

Replication: A force of nature or work of art?

by

Marie Bengtsson & Lars Lindkvist

LiU School of Management

Linköping University

S-581 83 Linköping

(e-mail: marbe@eki.liu.se; larli@eki.liu.se)

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Abstract

Replication refers to the creation and operation of a large number of similar outlets that deliver a product or perform a service. Undertaking a replication strategy ideally entails identifying the recipe that proved to be successful, and apply it over and over again without another company being able to identify and imitate it. Replication processes in business settings have been investigated, informed by a biology metaphor framework where ‘routines’ and ‘copying exactly’ from templates are among the basic conceptions (Winter and Szulanski, 2001). In the paper we identify yet another replication metaphor, originating in art, focusing on ‘authenticity’ and the transfer of a prevailing ‘spirit’ to replicas. We also illustrate empirically how this addition is fitting in a context where it is not only routines, but also an enterprising mindset, that shall be replicated in new outlets. The combined use of biology and art metaphors, we contend, should generate a more comprehensive framework for understanding replication practices.

Introduction

Replication “refers to the creation and operation of a large number of similar outlets that deliver a product or perform a service” (Winter and Szulanski, 2001). Undertaking a replication strategy ideally entails identifying the recipe that proved to be successful, and applying it over and over again without another company being able to identify and imitate it. Within a resource-based framing, replication may be seen as a matter of finding an Arrow type, non-rivalrous resource, that it is possible to use repeatedly without loss of value. While there are quite a lot of studies of the transfer of technology and other more specific subsets of firm activities, very few focus on how firms replicate whole business strategies. Naturally, this is of particular importance in chain organizations. The first company which comes to mind for most people is probably McDonald’s, but examples of replicating firms outside the fast-food industry abound. As stated by Winter and Szulanski “replicators are rapidly becoming one of the dominant organizational forms of our time” and may be found in over 60 industries, among which hotel, banking, and accounting are just a few examples.

Replication processes in business settings have predominantly been conceptualised using a biology metaphor as main inspiration. As with all metaphors, in addition to enriching our thinking, they also limit what we see (Alvesson, 2002). In the paper, we hypothesise that yet another replication metaphor, originating in art, may compensate for some limitations,

and that the combined use of these metaphors is a fruitful path to generating a more comprehensive framework for investigating replication practices. Our purpose is thus to contribute to the literature on *how* replicating firms may grow by transferring their business recipes and the knowledge contained in these to additional outlets, and our more specific ambition is to explore how metaphors taken from biology and the art may contribute to understanding replication processes. We also illustrate our discussion with observations from an empirical study of a fast-growing – fast-replicating – highly successful, internationally operating retail firm.

Conceptualizing replication

Extant replication literature tends to build, more or less strongly, on evolutionary theory as conceived by Nelson and Winter (1982). Within such a framing the competitive dynamics is a matter of the rate or speed of (internal) knowledge transfer versus that of external imitators. In their empirical study of the transfer and imitation of production technology among Swedish firms, Zander and Kogut (1995) adopt such a view of a race between replicating firms and imitators. Rivkin (2001) too, relies on an evolutionary perspective, viewing “replication and imitation as competing search efforts” (op cit, p. 275).

However, replicating firms are then faced with a knowledge-related dilemma. To replicate the recipe, a company would want to have quite explicit, uncomplicated directions as to how to go about. A manual readable by anyone would probably be a windfall, especially since that would mean that nearly anyone could be appointed to carry out the mission. The hitch is that the easier it is for the original company to tell the success factors that form their concept, the easier it will be for other companies to snap them up and make them their own. Conversely, if recipes to be replicated are highly complex or less well known, difficulties may prove to be overwhelming for both imitators and the original company. As noticed by Winter (1987), “Features that restrain involuntary transfer tend to inhibit voluntary transfer; likewise, actions undertaken to facilitate voluntary transfer may well facilitate involuntary transfer also.” (p. 174). Replication and imitation thus tend to be “blades of the same scissor” (Kogut and Zander, 1992) and “brethren phenomena” (Rivkin, 2001).

So how may a firm go about “escaping” this dilemma? A core assumption then, is that the replicating firm is able to replicate its “routines” faster than imitators, due to the fact that it has superior access to the original, successful template (Winter and Szulanski, 2001). The framework relied on by Szulanski (2002) in his study of Banc One’s replication efforts is explicitly stated as being structured within the Nelson and Winter (1982) framework, using “routines” and “copying exactly” from templates as core categories.

However, as mentioned above, we suggest that also art literature provides metaphorical inspiration in developing a replication framework. We here benefit mainly from works describing how art was transformed from craft work to artistry (cf Baxandall, 1972; Becker, 1982; Vasari, 1998) and from the debate about how we may distinguish between a great work or art and a forgery, which has been a major issue in the philosophy of art literature. Based on the arguments presented by Sagoff (1983), Lessing (1983) and Meyer, (1983), we here discuss how the originality of the artist preserves the authenticity value of replicas and how the artist’s signature is signaling the authorship of a new “finding” or discovery.

In our view, the art metaphor suggests a different type of replication process and the presence of a different type of protection against imitation. Specifically, this means that replication in a business context could be seen as a transfer of the enterprising spirit, once introduced by the founder. Copying routines and copying exactly from templates may not be part of such a spirit. Moreover, it means that the biology-inspired competitive race idea may be complemented by the arts-inspired idea of keeping competitors away by being recognized as the ‘authentic’ firm.

Outline of discussion

Below we start by presenting our study of the replication process in a retailing company. This empirical study is based on interviews with managers and a real-time study of the establishment of two new shops in a country in Eastern Europe. During three months in 2004, one of us, equipped with a tape recorder, a notebook and a camera, worked side by side with the people being trained to work in the new shops, experiencing first hand how they learned to become employees of that firm, how rules and routines were established, i.e. the entire process through which empty premises became fully-fledged shops of a certain kind. In spring 2005 we returned to these two new shops to carry out the second phase of

the longitudinal case study. This phase lasted one month and involved both real time observations and interviews of a more retrospective nature with sales employees, shop management teams, managers at the country office, and at company headquarters.

We then present a brief account of replication in the world of biology, focusing on the replication of genes, and apply this biological filter on the literature about replicating firms. After that we explore the issue of replication in an art context, compare the two metaphors, and discuss what new facets become visible when we add the art metaphor. Finally we suggest that a framework incorporating the inspiration of both metaphors may benefit empirical analysis, and we use our own case story as an illustration.

Case illustration: The H&M mode of replication

Background

H&M is a rapidly expanding, Swedish retailing firm selling clothes, accessories and cosmetics. It now operates in 22 countries with some 1200 shops, employing about 50000 employees. Most shops are full range stores, selling ladieswear, menswear, young-, and childrenswear. It often presents its business concept as “fashion and quality at the best price”. Germany, the UK and Sweden are main markets, but H&M is present in many other West and East European countries as well as in Canada and the US. The number of stores has increased steadily, from only 70 shops in 1974, when the company was listed, to about 600 shops in 1999, a figure that had doubled by the end of 2005. Turnover and profits display a similar pattern, rising to 72 billion SEK in sales and 13.6 SEK billion in profits (after financial items) in 2005. In recent years H&M has been opening some 130-150 new shops yearly, and the target for 2006 is 150 new shops.

Thus, H&M has managed to multiply its operations, by adding on similar outlets, without loss of value in terms of profits made. We may then ask whether H&M inhabits any resources of the Arrowian kind, i.e. assets that are non-rivalrous, like knowledge, and which may be used without reduction of its further usefulness as a consequence.

A business concept with a history

The phenomenal, steady and largely uninterrupted growth in sales profits and number of outlets over a period of more than 50 years has turned H&M into a much celebrated success story in the Swedish context. Over the years, a great number of factors and circumstances have been put forward as explanations for H&M's achievements. While many of these, such as excellence in purchasing, sensitivity to design/fashion, low cost production, first mover advantage, etc, have no doubt had a considerable impact from time to time, we will focus on another factor, that is unanimously recognized as a major one among analysts. This factor which is highly significant considering our outlet replication interest, is the content and importance of the founder's business concept, originally conceived in the 40s by Erling Persson, H&M's leader up to the 80s, when his son Stefan Persson took over as managing director. It would appear that the generation shift in this family owned firm went smoothly, not only in terms of wealth transfer but also in business recipe terms.

So how do we make sense of the founder's original vision and ideas? In our view, the notion of "tradesmanship" may be used as an overall characterization. Now, while this may seem to be quite a simple concept, and Erling himself stated that it was a matter of a "primitive trade" of buying and selling (Pettersson, 2001, p. 73), this concept no doubt contained many subtle facets in this case. Some of these could be seen as mirroring the attitude of a small business owner working in a hostile environment, such as focus on costs, profit margins, stinginess, fear of being cheated, and detesting bureaucracy. Other facets rather acknowledge the possibilities out there, such as the inclination to compete and try new things, to always look forward, to trust your intuitions and abilities, to act rather than investigate, etc.

There has been little attempt to codify the virtues involved in the vision, although seven values to be honoured in H&M, namely common sense, trust in people, own initiative, cost consciousness, teamwork, high tempo, and straight communication have been formulated.

We realized sometime in the 90s that we cannot take for granted that people understand this H&M-spirit that we claimed existed. IKEA has been clearer in defining this. At H&M there was just some general talk about it, so we had to try to get it on paper, and that's when we wrote down the H&M values. .
(Manager for Training and Education)

Erling also repeatedly used the notion of “geist” to signify the kind of spirit that has to exist within a firm. Such a spirit of initiative and responsibility, he maintained, is shaped where most of those who have some kind of management role in the firm have been promoted internally, “Here all of them should participate and have a say” (Erling quoted in Pettersson, p. 74). “We encourage our personnel to come up with new ideas and we welcome the existence of many opinions”, says his successor Stefan Persson (Pineus, 2004). More generally, as explained by Samuelsson (2006), H&M may be seen as a truly experimental firm, relying on trial-and-error learning, where a willingness to try new ideas, even in the face of little up-front investigation, is combined with fast feedback and learning. It should be underlined, however, that it is a matter of bounded experimentation and flexibility, revolving around but respecting as “sacred”, the longstanding core values as identified above. As stated recently at its web-site:

The H&M spirit is essentially the same today as it was during the company’s earliest years. The way we do business is determined more by values rather than by manuals. Two of the fundamental values that we feel encompass the H&M spirit are common sense and showing initiative. (H&M: Facts 2005)

Replicating a “geist”

Returning to the issue of outlet replication we may thus conclude that H&M no doubt wishes that a significant portion of the tradesmanship described above should be replicated in the new units set up. This would mean that the kind of flexible small business spirit that was originally there should still be around, including “the geist” of initiative and responsibility. In a sense, the founder’s vision is thus still alive. We should recognize of course that while these ideas, as formulated above, seem to be both old and simple, they have been polished and refined over many decades, chiselling out a hard to describe, but well functioning and core part of its business recipe. In the words of Pettersson (2001; p 21) “the story of H&M is not really about clothing, but from the beginning, of one man’s visions ...”. According to him, the “geist” of the founder is still around, while today it is Stefan Persson who is seen as the final guarantor of what is the H&M way.

As a result, what should be replicated to a significant extent would need to mirror something that has a personal origin, a kind of spirit or “geist”. This need not mean, however, that the origin is explicitly recognized; either generally within the firm or by

those who enter as employees in the new outlets. For them the virtues conveyed during education and training will probably appear rather as some kind of corporate culture that they should adapt to.

Opening a New Shop

Entering a new country normally involves setting up a local administrative organization as well as a local logistic organization. At the time of the new establishments in the Czech Republic that we followed, a new model for expansion was being tried out at H&M, where a neighbouring country was put in charge of the openings in the new country. In our case, the Austrian country office opened the new Czech shops as if they were part of Austria and therefore took care of construction, warehousing, administration and training. With the new model, initial overhead costs could be reduced, and the company could therefore afford to expand more slowly, opening only a few shops to begin with in a new country and then wait and see. This experiment put high pressure on the Austrian organization, but was also rejuvenating in some sense, and seen as a positive challenge. The first shop was opened in Prague only four months after the contract had been signed, and a second shop followed closely after that. The opening of shop number three and four in Brno, situated less than two hours by train from Vienna, followed the year after, and we took part in that process, focusing on the training of the Czech staff and how they learned to become H&M-employees.

The signing of the contract is the starting signal for all the activities necessary to open a shop. Nothing is to be done before that point. Once the signal has been given, shop drawings have to be made, budgets prepared, employees recruited and trained, shop fittings and garments ordered, construction workers hired, flow of goods planned, and teams put together, and all the other things that have to be finished in time for the shop opening.

New employees are carefully selected. They have to have a certain drive, be enterprising and see for themselves what needs to be done. One of the managers here suggested a metaphorical expression, in terms of ‘sardine-tins’ and ‘fish-bowls’, that we find to be representative of the philosophy that should permeate the organization:

A tin of sardines is quite predictable, there are clear descriptions on what to do, how to think, the decision procedures are described, and if you turn your back, they do not move, nothing has moved. In this company little fish are swimming around all the time, there is always something happening...from a production point of view this [the Sardine-tin way of management] can be very efficient if you pour out a certain product. The input in one end will be output in the other end, as long as everyone does what they are supposed to do. But in our business it is very difficult to predict what will happen. With input and output we don't know if we bought the clothes that are selling in the end, so as a leader you have to stimulate people and make them think and take some initiative. They can't just wait around for instructions. (Manager for Training and Education)

The people who remain after a steeplechase course of applications, interviews, and sometimes also assessment days, are thrown right into the action. On-the-job-training, learning-by-doing and trial-and-error are the main building blocks of the pedagogical philosophy. Working together with more experienced people in an already existing shop is the basis of training. The shop training is sometimes interrupted by workshops on topics such as security and call-off, led by H&M-trainers or people from the country office. There are no employees whose daily work is that of a trainer; all trainers have 'regular' jobs either in a shop or in one of the offices. It should be added that this strong reliance on "internals" is also connected to a reluctance to resort to de-contextualised and formalised modes of education.

If someone were to come from the outside, like a behavioral scientist, I don't think it would work. In a company like H&M ... it has not been part of our culture to be a learning organization in the sense that it is ok to have training sessions and courses, that's like swearing in church, so you have to take it slow. (Manager for Training and Education)

All in all, the 50 employees selected needed for a new shop had 2x10 days of training prior to the opening day. So, for what were they trained?

The Shop – H&M:s tradesmanship in miniature

The shop's main tasks are to display and sell garments, and to take care of and develop employees. Marketing, procurement, accounting and other activities that single shops normally have to deal with are taken care of at the country office or at the company headquarters. All shops are wholly owned by H&M, but the company practices 'mental franchising', i.e. the shop managers should run their shop as if it were their own. The chores that need to be done every day are similar in all shops: taking care of garments when

they arrive at the shop, preparing them for the shop floor and displaying them, attending to the fitting rooms, restocking empty spots, keeping the shop tidy, and working the cash registers.

The garments are designed and bought centrally and are then dispatched to the different shops either via a central warehouse or through local warehouses. The distribution system can be described as a combined push and pull system. The shops are each allotted a certain share of the garments, based on estimated sales capacity. The rest of the garments are placed in call-off. New garments arrive in the shops on a daily basis and for the shop staff it is more or less Christmas every day in the sense that boxes arrive in the morning, and they do not know what to expect when they open them. Since new garments arrive every day, the garments in the shop are also rearranged every day. Not the whole shop at once though, but parts of it. It is part of the business concept that the customer should be able to come to the shop every day, and every day find something new and fresh.

The advent of the sales statistics is a weekly event and a direct feedback on last week's endeavours. Through the sales statistics, the management team can find out how much they sold last week and how they did compared to other shops. This is also a feedback on the sales capacity of the shop display. From the detailed statistics the management team can find the weak spots of the shop, and the garments that will need some focus the coming week. When a garment stocks up, the shop has to be creative.

To me, what we do in the shops is fairly simple when you look at it on paper, but when I face reality with everything that is happening around me, things happen and then what you sketched on paper may not work or be correct anymore. Or you might have a frame but it changes because something happens every day, every week, and then the shop management team has to be flexible. (Area Manager)

The company relies heavily on internal recruitment, and values shop experience highly, also for office jobs, and hence one of the most important tasks of the shop management team is to further the development of the sales employees. Sales employees who seem to have an eye for colours and combinations are often involved in the decoration work and assigned a small area to work on to gather some experience and prove themselves. A sales employee who takes initiative and is interested in selling is gradually given greater areas of

responsibility, and should he or she then show some leadership talents, a floor manager's job may be the next step. Since the company is expanding rapidly, trained staff is a sought-after resource and, in the new countries especially, it is not impossible to go from sales employee to floor manager or visual merchandiser within the first few months. As a result managers at different levels in the shop have strong incentives to work hard – adhering to and honoring a small business spirit.

Common sense and initiative taking

The shops are based on self-service and the garments are more or less expected to sell themselves, so how a garment is displayed is of great importance. We have thus chosen a few observations related to display activity to illustrate how the core H&M values of common sense and initiative taking may be expressed in practise. The display work is full of traditions, rules, and beliefs of what makes a composition H&M, but only very little is written down in the form of instructions. Still a certain level of uniformity in display between shops is expected. The regular campaign info and the department book, which is not so much a book as a binder with exchangeable pages, are examples of documents that emanate from the company headquarters with the intention of setting the course. These are however not exact “how-to” directions with pictures of what the presentation must look like and exact instructions on how to get there, but more of limiters to reduce the number of choices that can be made. The limiters can consist of descriptions of the feeling or style the display should convey (e.g. the 50s) as well as the main colours to choose from and some hints and tricks. Much of the campaign info is intended as a source of inspiration.

We believe that if you come and tell people on a sheet of paper that this is the way it should be and think that it will be carried out that way, that would be amazing, but it's never like that, we know that. So that's why we don't put self evident things on paper for people to read. They have to think for themselves, but we can help them on the way, and tell parts of it, and then let them figure out the rest by themselves. (HR Manager)

People should thus use their common sense and ingenuity in their attempts to manage problematic situations. In our view, the below story of Dita gives a good illustration how people should think and act in accordance with these H&M values.

Dita was one of the new Czech employees who were being trained in Vienna. It was before lunch on her second day at H&M. She had been given the task to go to the stockroom and pick up the new

garments and fit them into the L.O.G.G. department and there was only one denim skirt remaining that somehow did not fit in anywhere. There was one spot on a table where it might fit, but then she would have to redo the entire table, and she had not been asked to do that. After much pondering, she suddenly remembered something that had been said during her interview and that was that at H&M they appreciated people taking initiative, so she started moving things around, trying to find a solution. In the middle of it all, the local shop manager came by and saw what she was doing. He started asking her questions on her way of reasoning, why she put a certain garment in a certain place, and gave her some hints like to find good sales arguments by looking at the prices of the garments and put forward the products with good prices on the price signs.

-Now try to change the table, try different solutions, he encouraged her. He gave her some hints on the use of colors as well, then before leaving her to continue on her own he said:

Don't be afraid. Never be afraid to make a mistake. At H&M this is really important, you're allowed to make mistakes. Then I or someone else will come by and tell you, 'that's good, that's not so good, that's good, and there you can swap these two' and so on. That's the way you learn and work it through and have fun doing it.

Then he left, and Dita continued her work according to her newfound knowledge. A little bit later he came by again to see how she was doing and gave her some more feedback on what she had done and further hints and tips. When Dita in the end considered her work to be done, he called for the Czech trainer and future floor manager, and asked her to give some feedback. She methodically went through each section of the table and the garments surrounding it and praised and asked for improvements. This also became a natural point to bring up the subject of the department book, which Dita up till then had not consulted in her redecoration. After a brief demonstration of its contents, Dita went back to work, and this time guided also by the department book. This process of trial and error continued until closing time, but Dita was bent on getting the table right before she would go home.

Trial and error and experimentation. These are not just guiding principles, which characterize the overall strategy of H&M, they should be valid throughout the whole organization.

Learning from New Shops

In H&M, opening a new shop is seen as providing opportunities to experiment and bring about change. While there is certainly an ambition to take advantage of old lessons learned, the principles guiding the establishment of a new shop do not fit squarely with the notion of copying precisely from templates. Returning to our new Czech shops, we may think of

them also as small laboratories. The inexperience of the new shops made them excellent sites for trying out possible new shop routines since they were starting with a clean slate. The new shops would then eventually become living examples of new routines actually working which could be shown to doubtful old shops to prove the new routine's feasibility. The decoration of the new shops also brought visuals from different shops and countries together to form a display team. The team was deliberately set up as a mix of experienced and not so experienced people to promote creativity. That way the not so experienced people also got an opportunity to try their skills and get feedback from some of the best. Since newly opened shops often get a support team the first weeks to get started, there is also a possibility for sales employees in particular to get a chance to see the world by helping out in the new shop, something that can be highly motivating, but also a chance to exchange experiences with employees of other shops.

Replication – a biology view

In the beginning, Dawkins (1976, p. 17-18) tells us, a particularly remarkable molecule was formed by accident, having the extraordinary property of being able to create copies of itself. As mis-copyings were made, a variety of replicating molecules emerged, out of which some became more numerous than others. Among replicators competing for scarce resources in the environment, the ones that have a high propensity to survive and outnumber others are those that display stability and longevity, speedy replication, and replication accuracy. So, these are the features of “good replicators”. A molecule, or a gene, within this conception has but one “wish”, to survive and reproduce as much as possible. It is a selfish gene as Dawkins puts it, a gene that sees to its own interest, not engaged in some altruistic endeavors for the best of the species it may be a part of or the like. As a result, we and all other animals are best seen as “machines created by our genes”. Surviving replicators, such as genes, are thus those who are good at building “*survival machines* for themselves to live in” (p.19). Such replicators, however, do not literally survive, but like all material bodies they are destroyed at each replication; “all that survives is their *structure*. They ‘survive’ only in the form of copies” (Hull, 1988, p. 406).

The effect of any given gene then depends on its interaction with many other genes. Taken together, they provide a basic structure or design for a vehicle, in much the same way as a computer program.

The genes too control the behaviour of their survival machines, not exactly with their fingers on the puppet strings, but indirectly like the computer programmer. All they can do is to set it up beforehand, then the survival machine is on its own, and the genes can only sit passively inside. (p. 52)

So far we have focused on replication, involving ideals of copying-fidelity or passing on structures largely intact. This would seem to contradict the idea of copying errors as a main driver of evolution. However, evolution should be seen as something that is happening, in spite of all the efforts by replicators to prevent it; “nothing actually ‘wants to evolve’”, says Dawkins (1976, p. 18).

In the light of this brief introduction into replication seen from the point of view of Darwinian biology, we may now return to the information economics idea, originating in Arrow (1973), about the much wanted non-rivalrous resources that may be used repeatedly without losing their value. Genes obviously have such a character, being able to multiply over and over again, while keeping their structure and competencies largely intact. Moreover, while genes and collections of genes do not wish to change, copying errors, mutations, differential outcomes of their effects on phenotypes, etc, generates variation, which in turn constitutes a basis for selection and retention. In a sense, genes may here be seen as “knowledge” and “competence” containers, able not only to replicate, but also to “learn” and transform, out of their experience in using their survival machines or “interactors” as a way of furthering their continued survival and reproduction.

Replication in a business context - inspired by biology

Winter and Szulanski (2001), in particular, focus on this “new” issue and we mainly use their article in re-interpreting their replication-as-strategy framework through the lens of the biology metaphor. First then, we should recollect that from the point of view of evolutionary economics a firm is “first and foremost an organization that knows how to do something” (Winter, 1995, p. 148). Secondly, learning how to do things is seen as heavily time and history dependent, and as is often emphasized, organizational knowledge or capabilities, tend to be fragmented, distributed and embedded in organizational routines, to

a great extent relying on “tacit” knowledge (Winter, 1996). The notion of routine is here a core concept and the entire firm is often referred to as a hierarchy of routines (Nelson, 1991). At a micro level, a routine may be conceived as a “web of coordinating relationships connecting specific resources” (Winter, 1995, p. 149) and as such it takes on the character of a team-embodied competence – i.e. the organizational counterpart to the notion of individual skills (see Polanyi, 1983; Nelson and Winter, 1982). Such routines are thus a key repository of organizational knowledge and firms know how to do things because they command appropriate routines.

Replicating routines

For Winter and Szulanski (2001), the “routine” notion is parallel to “gene constellation” as conceived in biology, whereas the “Arrow core” refers to the set of valuable “know-how” features of a routine. The Arrow core is thus a resource that is information or knowledge-like, infinitely leverageable and non-rivalrous in use, constituting what ideally should be passed on to additional outlets. Obviously, the routines actually in place in a specific outlet may then incorporate more or less of these Arrow core features.

However, as with genes, the Arrow core knowledge and competencies should be seen as embedded in an “interactor”, i.e. an operating firm or outlet within a certain environmental setting. As a result, successive replications will tend to have differing outcomes even if the same Arrow core were in place. This makes it highly problematic to find out from past success what elements of a given practice should be seen as making up the ideal Arrow core. While some of these aspects may be salient and possible to explicitly recognize, Winter and Szulanski (2001) stress that the Arrow core tend to inhere in “routines”. Being able to identify nonrivalrous information/knowledge in such ambiguous contexts, and recreating tacitly operating routines in other settings, before would-be imitators do, is thus the challenge facing the replicating firm.

Thus, successful replicators [interactors in our terminology] learn to extract nonrivalrous information from a complex and causally ambiguous example, *before others do* [our italics]. To effectively leverage complex and ambiguous success, replicators then become adept at recreating such complex sets of routines and maintain them in operation in multiple contexts. (Winter and Szulanski, 2001, p. 741)

A sine qua non for replicating firms is thus to learn and copy fast. In order to do so, Winter and Szulanski stress that firms need to have in place “centralized capabilities” to support a speedy and precise replication process. The “Centre” has a vital role in considering whether the Arrow core is “principled” enough and sufficiently validated to allow for commitment to full-scale replication. However, consistent with the view of “routines” as constituting the core competences of a firm, Winter and Szulanski (2001) suggest that the best way of leveraging the Arrow core, is to let the additional outlet copy an established and operating “template” outlet.

The logic behind this view would appear to be that, as a well-functioning template is a result of repeated cycles of learning, it may be assumed to possess many of the vital elements that make up the ideal Arrow core routine. These elements, embedded in the template routines, are not known with precision, nor are they salient upon mere inspection. As a result they cannot be “transferred” to the new outlet in a conduit transmission sense. Instead they have to be acquired through some procedure of tacit learning, such as through some kind of experiential learning, learning by doing or practice-based learning (see e.g. Wenger, 1998; Brown and Duguid, 2001; Lindkvist, 2005). Apparently, this makes it necessary to involve and utilize people at the template, to work together with those at the new outlet, in transferring the craftsmanship of those who embody the knowledge associated with running the “original” to those who shall acquire the same “how to do” abilities at the “replica”.

Copying precisely

Interestingly, Winter and Szulanski (2001) argue forcefully that such copying from existing templates should be made precisely. As a core hypothesis they state:

... replication is more effective and profitable when replication tactics rely on an initial effort to copy the template precisely (p. 737)

Empirical evidence, reported in Adler (1990), Bradach (1997) and Knott (1997), showing that when replication is guided by a template that performs satisfactorily it is better to “opt for strict precision”, is here put forward to substantiate this hypothesis. Instead of venturing into “improving” on the template or changing it in order to better adapt to the new

environment, it is suggested that, for organizational and psychological reasons, such attempts tend to be overly optimistic.

More generally, a rationale for this hypothesis may be identified in relation to ways of dealing with complexity. Reiterating Simon's (1962) notion of the complexity of productive systems as a matter of the number of elements and interactions, we may recognize that high or moderate levels of complexity may easily result in a vast number of unforeseen interaction effects, many of which may be damaging (Rivkin, 2001; Reed & DeFillippi, 1990). Relying on an existing template where the resulting, routinized interaction effects are already proven to be either tolerable or beneficial, then appears to be a sensible option. Interestingly, we here identify a parallel view in biology, where it is often stated as a rule that new combinations and mutations almost always involve detrimental outcomes. Apparently, a similar reasoning regarding the low probability of getting new interaction effects that are beneficial to the system, is favoured.

Replicating without imitation

As to the reason why replicating firms may replicate successfully without being severely hurt by imitators, Winter and Szulanski first point at their superior *access* to the template. Imitators may inspect such a template, but are denied access to the more tacit and routine-based qualities (incorporating vital aspects of the Arrow core). Rivkin (2001) favors the same explanation, noticing that, as long as the replicating firm "has better information than the imitator about the original success" (p. 274), a wedge between the ease of replication and difficulty of imitation, may develop. However, this advantage to the replicating firm, he continues, would seem to apply only in cases of replication involving a moderate level of complexity. In simple cases, imitators may be on equal footing with the replicating firm, and where very high levels of complexity prevail, replicating is impossible for both. Secondly, Winter and Szulanski argue that replicating firms have a kind of learning advantage. Competitors would not have the kind of (central) organizational capabilities in place and the same absorptive capacity to learn from experience as the replicating firm. So although they could actually copy both salient and tacit features of an outlet, it would tend to come at too high a cost and involve learning at too slow a pace.

Replication in Art

A replica in art is a copy, duplicate, or reproduction of a work of art made by the “original artist” or under the supervision of the “original artist”. To gain a more vivid picture of what this implies, we will go back in time to the Renaissance and the practice of painting. This was the period when painting became an art. The issue of how we then may distinguish between a great work of art and a forgery, has been a major one in the philosophy of art literature. We will make a brief account of this discussion of what is a forgery and why we do not appreciate forgeries. In doing so, we identify some of the core ideas and conceptions in these debates that we believe are informative in suggesting some additional aspect of the replication-in-business problematic.

From Craft to Artistry

In the early medieval period, painters were craftsmen just like carpenters or potters, working as members of a team. The workshop was the place of production and training. Before the 12th century, craft skills were mainly associated with monasteries, and the work of painters consisted mainly of illustrating manuscripts. From the 12th century, many building projects started, and cathedrals became the patrons and focus of workshops. The purpose of the works of the craftsman was usefulness, and what he strived for was virtuoso skill, i.e. master control of his material (Becker, 1982). In estimating the price of a painting, the principle was very similar to that of today’s plumber’s, i.e. the costs were split up into materials and work time. In the first half of the 15th century, the materials used was a very important issue, and when ordering a painting, the amount and quality of gold and ultramarine color to be used was one of the main factors specified in contracts (Baxandall, 1972). These paintings, which were publicly displayed in churches and cathedrals, were a way for the patrons to flaunt their riches. The more lavish the materials, the more noble and affluent the patron would seem in the eyes of the painting’s audience.

By the end of the 15th century something happened. The social position of the artist changed along with the recognition that painting, sculpture and architecture were not mechanical, but liberal arts. Arts was thought to differ from crafts such as pottery or weaving, in that the practice demanded intellectual understanding of such matters as anatomy, perspective and Classical culture (Dictionary of Art, 1996). The focus changed

from collectivist to individualist efforts, putting the Artist in the spotlight, regarding him (mainly) as superior to craftsmen. Giorgio Vasari, who collected the life stories of the great masters of that time, described the artist's genius as an innate factor, which contributed to the exclusiveness of the artists (Dictionary of Art, 1996). Leonardo had a similar view, regarding painting, quite chauvinistically, as the noblest of the sciences.

Those sciences that are imitable are of such a kind that through them the disciple can equal the master and produce comparable results. These sciences are useful for the imitator, but they are not of such excellence as those that cannot be passed down in this way as if they were heritable goods. Amongst these, painting has first place. It cannot be taught to someone not endowed with it by nature, as can be done with mathematics in which the pupil takes in as much as the master gives out... Painting alone retains its nobility, bringing honors singularly to its author and remaining precious and unique. It never gives rise to offspring equal to itself (Leonardo da Vinci, 1989, p. 19)

The products of the studio became more firmly associated with the reputation of the master, although they were still made by a group of people. One sign of this change was that contracts for paintings would shift their focus from the materials used, to specifying more clearly how much involvement was expected from the master, and what was to be done by his apprentices and assistants (Baxandall, 1972). The great masters came to be precious ingredients of paintings themselves.

Generally, apprentices would learn to be good craftsmen by working in their master's workshop, but some would display special gifts and develop into great artists themselves. In his youth, Leonardo da Vinci was apprenticed to the great artist Andrea del Verrocchio. The story, according to Vasari (1998), goes that Verrocchio, who was finishing a panel showing Saint John baptizing Christ, put Leonardo to work on an angel, which was a minor and quite unimportant part of the painting, and hence a suitable job for a young apprentice. However, this young boy did not only paint an angel, but painted an angel that eclipsed anything the master had done on the painting. After this event, so says Vasari's story, Andrea del Verrocchio never again touched a brush or paint.

What is wrong with a forgery?

The change from craftsmanship to artistry is what constitutes the 'replica'. The replica, as opposed to a mere copy, has some contact with the original artist and before this transition there was no 'original artist', and hence the distinction was not necessary. Another

distinction triggered by this transition was the one between an authentic picture or replica and a forgery. As the former were highly valued it became an alluring option to produce fake copies of the artist's works. So, relying on the art literature, how can we distinguish a forgery from a great work of art? Our main interest in the forgery debate is motivated by the explanations that certain authors have put forward.

What these authors have in common is the idea that pure aesthetics cannot explain forgery. Sagoff (1983), for example asks the question "are the original and the forgery, then, equally accurate, equally skillful, ingenious, suggestive, or creative as representations?" (p. 146) and answers it with "No". A painting is, Sagoff argues, an attempt to accurately depict and understand nature, and then the mission of the artist is to create a believable image "despite the fact that not one individual shade corresponds to what we call 'reality'." (Gombrich, quoted by Sagoff, 1983, p.146). The artist solves the problem by finding, through his or her paint, the symbol that represents that reality. The painting is then a kind of record of the advances that have been made in finding accurate symbols, e.g. finding out what colors and shadows to use in order to create the illusion of a drop of water on a leaf. Here we can see the difference in value of an original and a forgery (or copy), because if a painting is a record of a problem solved, then a copy of it is less exciting since it merely repeats the solution of a problem that has already been solved.

The painting, as a record of that discovery, advances a theory concerning the way in which we see things or the way they can or are to be seen. ... painting is an experiment and serves to advance a psychological and artistic theory of sight. ... only the original makes a contribution to theory. ... the value of an art work consists ... in the amount that it advances understanding. (Sagoff, 1983, p. 148, 151)

Lessing (1983) has a similar way of reasoning in his answer to the question 'What's wrong with a forgery?'. He renounces the assumption that the difference between the original and the forgery lies in the aesthetic value, i.e. that a forgery lacks aesthetic value and thereby is an inferior work of art, because if that were the case, he argues, it would not be such an embarrassment to art critics when the work of art they praised so highly in the past turns out to be a forgery. It is still the same painting, only now attributed to someone else, and that slight modification should not matter if the difference between an original and a forgery lay in the aesthetic value (beauty) of the picture.

So what is wrong with a forgery? For Lessing forgery is closely related to the notion of originality and creative art. Technique cannot be forged since it is public but originality is a different matter.

It is not Vermeer's technique in painting light, which van Meegeren forged¹. That technique is public and may be had by anyone who is able and willing to learn it. It is rather Vermeer's discovery of this technique and his use of it, that is, Vermeer's originality, which is forged. The light, as well as the composition, the colour, and many other features, of course, were original with Vermeer. They are not original with van Meegeren. They are forged. (Lessing, 1983, p. 68)

The originality we ascribe to creative art refers to novelty or achievement. It is not limited to one particular work, but may cover the entire production of either one artist or one school, e.g. Leonardo da Vinci or the Renaissance. This kind of originality depends on the historical context of the artist or school, i.e. the achievement will only be an achievement if made in a certain period of the history of art. Technical mastery is not enough, there has to be creative genius as well.

Vermeer's art represents a genuine creative achievement in the history of art. It is the work not merely by a master craftsman or technician but of a creative genius as well. (Lessing, 1983, p. 74).

To create is to discover something new – to reveal in a timely and timeless aperçu some aspect of the world or some relationship of which we were previously unaware and, by so doing, to change forever our experience of the world and of ourselves. When a great poet has lived,' writes T.S. Eliot, 'certain things have been done once and for all and cannot be achieved again.' The crucial word here is 'achieved'. They can perhaps be done again, but they cannot be achieved again. Beethoven's late style is a discovery and an achievement. Someone coming later can only imitate it. And it is for this reason that forgers and copyists are considered to be artisans, not artists. (Meyer, 1983, p. 82).

So far we have thus come up with a fairly clear view of what is a great work of art and what is not. In that answer the originality of individual creator and his or her accomplishing something novel, something new to the world, something we did not know before, are among the defining characteristics. But why do we so highly value authenticity and look down on forgery?

¹ In 1945 the artist Han van Meegeren confessed that he was creator of a number of paintings that had been sold as highly acclaimed paintings by 17th century artist Vermeer, causing much embarrassment among convinced art critics. (For the whole story, see e.g. Werness (1983) Han van Meegren fecit, in Dutton (ed) *The Forger's Art*, University of California Press)

Why do we admire original artists?

In our view, Meyer (1983) here suggests an interesting answer, focusing on our Western culture mindset in relation to the genesis of art works. According to Meyer (1983), we have a set of beliefs that are the basis of all our thinking and behavior, and these beliefs, which are implicit and unconscious and deeply ingrained in the Western culture, influence our aesthetic experiences. Even if we like to believe that aesthetic experiences are purely based on the intrinsic values of the work of art, “we do not judge works of art in terms of their intrinsic qualities alone.” (p. 78).

According to Meyer (1983), those beliefs are so profound that they can affect our bodily reactions and how we feel when we look upon a work of art. The beliefs Meyer claims to be basic to our appreciation of art are (1) our belief in causation, (2) our belief in human freedom, and (3) our belief in the importance of the individual creator. One could say that all three beliefs circle around or stem from one concept, namely creation. Creation also indicates risk, and risk-taking according to Meyer, is something that is admired, especially in the Western world, just as much as repetition has been shunned ever since the Renaissance.

The importance our culture attaches to originality is a corollary of our attitude toward repetition. In our culture – particularly since the Renaissance – repetition has been considered wasteful and unproductive. (p. 85)

The creative act thus seems to have a revered place in our culture and hence there is something special about the creative power of the great artist, which we want to be part of. If we have seen a beautiful painting, is it not so that one of the first things we will want to know is the name of the artist who created it? This also says something about our relationship to the artist and indicates the importance we assign the individual creator. One reason why we give such importance to the name of the creator of the painting according to Meyer, is because a work of art has its place in history and we partly understand it by understanding how it came to be. The original is also more valuable and more exciting, Meyer argues, “because our feeling of intimate contact with the magic power of the creative artist heightens awareness, sensitivity, and the disposition to respond. Once a work is known to be a forgery, that magic is gone” (p. 87). By copying, paradoxically, you may

even end up only having contributed even further to the greatness of the original artist. The copy disclosed as a forgery only confirms the artistic genius.

Replication in biology and art – basic differences

Genes have fabulous replication qualities. Through a self-copying and correcting process they are able to make non-inferior copies of themselves. In that sense they may be seen as paradigmatic examples of a non-rivalrous resource. A high degree of stability/longevity, high speed and copying-fidelity are then among the most important features that a “good” replicator gene has to display. The reproduction skills and success of such a gene are then very much a matter of fast and exact “production”. By skillfully producing copies, it may out-compete its rivals in the battle for scarce resources. Having a fragile structure, moving slowly and producing copying errors most of the time, would thus prove to be fatal.

Nature is a tough place where only the fittest will survive. In such a world, “good” replicators have an advantage. However, genes do not often compete against other genes directly, but from the inside of “interactors”. This causes also the outcome of highly productive replication processes involving good replicators to be differential. Whether replicator genes or their specific interactors survive or not then depends also on the contingencies in their particular environment. Sheer luck in choice of habitat or timing may then be important. Being a skilful producer in the sense of fecundity and fidelity of replication, however, should give better odds for a continued existence. Put differently, a superior growth rate appears to be the main available “shield” against competitors in a natural selection context.

Paradoxically, genes are also interesting because of their copying-errors. Such blind or “un-intentional” variation constitutes a necessary pre-condition for selection and evolution. Without variation, selection has nothing to choose between. While most errors may result in dead ends, in a long term perspective some “errors” will turn out to be valuable to the mutated gene, or to its interactors. Natural selection may thus be seen as implying a “mode of learning”, made up by cycles of variation, selection, and retention, which involve replicators and interactors in a complex and non-transparent interplay. In nature, we may

notice and observe which interactors survive and do well, and while this provides us with a chance of finding some clues as to why some prosper and some fail, it still seems to be a task of formidable complexity to disentangle, for a particular case, the role of good genes, mutations, and environmental circumstances.

The artist's reputation and signature, too, have replication qualities. The signature here embodies the creative genius of the artist and his work as being recognized and reputed for originality in the history of art. Signed copies, made by this artist, or under the supervision of this artist, will then retain much of the value of the original. This will be especially salient in comparison to a similar looking picture made by someone else, such as in the case of a known forgery. In our view, the fact that the repeated use of the artist's signature does preserve the value of copies, makes it a candidate for being a non-rivalrous resource. Interestingly, such re-use of signature also extends beyond mere copies, to encompass other works of the artist that are less closely related, in style, choice of object, and the like, to his or her previous works.

Basically, this means that the artist's signature is signaling the authorship of a new "finding" or a discovery. The possibility to preserve value is thus related to the artist's role in the genesis of certain art works. As suggested above, our respect and admiration for such achievements may be seen as mirroring our Western culture psychological mindset. We like to celebrate those who are daring and make discoveries, whereas "more of the same" and all kinds of forgeries are shunned. Copies, representing merely more of the same are thus not highly prized, whereas copies made into "more of the same special", by the respected artist, are. In that sense, what is specific about the value-conserving capability of art, is to be sought in connection with the art work's genesis.

Replication in business – a combined metaphor view

As a strategy, replication should ideally be a matter of growing spatially by creating copies of a successful business model without allowing for competitors to engage in successful imitation. Stated more specifically, it is a problem of duplicating the non-rivalrous resources that are inherent in such a model while still preserving their value-generating capacity. Generally, we may think of such resources as information- or knowledge-like, mirroring the discussion in Arrow (1973). Using a "knowledge" terminology we may then

ask how the above views in biology and art could be used as metaphors for illuminating what goes on in firms that grow by practicing replication.

We return first to the biology-inspired view displayed in Winter and Szulanski (2001). In the light of the above discussion, we may then underline its “productivity” features. In their two-stage theory they emphasize that replication is a matter of “reaching large markets quickly”. Apparently, this speed imperative is important in the first exploratory phase and certainly even more so in the subsequent full-scale exploitation phase. It seems it is only the first phase that mirrors the natural selection dynamics in biology. In the second phase, where copying exactly is advocated, it is rather “pure replication – no learning” that is the task. What may happen in a third phase or later life stages is not discussed as it is beyond the analytical scope of their article.

Anyhow, the normative implication of their view would appear to be that a firm should try to beat their competitors by learning faster/cheaper and transferring knowledge faster/cheaper and more precisely. Generally, such advantages make sense as an expression of “property rights” to close inspection and learning-based first-mover advantages, especially where core knowledge is tacit and non-transparent to outsiders. In our view, such a conception however implies a knowledge-related “dilemma” as the demand for speed is not easily reconciled with reliance on natural selection and transfer of “routinized” knowledge. First, stabilizing a template, seen as a matter of allowing for repeated cycles of variation-selection-retention, would appear to be a time-consuming affair. Second, the vital Arrow core features that eventually become “principled” enough, inhere in “routines”, incorporating much “tacit knowledge”. As is often pointed out, transferring tacit knowledge is a highly difficult and time-consuming endeavor. There is thus some contradiction between all the stress laid on fast copying, well grounded in genetics, and the fact that much of what is to be copied is “tacit knowledge”, “know-how” dispositions (Ryle, 1949) or the like. Transferring such knowledge is typically a slow process, requiring a lengthy period of face-to-face contacts (Kogut and Zander, 1992). As discussed by Knudsen (2003) tacit knowledge processes cannot be speeded up much; as a result it is the prevalence of tacit knowledge that determines the pace of such processes. Indeed, tacit knowledge appears to travel at its “own” pace and also to affect the speed at which its complementary explicit dimension may travel.

Continuing on the theme of tacit knowledge, we may also consider, as pointed out by Winter and Szulanski (2001), that it may be both difficult and costly, but in principle not impossible, to transfer such knowledge. So while being fast and exact in copying should contribute to keeping successful competitors behind, in the long run, imitators might be able to acquire the routine-embedded secrets underlying the business model. One often applied strategy for this, is to bid for key persons or teams that possess the experience needed. Interestingly, the Zander and Kogut (1995) study previously referred to found a statistically significant effect for “key employee turnover” on risk of imitation. Having superior access to the template would certainly enable a firm to be among the fittest in the sense that it can learn quickly in the first phase, and by transferring how-to-do knowledge swiftly in the second. However, over time, such a differential advantage may become a less and less effective shield.

Returning to the H&M case illustration, we may notice, first, that the routine-replication view highlights the importance of tacit knowledge transfer. The preference for on-the-job training in H&M is no doubt indicative of this. Other examples would include its reluctance to transfer *in abstracto* knowledge as well as its policy to only limitedly provide new employees with highly codified knowledge. As a result, much behaviour in H&M will as a result tend to become only tacitly known and routinized. Moreover, H&M often prides itself of being a fast-mover, e.g. as expressed by its impressive pace of growth and its way of generating fast feedback on sales, experiments undertaken, etc. Moving fast and reaching large markets quickly is certainly an important ingredient in its recipe for staying ahead of competitors.

In our view, art is associated with different knowledge features. Instead of focusing on arduous work in relation to repeated learning cycles and knowledge transfer, art is concerned with “findings” and “discovery” - stressing that new knowledge is what counts, however it came about, and that the recognized originator of this knowledge is respected. The art view of replication, too, suggests a two-phase solution. First, there is a phase wherein the discovery has to be made and recognized. As with the former metaphor, we thus also have a kind of exploration phase. However, unlike the biology-inspired metaphor, coming up with a replicator proper is not seen as necessarily involving a learning process. Rather, here it is a matter of somebody’s insight, which happens to be new to the world,

whether this insight is the result of a genius' superior mind, luck, or serendipity. Apparently, the art view here more clearly acknowledges the importance of the H&M founder and the concept he once discovered. Naturally, this concept has been “polished” and developed during later learning processes, but it is still ‘in contact’ with the original inventor – the signature is still valid.

As to the second, more purely exploitation oriented phase, the art metaphor lets us ‘see’ that outlet replication in H&M is not merely a matter of transferring organizational how-to-do routines, but rather of infusing in those who will work in the new outlet with a large portion of the original spirit or “geist”. In H&M, this spirit also comprise values which encourage people to use their common sense, to take own initiatives, and to break with established and routinized patterns of behavior. Instead of only trying to copy exactly the behavioral routines of a template outlet, the new employee in H&M should use his or her reflective imagination. As pointed out earlier, this is a matter of a ‘bounded’ reflectivity, where the employees must recognize the limitations that apply. To become familiar with these subtle, deep rooted values takes quite some time. As a result, for a firm like H&M which uses internals in transferring these values, the pace of growth is limited by the supply of such knowledgeable personnel. As shown in the case illustration, H&M has a policy that strongly encourages career development.

In addition, the art metaphor indicates a different type of shield against imitation. Once authenticity and reputation is established, imitators appear as mere copiers. Indeed, the presence of a number of such mere imitators may actually serve to strengthen the reputation of the authentic firm. The art metaphor thus turns our attention to the knowledge-related ramifications of the reputation-based shield of firms, which like H&M, appear to have a substantial amount of that currency. First, such a shield would facilitate knowledge transfer pacing. For example, where much tacit knowledge is important, such a shield would allow it to travel somewhat slower and closer to its ‘own pace’. Second, such a shield would allow for more variation in setting up new outlets, by “covering-up” and preserving value, although some intentional or unintentional “miscopying” is made. While such deviations can turn out to have bad consequences, as in biology, they may also be beneficial from a learning point of view.

Conclusions

In conclusion, we believe that the combined use of replication ideas in biology and art as metaphors for replication processes in a business setting is a rewarding path to enter. The use of “organizational genetics” thinking is no doubt a very fruitful way of generating novel and interesting hypotheses about outlet replication in a business context. This perspective stresses that it might be a good strategy to rely on a kind of natural selection process to sort out what routines, comparable to gene constellations in biology, have survival qualities. Routines, therefore represent the outcome of a cyclical learning process, underlining their time and history dependence, as well as their character as vital knowledge containers for “tacit knowledge”.

By adding a complementary art metaphor, we propose another mode of transferring a business concept, which focuses on spirits and values with a personal origin, and way in which the “fast copying-tacit knowledge” problematic may be alleviated. As illustrated in the H&M case, this implies a knowledge transfer, not only of behavioral routines, but also of values emphasizing local initiative, ingenuity and setting aside rule and routines and using “common sense” where this is judged as being needed. In addition, the presence of authenticity may provide room for an appropriately paced process of transferring tacit knowledge and make it possible to copy less exactly, which may be beneficial from a learning point of view. Finally, the notion of authenticity may help to explain why a firm may keep imitators away in the longer run, although imitators may have actually been able to acquire much of the routine-based tacit knowledge that constitute the Arrow core.

We should emphasize finally, that we do not believe this second metaphor alone could make up a core replication theory for business firms. What we suggest is that the two metaphors used in combination, as complementary guides, could inspire the identification of a more comprehensive framework for understanding how firms that engage in a replication practice, may get along successfully, for short or long periods of time. As stated by Winter and Szulanski, however, we are only at the beginning of developing a “replication science”.

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