

Neojiba: The Steam Boat Model and a Lesson in Operational Learning

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Introduction

Quality management is the area of Operations that deals with learning and improvement. In the last 40 years the quality field has seen the proliferation of many “new” approaches, purporting to transcend and improve all the previous ones. Examples range from the old PDCA, the fishbone, the KJ’s, and going on into many other qualitative pragmas, like 5s, all the way to comprehensive systems full of fireworks, but somewhat empty like six-sigma. We should recognize that all of them are full of good advice, many well-meant ideas, but sometimes lacking a consistent integration into the whole system of Operations.

Much has been written on how to achieve improvement. See for example [1]. Still, there is a lack of a global theory that shows how to put everything together as a whole, not as bits and pieces, when designing the Operating System.

Quality has claimed as its own, the field of learning in the enterprise, but typically does not provide global conceptual approaches (other than the most simple ones), linking quality with the strategic and operational peculiarities of the company- This may be right in practice, because practitioners do not like (or do not have the time to spend on) theoretical constructs. However, the field eventually needs somebody of theory that provides structure. At this time, there are few models that try to organize the ideas boiling (or at least simmering) in the area. Little help is available for a company that is designing (or redesigning) its operations with quality built in. No wonder practitioners seem to be still relying on JIT, TPS another practical approaches (and their derivatives) for inspiration.

In our book [2] a global model of continuous improvement is presented in the context of operations management. The model is fairly simple, but the main concepts are high level concepts, meaning that, even if the model suggest a course of action, it does not explain detailed ways of implementing it. In this paper we dwell at some depth into the learning side of the model. We are interested inefficient operational learning [3-5] and on designing into the system operational actions that achieve the desired result. We do this through the specific analysis of an exciting case, the Neojiba Project, in Salvador de Bahia (Brazil), a system of orchestras similar to “El sistema”, its Venezuelan precursor¹. Neojiba is considered an ongoing successful experience, both musical and as a social development.

This paper is a contribution, in the sense that we have identified a “successful” enterprise, Neojiba, and investigated what makes it successful in a sustainable way, concentrating on the learning system. We list the isolated actions being performed by the enterprise, and put them into a general context that sheds light on the operational manager’s role in building a satisfactory quality operation.

We studied in detail the status and evolution of Neojiba by living a few days with the Neojiba Orchestra, at that time touring Europe, observing both their procedures and the results obtained by the approach. The result has been a simple scheme, that we call the “Neojiba Model” (NM), which contains an action oriented model of the situation, disclosing a few drivers for the successful implementation

of the Neojiba ideas in other real life situations. We will see that the Neojiba model includes many of the driving forces of Total Quality (TQ) [6] and of the Toyota Production System (TPS) [7,8], albeit in a more specialized approach². We also draw some lessons for its general business application

We have some experience implementing the NM model in real life³ and we believe that NM, is a tool capable of achieving the same exciting results in Operations, as it does in the musical domain.

A General Model for Continuous Improvement

Some 20 years ago, Perez-Lopez [9] published an important book, unfortunately available only in Spanish, putting forward an integrated philosophical conceptualization of the manager job based on knowledge and people. The work was largely ignored by the international community and did not achieve the credit it deserves. Most of the model has not been researched in the usual way, namely making appeal to statistics, hypothesis and the like⁴. Being mainly philosophical, it is difficult to validate using the standard empirical tools. In a sense, doing this would be similar to trying to test, say, Kant’s philosophy [10] in the real world.⁵ As in philosophy, most of the variables are internal variables, and as such very difficult to measure. For instance, one variable in the model is “intrinsic motivation”. In the model, it is not a primitive but appears as a conceptualization in explaining the motives for a decision maker acting in a given way. Like many other philosophy based theories⁶, this should eventually be justified in the input-output sense i.e., if you apply a given set of inputs and if the model is logical, the outputs should, probably, be “good”⁷.

²We have used it in companies with excellent results and very good absorption from the operational manager that seem to obtain good results in a conceptually simple way.

³In fact, many ideas of this paper were put forward while implementing the approach, albeit at a preliminary stage

⁴It probably does not even need such an approach

⁵Is it “TRUE” that “Cognito, ergo sum”?

⁶Which abound in practical management? See Porter(12) for a very successful example.

⁷Many people justify the approach because “The proof of the pudding is in the eating”

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¹For more introductory information see “El Sistema” in Wikipedia.

This has been done by some people, by writing cases⁸ [11] that's how Perez-Lopez ideas seem to be successful.

Knowledge types

Of course, in this work we do not mean to consider all types of learning, so we restrict the scope. We start by giving some operational definitions for the two main concepts in the paper i.e., Knowledge and Learning. To avoid being involved in high level philosophical issues, the definition of knowledge is formulate in terms of problem solving. We state that the existence of knowledge in a subject is demonstrate by the ability to solve a certain category of problems and vice versa. Therefore, we define "a knowledge" as "the ability to solve a category of problems" [12] Correspondingly, "learning" is defined as "any increase in the set of actions available to solve a problem" [13].

With those two definitions, we can see that three types of knowledge are involved in the development of a professional musician⁹, in turn associated with different types of problems.

- a) The mastery of its instrument, i.e., dealing with the problems in the physical production of sound.
- b) The performance of the music i.e., problems related with the mastery of the production of music

c) The creation of emotion from the sound, i.e., relating to the mastery of the creation of feelings There are considerable differences among those three categories.

- The first is mainly an activity of operational learning, related to rote learning, the learning of an operation. Physical work is normally involved, i.e., training of the body, and as such it is not a very high level activity. It mainly deals with the repetition of physical tasks, until everything is perfect (in the limit). It is believed that a musician needs intensive training during all its life, say several hours a day. The initial training, before turning into a professional, typically takes from 6 to 14 years, depending on the instrument. One of the instruments with a higher investments in time is the piano, since beyond the basic keyboard playing, there is a lot of additional knowledge to be absorbed.

- Making good sound from the aggregation of a number of musicians is a higher level activity. You may say that it deals with group learning. The focus is in the synchronization of the different sounds in a combination that achieves the right color that cannot come from by a single instrument. In music training you need considerable expertise in your instrument before being able to make music in a reasonable sized group. However, sometimes and for the right type music, you do not need a superb mastery of the instrument.

- Making emotions from music could be called the topmost level of musical playing. Typically the music student takes courses on the work of different music masters and, with the help of experts, develops his own appreciation of the musical art. In a sense this is a type of learning associated with mentoring in learning unstructured

⁸At the beginning, we considered using a Set-theoretical Method (like QCA, see 14) to summarize and structure the qualitative data in the planned interviews. We dropped the approach, first, by logistical reasons. We wanted to spend our limited time with the orchestra in understanding the atmosphere surrounding it. Second, the methods are still fraught with difficulties. A formal method only takes care of formal reasoning. But we felt that we had a blurred view of the phenomenon that initially needed just exploratory work. The same could be applied to other techniques like C50, Correspondence Analysis, and the main classical clustering algorithms.

⁹Most of the timewewilltalkingabout "musicians", whenwe refer to all levels of "OperatingPersonel" Thereaderwillfindrelevant to exploretheir differences, if any.

crafts. In symphonic work, conductors are one of the main sources of mentoring for the playing musicians. Actually, the conductor strives to get the sound and feelings he wants and a good orchestra should be capable of achieving the demands of the conductor. No discussion can be carried on against the musical ideas of the conductor; the purpose of the players is understanding and achieving his wishes. Sometimes the messages are translated in concrete recommendations "plays this louder" or "play legato", but often they are transmitted in a vague form (e.g., "play this with feeling") that rely on the musicians' experience, and on the repetition of passages as the rehearsals go along¹⁰.

In this paper we have mainly in mind the operational and group levels, i.e., how do you learn, quickly and efficiently to play an instrument in a group, so as to make "beautiful music together". This is equivalent to job training in factory operations.

Neojiba deals very efficiently with learning. In four months, a neophyte student can play well enough to participate in group work (ensembles). Then, in 3 or 4 years he/she can play in the Neojiba Orchestra (YOBA¹¹) Obviously, YOBA selects the more capable performers, by taking into account their full range of virtues, not only the playing ones.

The Starting Point

The Perez-Lopez model starts with some very general postulates that almost everybody agrees on. The two main ones¹² essentially are: "People want happiness" and "Do unto others what you want them doing to you" This is then translated in business parlance to: "people work well when they are happy in their work", and "justice is a must in business life". From this start, you can see that this theory cannot possibly be a descriptive one, but rather, it should be a normative one¹³.

The Perez-Lopez model identifies three elements that allow a complete valuation of the state of cooperative decision making. It assumes the presence of two types of agents in each decision: the active and the passive. Both carry with them a state that can be thought as their accumulated knowledge, usable in future decision making. The first agent has the initial decision. The second receives the said decision, and reacts to it either by acting, or by storing it into his internal state, this being a list of observed behaviors pending of interpretation. The result of an interaction can be evaluated by three (sets of) criteria:

- Efficiency (E): Has to do with the direct effects of the decision, and their results in the physical world, especially in the company
- Learning (L): has to do with the effect on the passive agent, resulting from the implementation of the decision
- Integration (I): Has to do with the change in the active agent resulting from the learning of the passive agent. This is a very relevant, indirect result, normally ignored in models of decision making.

- These criteria, will be known collectively as "the ELI triad". Perez-Lopez argues the completeness of the three types of criteria and their logical independence. Accordingly, all conceivable criteria to define the quality of the result of an action, should belong to one of the three above categories, and the categories are logically mutually exclusive.

¹⁰Sometimes the conductor sings to show what he wants. For a good example see Carlos Kleiber rehearsing the Overture of The Fleddermouse in YouTube, (1970)

¹¹Young Orchestra of Bahia, the main orchestra in the Neojiba system.

¹²Both of them publicly recognized by reliable sourcessince long ago

¹³An additional reason that makes direct testing almost impossible

An starting model

We simply start from Perez-Lopez model we introduce dynamics into it to deal with permanent improvement. This is done by postulating the existence of an inventory of knowledge and an inventory of extant problems that the company has to solve to survive and progress. In a simplified way, the dynamics comes from the interplay of knowledge and problems. Essentially, knowledge is acquired when (and by) solving problems, and its existence leads to (better) solutions both for new and existing problems, that provide new opportunities for improvement. A diagram of this interplay is displayed in Figure 1.

The arrows represent a (probabilistic) pseudo-causal relationship between two concepts. We call the left (complete) cycle the “inner cycle” since it could work in absence of external interaction. However, left to itself it would have little (or none) “impact in the environment” The right cycle deals with the external world, where the improvement is produced. Here actions coming from the inner cycle are implemented, and result both in learning and in some effects in the environment. Both cycles are not synchronized and normally could run at different speeds. Notice that you could simplify by saying that, at a certain level of aggregation, an actor can make decisions on the variables of the inner cycle, and the result would appear as a consequence in the outer cycle.

Let us remark that many current buzzwords appear in this model. In current business practice, they are treated as isolated objects, responding by themselves to some sort of theory. Here we imply that they are to live together and cooperate in any process of improvement. There is no reason to separate one from the other. You cannot do I, they are simply the pillars where improvement is built.

In practice the system has a considerable degree of redundancy and thus of reliability. However, failures lead to inefficiencies in the ELI criteria, the more sensible ones being those affecting learning and integration. In extreme cases, typically caused by negative feedback loops, the whole improvement process could fail miserably (For more details see 6).

The terms in Figure 1 are not to be thought as point wise events. The whole is a global process, and develops in continuous time, although its effects could probably manifest themselves only at random points of time (events). But those events have a lasting influence on behavior. And this is so, because every item, in turn, is a process,

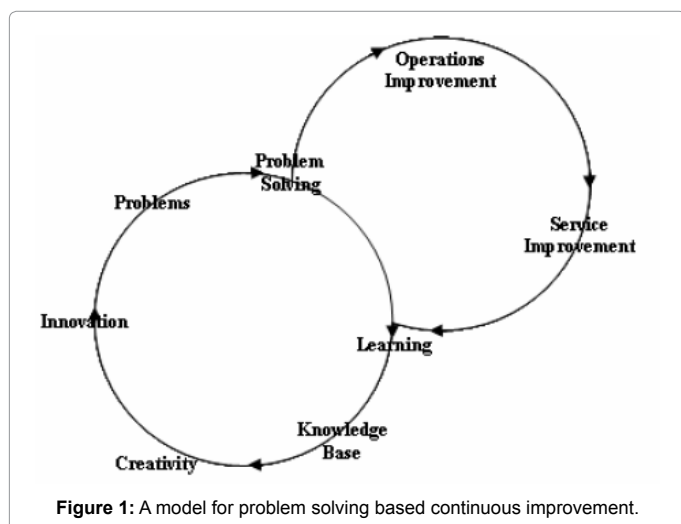


Figure 1: A model for problem solving based continuous improvement.

taking place inside the global one, and possibly having a dynamics of its own. Obviously, inside every sub process operates a whole pyramid of processes, followed by additional pyramids and then some more, ad nauseam.

Neojiba

The previous model, even if a reasonable one, is still difficult to test in a sensible way. To anchor it in real life, it is necessary to find simple cases where the hypothesis are so obvious that they can be construed as axioms.

In trying to pin down a suitable case, we came across what we think is an excellent one. In the past we had been interested in “El Sistema” project in Venezuela, and after some initial effort we ended up considering it too unwieldy to be treated in depth¹⁴. A few years ago, while at Salvador de Bahia, we came into close contact with Dr. Ricardo Castro, the head of the Neojiba project, and we were allowed to accompany the orchestra during his 2014 European tour, we were able to live for a few days as one of them, and were able to interview musicians and managers with complete freedom. We were very well accepted by the collective of musicians and managers, and we were fascinated by their approach to life. In what follows, we briefly document the Neojiba project, referring the reader to the actual case [11].

Neojiba is not a system of orchestras, as in “El Sistema”, but a social structure whose objectives lie beyond the purely musical. It was originally conceived as a way to keep young people out of the drugs, and of the dependence on income generated by the drug business. Inspired by the Venezuelan experience, it was thought that involving people in challenging and fun projects could provide the motivation to fulfill the desired purpose.

The city of Salvador de Bahia is especially sensible to such approaches, as it is a not highly developed city in Brazil, and drugs are easily found. On the other side, Salvador is a wonderful land of music and rhythm. Young people are obsessed by music and live and dream of, and about, music. Of course, it is mainly popular music with a strong and distinctive native touch. So, it seemed that the soil was ready to receive new seeds.

At the time, the challenge was stated as inducing young people into becoming players in a Symphonic Orchestra. The Orchestra would perform, at professional level, the full repertoire of classical music, as in any other symphonic orchestra in the world. Also the orchestra should emphasize the native virtues of the players. To maintain motivation, the training had to be done very quickly, so that results would have been immediately enjoyable to participants and friends, without boring afternoons of scale playing

Neojiba started nine years ago and has sprout into existence two major orchestras and a number of musical training centers, for the benefit of the would be players¹⁵. The project has developed a special approach to musical learning that is geared to achieving their specific objectives. While initially following the Venezuelan track, Neojiba has developed a particular structure and training methodology, developed by its founders, but initiated in cooperation with Jose Antonio Abreu, the founding father of the Venezuelan “Sistema”.

The Research Plan

Our questions for the field work were:

¹⁴“El Sistema” has morethat 250 orchestrasoperating all over Venezuela.

¹⁵Details can be found in the Neojiba case.

- a) Is the Neojiba approach to training and learning successful in the musical sense?
- b) If it is, what are the key ideas behind it?
- c) Can it be exported to other areas of activity? With any advantages?

To do this we did:

- Evaluate the success of Neojiba. This is a difficult endeavor, because the very definition of success is difficult to state. Remember that time-data are scarce since the operation has been just a few years in place. Also “being good citizens” no good musicians, should be considered the primary criterion, according to the fundamental principle of Neojiba. In view of this, the technique we used was to maintain interviews with some 40 musicians (out of 130) from the orchestra, and enquire whether or not they were satisfied with their careers and why.
- Build a model of Neojiba, that can go beyond the orchestral world but that incorporates the key ideas. We began from the two cycle model already presented, and went beyond it, to incorporate additional variables allowing a more specific approach.
- Extract from the model the ideas valid for all operations in an enterprise, finally reporting what we believe are the main traits for a successful deployment.

Is Neojiba Successful?

The simplest way to evaluate an adventure such as Neojiba is by its artistic results. And this is easy since involves mainly listening to music, instead of some convoluted approaches in use. So we begin by reporting what we heard, namely the music performed by the orchestra, in particular the music performed during the European tournee of the orchestra in July 2014.

As a summary of the observations we can say that YABO is not (yet?) a top world-class orchestra, like the Vienna Philharmonic or the New York Philharmonic. If we were to classify it against the professional orchestras in the world, for us it would be roughly at the middle, in a category where many present day Spanish orchestras belong. Having said that, one must point out that sometimes, they produce moments of catharsis, where the orchestra sounds exceptionally well. It was hard to believe that some of the players were only 14 years old!

The Factors

We interviewed in depth a large portion of musicians in the orchestra, namely 40 musicians selected with the cooperation of their conductors and educators. The interviews were largely exploratory and informal, trying to discover what they felt were the clues of Neojiba’s

result, especially insisting on the learning process and the resulting product. We then collected all scripts and extracted (using Shohi Shiva version of the KJ method¹⁶) 20 Neojiba key issues (NKI) that were considered the critical structure of the learning process. They are fully listed in Appendix B

The complete list of NKIs was judged too detailed for a synthetic global approach. Accordingly they were processed by the researchers, again using the same KJ method, and subjected to an in depth discussions with some of the people of Neojiba, especially with some of the musicians. As a result we identified the following set of four global factors that were considered the main global drivers (NGD’s) of its learning process.

- a) Here they are:
- b) No bosses, facilitators
- c) Learning and mentoring by task switching
- d) Finalistic Learning
- e) Recurrent improvement by “Increase Operators (Actions)”

In the following table we compare the above NGD with the rules presented in Spear and Bowen for TPS (Table 1).

As can be seen, although the spirit is largely the same, there are important differences. The similarities are remarkable specially having into account that no one in YOBA had the slightest idea on TPS or JIT. Obviously the ADN properties have a strong industry flavor, whereas the Neojiba NGD’s reveal their source in services. Possibly, the simple nature of the YOBA service, simple by reference to industrial activities, allows a better view on the inside of the operations. This simplicity makes focusing the global ideas more transparent.

A More Detailed Look at the NGD’s

In this section we provide a brief discussion of each one of the four NGD, and describe briefly the Neojiba approach to exploiting each one of them.

- a) No bosses, facilitators. Everybody knows that symphonic orchestras are a nest of conflicts. Rivalries, prima donna complexes and related anomalies, combine to sometimes create even permanent conflict. Consider now the Neojiba orchestra. You can only play there for a moderate amount of time, not after your 30th year. What would you do beyond that date? Probably, left to the dynamics of a normal orchestra, conflict is already served. That would be the death of the full project. There may be other alternatives, but the one chosen in Neojiba is both drastic and efficient. There are no bosses. Nobody has a local niche of authority. Nobody tells anybody else what to do. You are supposed to do it. And we allow mistakes. Err is human. But resentment or bad faith would not be accepted. We work together, we

Neojiba	Spear and Bowen (Decoding ADN of TPS)
No bosses, facilitators. There is no need for giving orders. Instead, define objectives at all levels and provide help in fulfilling them	Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level in the organization.
Learning by mentoring and task switching. Use the task structure of the processes to create learning opportunities	Every customer supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.
Finalistic Learning. Learning from immediate task problems. Learn by achieving short term objectives	All work shall be highly specified as to content, sequence, timing, and outcome
Recurrent improvement by “Increase Operators”, provided by the organization to help in achieving improvement	Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.

Table 1: Comparison of the NGD with the rules presented in Spear and Bowen for TPS.

¹⁶An American TQM

play together and we live together. We depend on each other through our work. If you do not live by this credo, you do not belong and should be excluded.

b) How do you manage the Integration of purpose? You establish a set of objectives, and design a prototype path to achieve them. In an orchestra there is immediate feedback. Everybody is going to see your performance. When we play in a concert hall, everybody will be seeing you and listening to everything you do. Including your fellow musicians. So the answer is simple. Propose a network of related objectives to musicians, and trust and help them to do their best in achieving them. If they don't succeed, they will make us fail. The collective would not tolerate such kind of persistent behavior. The causes could be lack of technique or a lack of willingness to perform. In each case, your success is our success. If you fail we fail and we will be discredited. Down the drain goes all the hard work. "The orchestra has not improved, it sounds worse than last year" will be said the critics. And all interest will eventually fade away. In such situations Neojiba leaders believe that the group itself will create a culture that excludes failures by misbehavior. And apparently it does!

c) In summary, you should insist on the ideas and provide the tools to accomplish them. Buy them a violin, if they need a new one; provide good copies of the scores, and so on. Then the control mechanism takes over in automatic mode and increase integration.

d) In a sense, all Neojiba is saying is: "Do show that you care for your fellow musicians and for everybody else. You are not the boss, you are simply a facilitator".

e) Learning by mentoring and task switching. One of the problems in putting the cycles to work is controlling the rate of problem generation. Too few problems, and there is no learning. Too many problems, and the universe becomes frustrating. Then the rate of problem solving, thus of Learning, decreases. In industrial operations there is a large rate of autonomous problem creation, largely generated by the interaction with the market (or, more generally, the environment). This is not the case in Neojiba. To provide for it, they implement a system of controlled challenge creation. We know that problems represent challenges (i.e., the challenge of solving them). Therefore you should create adequate problems! Problems are pretty easy to define in Neojiba. A large category of problems can be created by just trying to play a fragment of music that is somewhat above the expertise of the student. Not too above, because then the experience becomes frustrating, and there is no learning (de Treville, as quoted in 12). And, obviously, not below, because the problem is then trivial and again there is no learning.

f) From this point of view, how to proceed is rather obvious. Create a process of challenge generation tailor-made to each student. This is done by the body of monitors (or teachers). Fortunately, there is a way of creating the right challenge that does not take too much time: select fragments from libraries of musical fragments in order of difficulty (available on internet) and keep track of the individual results i.e., listen! The process is rather efficient. Once the assignment is performed, you should control if the student is being successful or not. So, use monitors as coaches to give advice and help on solving the problem. Practice with the flutist until the desired sound emerges! The nature of Neojiba avoids one of the biggest mistakes that even professional teachers make. Sometimes monitors end up solving the problem for the student! No way here. Music learning requires the learner's to sit in the driver's place! You cannot play the piano by being given lectures on how to play piano, or on the physics of vibrating strings. You should press the actual keys!

g) A second way, and an important one, is task switching. Imagine the effect on a student on being invited to lead the orchestra in a rehearsal. This is an extreme case, but it is rather common in Neojiba. Fortunately, you can get similar results by carefully grading the assigned types of music and inviting the student to play in public. And do not restrict the student to play a single type of music¹⁷

h) Finalistic Learning in Neojiba you are learning to play a part in the next concert is it at a school PTA event, or a formal performance in a big concert hall. Typically when this happens you have spent 2/3 months, 3 hours per day, rehearsing alone or in group. Thus, learning it is not "just in case". It is "just in time". If you are not going to need a given key signature no effort should be put into its practice.

i) In Neojiba there are no standard courses for all students. All is managed in a need to know basis. So there is not an academic curriculum as such. In common individualistic mental learning, a high level of interaction should take place between the student and the monitor (the teacher). Not as much in operational knowledge. There is no need to explain in detail a bunch of ideas that "should be absorbed" to play the oboe. Only very basic ideas are involved in music playing. What is put into practice is mainly a guided trial and error approach, helped by a considerable number of heuristics. For instance, a flutist should learn the different embouchures required to play the full flute range. But the teacher involvement is essentially showing the position of the lips and the mechanics of breathing, and later on, correcting the student. It is a matter of the student to become excellent, aiming towards the desired production of music, which is the ultimate test of the training.

j) If students can do the required playing, they are OK. If not, they should keep practicing. This needs time... and the concert is next week!! What can you do? Simple. In a concert, if a part has a very difficult passage and the musician has not the required advanced skills, he is advised not to play the fragment, or play a simplified version, subject to obvious constraints, but always keeping up with the professionalism of the orchestra.

k) No grades are awarded to students, nor there any exams. Evaluation is based on the listeners (including colleagues), having the feeling that the participant is "doing well" The only place where evaluations are performed formally is in the contest for entrance on the two big, more professional, orchestras. In this case the candidate is evaluated by a committee on his/her full past career at Neojiba. If the committee agrees that he is "doing well", he is promoted and a moderate increase in pay happens. The pay is modest but at Salvador prices can make a substantial difference in quality of life.

l) Recurrent improvement by "Increase Operators" As in any system of decentralized decision making, a conflict appears between the more advanced people, the ones with a better training, perhaps veterans in their last years in Neojiba, and the beginners (or at least less advanced ones). Teachers (coaches) suggest alternatives and provide basic ideas for solving problems. But there is a need of some sort of mechanism that allows people to improve by them, building up an increasingly advanced set of capabilities.

m) The key is putting the improvement into the hands of the user, the musician. To do that every musician should challenge his own

¹⁷One of the authors learnt to hate Bach (yes! Johan Sebastian!) when he/she was 14 years old, His/her sister, at the time a piano student, was forced (by his/her teachers) to spend two years playing just Bach "Studies for piano solo". The story has a happy ending, because nowadays he/she is a most fervent admirer of the old master!

activities. Yes, there are some activities that should be kept immutable. But most of them do not. And even the immutable ones invite change. So, a preliminary conclusion would be: Neojiba does not need to redesign music-related processes, it should design and put in the hands of the user, a metaprocess for helping him redesign his own processes.

n) The principles of such metaprocess are simple. In Neojiba the main source of monitoring comes, in order, from the mentors of the small groups, from the people responsible of the territorial ensembles and from the conductors of the two big orchestras. But, and above all, from the colleagues. There is a need to get feedback from colleagues. Good, honest and objective feedback. Neojiba insists on anybody freely expressing his opinion about the virtues or defects observed in a performance. This is accomplished through a feed-back loop. Everybody is involved in teaching. All students teach and receive teaching from the colleagues. So, most of the time a mentor is also a student. Somebody that has authority and knowledge greater than you, in some (perhaps small) area of musical expertise. But he is a teacher in something, and deserves credit and respect. If you are a drummer, you know how to beat the drum. Then go ahead and show your interested colleagues how to do it. You'll become a teacher in drum-beating. Learning is teaching and teaching is learning. Nobody scores you. If you do not learn you will not teach well, so everybody will know of your lack of skill.

o) So you can improve, by collecting "increase-operators" like recipes or algorithms, and most likely by putting together your own version of improvement heuristics. And this will not be lost, because, if you keep improving, one of those days you will be teaching drum beating!

In general, the whole system has a sort of double loop behavior. What changes the system state is not what you do. What you do, changes the way in which further actions change the state.

Still, you need a formalization of this meta-process. This formalized process should be iterative and such that any reasonable musician can go through it at his initiative, to achieve results with independence of his experience in the musical art. How to do it in Neojiba, is not yet very clear and they are still working on ways of doing it. But the purpose is there!

In any case the message should be "Rules are meant to be broken. Do not make them too impossible to break"

The Steamboat Model: A Comprehensive model for the Neojiba learning process

In the following picture we present a structure for the full Neojiba model, based on all the above ideas the development proceeds by analogy to a classical Steam-Boat. We take as the hull, the full two cycle's model, with the cycle variables as the main control levers for the whole ship. Then we add to it the details of the engine that moves the driving wheels. Remember that the only decision making variables are in the inner cycle. Thus, it is enough to consider the engine just driving the inner cycle. Finally, to complete the driver chain we include the 20 NKIs, (the palettes acting on water). The palettes are related to the engine by a transmission organized in four groups, each group associated with an NGD, altogether forming the master driving train for the boat (Figure 2).

Some incidental remarks

1. We should emphasize that unlike in the mechanical analogy;

there is not a univocal relationship between the workings of the engine and its effect on the speed of the palettes.

2. The main actions, the top level management of the Steamboat, resides on the cycle variables. But all cycle variables are not created equal; the main action variables being Creativity, Innovation, Problem Generation and Problem solving. You could argue that by managing them, the rest of the cycle is managed.

3. The model is mainly a strategic. But the managerial work involved in running the wheels should not be overlooked. All links are not mechanical, but human. The day to day management of the operations is management of humans. It is difficult, and needs a lot of careful and detailed work. Here we rejoin the three basic criteria, Efficiency, Learning and Integration playing a central role in the control of the Operations of company

Final Summary

The main contribution to general business practice from the Neojiba experience has to do with a new and more systematic approach to strategic quality. The Neojiba approach integrates quality in strategy, which in turn includes all aspects of the operations system. The task of continuous improvement is indeed a complex one. And it is even made worse if it is not considered in the front line of the business activity. Many companies deal with quality almost as if it were an afterthought, not paying attention to the need of integration with all aspects of the Operations.

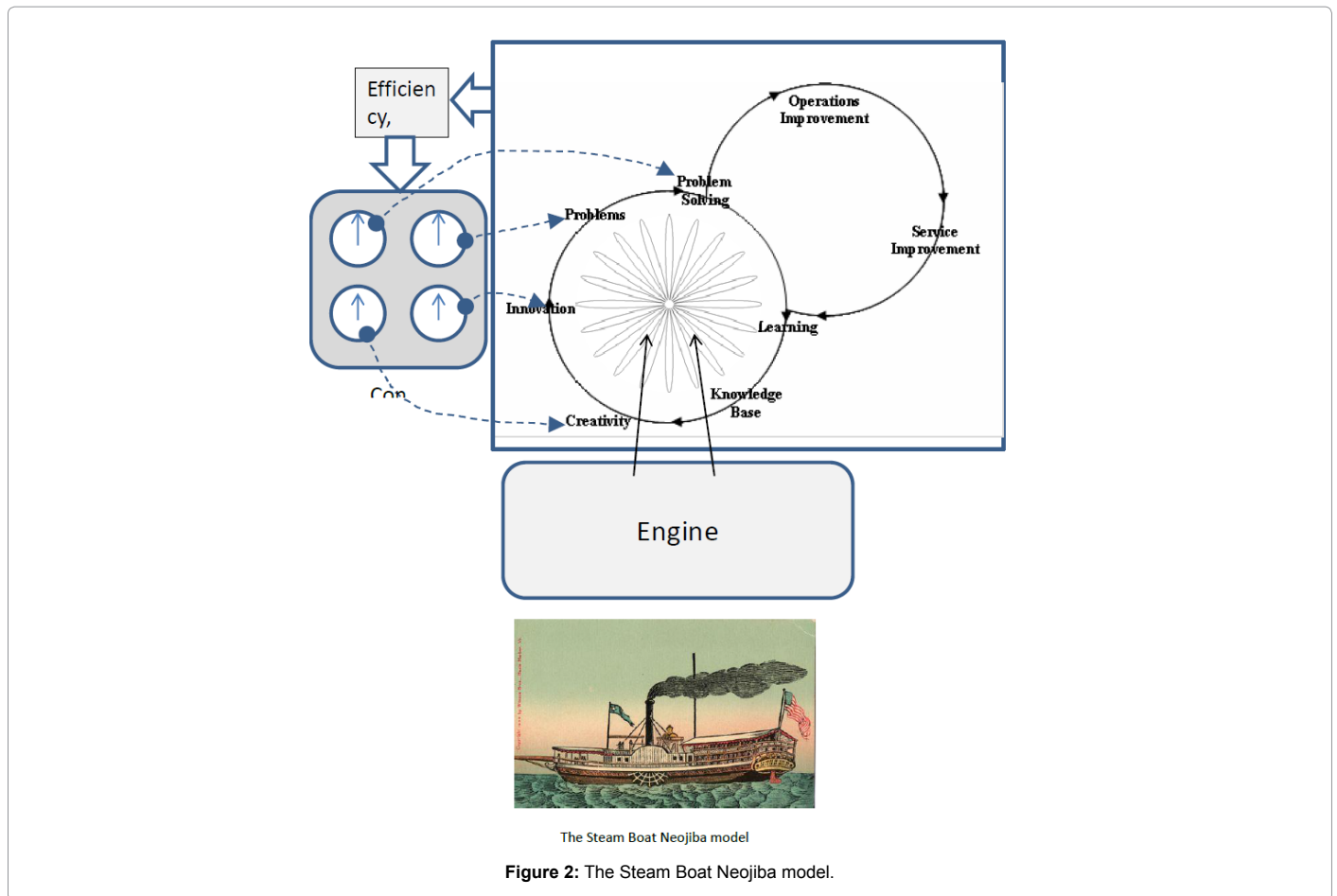
In those cases, improvement is defined as the increase in some indicators (unfortunately only related to the financial side of the company), but incidental in a wide spectrum of areas. This is appropriate, but it is the result and not the cause, since "the cause" is to be found behind the actions changing the structure and parameters of the operations system.

In trying to categorize the causes, our Neojiba Model considers a comprehensive spectrum of variables, covering four subsystems

- a) The ELL, that measures the results, objective of the improvement
- b) The Neojiba engine and its NGDs
- c) The palette, with its 20 NKIs as individual components
- d) The internal cycle variables, main drivers of the system which in turn provide and receive feedback from their movement

None of the variables are new, all of them have been proposed in the literature. The main advantage of our model is an easily remembered conceptual set of hangers that show the right place where to put the actions, so to keep them consistent. Also it helps in covering a large spectrum of problems associated with learning in Operations, as a whole and not a bunch of isolated techniques. Once you have a general model, the implementation plan needs filling drawers with concrete actions, most of them well known, and getting them aboard. Then, on the boat, the spade work is done, gathering all the bits and pieces, and using the hangers to create a purposeful structure.

The reader can see a more complete list of somewhat unconnected actions (not yet integrated but in the classical way) by looking at refs. [12] and [14]. Reference [12] deals mainly with the knowledge approach. Those works can be used as a source of inspiration in developing actions. However they lack an integrated and systematic approach, as represented by the Steam Boat Model. Specifically, b) and d) above can be linked, at least partially, with knowledge and its management. And



ref. [14] contains a number of hints to implement c). Finally, in terms of more detailed actions plans, in ref. [7] you can see how most of the work on TPS and Quality suggests lots of concrete, but disconnected, ideas for implementation that find their actual position in our Boat model [15-20].

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