there is some inquiry and other-focus but is not sustainable). High

performance teams operate within the range $25 \leq c \leq 33$ where symmetry is well represented by the equations; i.e., these teams are able to maintain a dynamic balance or approximate symmetry between inquiry and advocacy, as well as a balanced focus on self and others. Connectivity is measured by the number of nexi (strong, lasting bonds) that team members produce in their interaction. When the cross-correlation function (inverse Fourier transform of the cross-spectrum) of the teams' interactive behaviors is highly significant ($p \leq .001$), we have a nexus, a lasting bond. A high cross-correlation function is really a measure of symmetry: it shows how many people are in the "same wavelength." We can see now that the causal chain has four links: starts with connectivity which, when high, induces symmetry which generates sustainable energy which promotes lasting high performance. I am convinced that in this powerful causal chain resides the success of the ML model for developing high performance teams.

I will end this brief presentation of the model by emphasizing the importance of symmetry and showing its implications for the future of the social sciences and their impact on society.

We have seen that as the variables *Inquiry–Advocacy* and *Other–Self* approach symmetry, expansive emotional fields are generated which can deliver sustainable energy to achieve long-term goals. High performance teams are full of this energy generated by symmetry. When we observe these teams, their energy is contagious. They are able to reach their targets almost effortlessly. They enjoy what they do and time doesn't seem to pass for them. They've learned that time and energy go hand-in-hand (actually, they are mathematical conjugates or Fourier transforms of each other). Low performance teams rarely have enough time and energy to finish their tasks and when they do, they end up exhausted. They are trapped in self-focus and advocacy, thus being unable to ask generative questions and take into account the interests of other people; hence their emotional fields are restrictive, they are poorly connected, and their performance suffers. When we observe these teams, we also suffer, but we know that all teams can become high performance teams once they learn to practice the ML model. There is not a single team that went through our training that did not become a high performance team. Just watching these teams celebrate the passage from low or medium performance to high performance justifies our work. All this is possible when a model incorporates symmetry in its critical variables.

Symmetry plays a fundamental role in science, mathematics and the arts. It's an all encompassing concept that unites many disciplines. It is actually one of the few concepts able to span so many diverse disciplines. In physics, it is so critical that Phil Anderson, a Nobel laureate, wrote in Science: "It is slightly overstating the case to say that physics is the study of symmetry." Many other Nobel laureates in physics have echoed this notable remark. There is a woman mathematician, Emmy Noether, who in the period 1915-1918 proved that symmetry is linked to conservation laws in physics, such as the conservation of energy, charge and momentum. Her theorems are now

considered among the greatest achievements of science and mathematics. Einstein thought highly of Emmy Noether and he was the one who wrote her obituary in The New York Times. There is a mathematical language that allows scientists to work deeply and generatively with symmetry. This language is known as group theory and was introduced by a young French mathematician, Évariste Galois, who died in a duel before reaching his 21st birthday. In his brief life Galois was able to change mathematics forever! It took more than forty years after his death for mathematicians to start acknowledging his genius. It is hard to imagine what humankind lost with his early and senseless death. Fortunately, group theory was further developed by Camille Jordan, Sophus Lie, Felix Klein, Arthur Cayley, Hermann Weyl, among others, and more recently by John Horton Conway, a British mathematician now a professor emeritus at Princeton (he has an Erdös number 1, quite an honor, according to the American Mathematical Society). Group theory is one of the most useful languages scientists and mathematicians use to make progress in their fields. For example, group theory has allowed physicists to synthesize the Standard Model of particle physics by using just three symmetry groups: U(1) x SU(2) x SU(3), one of the most remarkable achievements in the history of science. Galileo said that mathematics is the language in which Nature's book is written. One could say that the grammar of this language is group theory.

I have often wondered why symmetry did not make its way into the social sciences beyond the obvious. Economists had made equilibrium an important criterion, sociologists and political scientists worry about social equality and psychologists have worked extensively on cooperation ("tit for tat"), cognitive dissonance (asymmetry) and other topics where symmetry plays an important role. But I cannot see yet the unifying force of symmetry providing the impetus we need to move closer to the more advanced sciences. One can say paraphrasing Phil Anderson's well-chosen words that "it is slightly overstating the case to say that the social sciences will reach new frontiers if we learn to harness the power of symmetry." We should start thinking explicitly about the role of symmetry in understanding complex human interactions, like the ones we find in work and sport teams, as well as in marriages. A deep understanding of symmetry will shed new light that will allow us to see how we can improve our relationships as well as the quality of life in organizations by helping them make the best use of their valuable talented people and connecting them in ways that goes beyond their mere sum to generate multiplication of their talents. This is not utopian, I have seen it happen many times.

It is not enough for organizations to be a "a great place to work," they should become "a great place to flourish." It would be quite an accomplishment for humankind if by the mid of the 21st century we could say that the majority of our organizations became a great place to flourish. People flourish when they learn to put themselves in the shoes of other people, when they connect with others by understanding and feeling their needs, worries, and dreams. To do this we must learn to ask generative questions so that our advocating for a better world carries the weight of

understanding and the moving power of compassion. By doing this we'll find the best in ourselves. One does not find oneself unless one is able to reach out of oneself. Then and only then, we will experience the power of the symmetry between Self and Other and we will learn to harness the lasting energy needed to accomplish great tasks.

In developing the ML model, I have tried to give a solid scientific foundation to something that humankind has known for thousands of years regardless of its spiritual traditions: "Love thy neighbor as you love thyself." The fact that we have known this for so long and find it so difficult to practice, shows that this is still among the roads less traveled. I hope that many of you dare to travel this road. The ML model can be a useful road map.

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