The Theoretical Basis of the Effective School Improvement Model (ESI)

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This article describes the process of theoretical reflection that preceded the development and empirical verification of a model of “effective school improvement”. The focus is on basic mechanisms that could be seen as underlying “getting things in motion” and change in education systems. Four mechanisms are distinguished: synoptic rational planning, the market mechanism, cybernetics, and autopoiesis. Principles relevant for effective school improvement that are deducted from these basic mechanisms are: goal setting for improvement, pressures to improve, cyclical improvement processes, and autonomy. The article also briefly touches upon the way empirical models of school effectiveness and school improvement can be linked and used in the encompassing model of effective school improvement that the ESI project has yielded.

Four Basic Theories and Mechanisms

The empirical work in the Effective School Improvement (ESI) Project was preceded by conceptual analysis. This conceptual analysis considered the relationship between school effectiveness and school improvement and analysed different strands of educational and social scientific theory that might explain core ingredients of an integrative model on effective school improvement. In the course of the process, an integrative model gradually emerged. This contribution refers to both processes of model development and theoretical reflection on initial model specifications, in order to lay bare the theoretical foundations of the ESI model. We shall first describe various strands of theory and then turn back to the integration of perceptions on school effectiveness and knowledge on effective schooling further on.

Four strands of theories, which could be seen as representing four basic theory-embedded principles in the social sciences, were considered:

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1. Curriculum theory, which is seen as an off-spring of the rational planning model.
3. Cybernetics and theories on “learning organisations”. Cybernetics literature refers to control and communication systems that depend on feedback loops.
4. Theories on self-regulation and self-organisation, which have a place in theorising related to the concept of autopoiesis. Autopoiesis means self-production, and is a term that was employed to refer to circular processes of production in living systems (Maturana, 1980, p. 78) and later on also used in a more metaphorical sense in organisation science (Morgan, 1986).

In the subsequent paragraph, these four theoretical principles will be further explained. By way of positioning at least three of them in assumed developmental stages of educational systems, we refer to Carneiro’s (1994, p. 6) synoptic table (Table 1). He shows how four development stages of educational systems could be characterised regarding the driving forces, the main features, and the dominant actors involved in each of them, as well as their theoretical orientation. Carneiro’s behavioural theories are closely linked to our interpretation of the rational planning model.

The first stage, labelled “production-oriented” stage, could be well described by what we usually call “behavioural theories” in a classic sense. Characterised by an important economic expansion and dominated by economic factors, it is mainly a period of quantitative expansion of the school institutions. The two following stages (“consumption-oriented” and “client-oriented”) are well formalised by the public choice theories. The two different stages could be found more or less at the same time in a system but the second stage usually appears before the third and is characterised by an economic expansion, while the latter is more closely associated with a less positive economic situation and public deficit reductions. These two stages are difficult to distinguish without a very careful analysis, because they could exist in a kind of complex and mixed stage (e.g., public and private schools but equally funded by the state or an experimental voucher system concerning only a part of the public system). The last stage, called “innovation-oriented” stage, is not yet perfectly implemented in our economically developed countries, but we can perceive more and more signs of it: for example, in all attempts to internationalise educational programmes or assessments and insure student mobility with a common system of certification.

We shall now proceed by explaining the three basic strands of theory, also distinguished by Carneiro (1994), in more detail.

**Synoptic Planning and Bureaucratic Structuring**

The ideal of “synoptic” planning is to conceptualise a broad spectrum of long-term goals and a possible means to attain them. Scientific knowledge about instrumental relationships is thought to play an important role in the selection of alternatives.
Table 1. Synoptic table adapted from Carneiro (1994, p. 6): the development stages of education systems and three related theories (behavioural, public choice, and learning organisation theories)

<table>
<thead>
<tr>
<th>Driving force</th>
<th>Production-oriented Stage</th>
<th>Consumption-oriented Stage</th>
<th>Client-oriented Stage</th>
<th>Innovation-oriented Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sustained economic expansion</td>
<td>Social demand</td>
<td>School accountability</td>
<td>Institutional intelligence</td>
</tr>
<tr>
<td></td>
<td>Formation of human capital</td>
<td>Welfare state</td>
<td>Public deficit reduction</td>
<td>Future-oriented management of change</td>
</tr>
<tr>
<td></td>
<td>Demand for qualifications</td>
<td>Economic growth</td>
<td>School-business partnership</td>
<td>Global learning strategies</td>
</tr>
<tr>
<td></td>
<td>Training monopolies</td>
<td>Mass education</td>
<td>Client satisfaction</td>
<td>Transnational competition</td>
</tr>
<tr>
<td>Main features</td>
<td>Teaching factory</td>
<td>School democratisation</td>
<td>Diseconomies of scale</td>
<td>Negotiation vs. regulation</td>
</tr>
<tr>
<td></td>
<td>Assembly line</td>
<td>Participation (parents, pupils)</td>
<td>Co-responsibility</td>
<td>Project work</td>
</tr>
<tr>
<td></td>
<td>Standardisation</td>
<td>National standards</td>
<td>Customisation</td>
<td>Grassroots networking</td>
</tr>
<tr>
<td></td>
<td>Uniform regulations</td>
<td>Deconcentration</td>
<td>Decentralisation</td>
<td>Ongoing institutional redesign</td>
</tr>
<tr>
<td></td>
<td>Bureaucratic power</td>
<td>Technocratic power</td>
<td>Shared power</td>
<td>Creative power</td>
</tr>
<tr>
<td></td>
<td>Teacher-borne production</td>
<td>Mass-media technologies</td>
<td>Individual itineraries</td>
<td>Flat management styles</td>
</tr>
<tr>
<td></td>
<td>Exponential expenditure</td>
<td>Public investment</td>
<td>User charges</td>
<td>Programme financing</td>
</tr>
<tr>
<td></td>
<td>National budgets</td>
<td>Global financing</td>
<td>Educational vouchers</td>
<td>Marginal funding</td>
</tr>
<tr>
<td></td>
<td>Teacher-centric pedagogies</td>
<td>Learner-centric pedagogies</td>
<td>Interactive teaching</td>
<td>Variable pedagogic geometries</td>
</tr>
<tr>
<td></td>
<td>Supply strategies</td>
<td>Demand strategies</td>
<td>Educational marketing</td>
<td>Strategic spin-offs</td>
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<td></td>
<td>Student assessment</td>
<td>Formative evaluation</td>
<td>Evaluation of results</td>
<td>Performance appraisal</td>
</tr>
<tr>
<td>Dominant actors</td>
<td>Teachers</td>
<td>Students</td>
<td>Parents/employers</td>
<td>Educational institution/Autonomy</td>
</tr>
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<td></td>
<td>Teachers' unions</td>
<td>Students' associations</td>
<td>Clients associations</td>
<td>Clusters of educational centres</td>
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<td></td>
<td>Central planning</td>
<td>Peripheral planning</td>
<td>Local planning</td>
<td>Anticipation and tactical moves</td>
</tr>
<tr>
<td>Related theories and models</td>
<td>Behavioural theories</td>
<td>Public choice theories</td>
<td>Learning organisation theories</td>
<td></td>
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</tbody>
</table>
Campbell’s (1969) notion of “reforms as experiments” combines a rational planning approach to social (e.g., educational) innovation with the scientific approach of (quasi-)experimentation.

The main characteristics of synoptic planning as a prescriptive principle conducive to effective (in the sense of productive) organisational functioning, as applied to education, are:

- “proactive” statement of goals, careful deduction of concrete goals, operational objectives, and assessment instruments;
- decomposition of subject matter, creating sequences in a way that intermediate and ultimate objectives are approached systematically;
- alignment of teaching methods (design of didactical situations) to subject-matter segments;
- monitoring of the learning progress of students, preferably by means of objective tests.

As stated before, given the orientation towards the primary process, inherent in economic rationality, the synoptic planning approach in education applies most of all to curriculum planning, design of textbooks, instructional design, and preparation of (series of) lessons. Innovation methods are mainly implemented by central impulses, accompanied in the field by a conformity control (inspection). Improvement is to be understood in terms of introduction of a planned change in the production means.

When the ideal of rational planning is extended to organisational structuring, related principles about “controlled arrangements” are applied to the division of work, the formation of units, and the way supervision is given shape. “Mechanistic structure”, “scientific management”, and “machine bureaucracy” are the organisational-structural pendants of rational planning (cf. Morgan, 1986, chap. 2). The basic ideas go back to Max Weber, who stated the principles of bureaucracy as “a form of organization that emphasises precision, speed, clarity, regularity, reliability, and efficiency achieved through the creation of a fixed division of tasks, hierarchical supervision, and detailed rules and regulations” (Weber cited in Morgan, 1997, pp. 15–16). Although Mintzberg’s (1979) conception of the professional bureaucracy, applicable to schools and universities, is often treated as the complete antithesis of classical bureaucracy, it should be emphasised that the basic notion of standardisation and predictability of work processes, albeit with considerable breadth of individual leeway, is retained.

Consideration of rational planning led to the realisation that goal setting and a systematic approach to reaching goals should be seen as necessary elements in models of effective school improvement.

The theoretical principle, to be discussed next, replaces the idea of proactive planning and structuring by the operation of market forces as a regulating principle. In this case, one could say that we are still dealing with a variation of the basic rational model, since effective goal attainment remains the leading aim.
Creating Market Mechanisms: Alignment of individual and organisational rationality

A central assumption in the synoptic planning and bureaucracy interpretation of the rationality paradigm is that organisations act as integrated purposeful units. Individual efforts are expected to be jointly directed at the attainment of organisational goals. In the so-called political image of organisations (Morgan, 1986, chap. 6) this assumption is rejected, emphasising that “organizational goals may be rational for some people’s interests, but not for others” (Morgan, 1986, p. 195). The fact that educational organisations consist of relatively autonomous professionals and loosely coupled subsystems, creates a general condition stimulating political behaviour of the members of the organisation.

In public choice theory, the lack of effective control from democratically elected bodies over public sector organisations marks these organisations as being particularly prone to inefficient behaviour, essentially caused by the leeway that is given to managers and officers to pursue their own goals besides serving their organisation’s primary mission.¹

Public choice theory provides the diagnosis of instances of organisational ineffectiveness, such as goal displacement, overproduction of services, purposefully counterproductive behaviour, “make work” (i.e., officials creating work for each other), hidden agendas, with time and energy creating schisms between subunits. When discreitional leeway of subordinate units goes together with unclear technology, this too adds to the overall nourishing ground for inefficient organisational functioning; see Cohen, March, and Olsen’s (1972) famous garbage can model of organisational decision-making. Not only government departments but also universities are usually mentioned as examples of types of organisations where these phenomena are likely to occur. Market mechanisms and “choice” are seen as the remedy against these sources of organisational malfunctioning.

Notes of criticism that have been made with respect to the propagation of choice are that parents’ choices of schools are based on factors other than performance criteria (Riley, 1990, p. 558), that “choice” might stimulate inequalities in education (Hirsch, 1994) and that completely autonomous primary and secondary schools create problems in offering a common educational base for further and higher education (Leune, 1994).

The alleged superiority of private over public schools is the most supportive piece of empirical effectiveness research for the claims of public choice theory, although the significance of the results in question is much debated (Goldhaber, 2000; Gorard, Fitz, & Taylor, 2001; Scheerens, 1992).

Nevertheless, it is important to distinguish,

the notion of partnership that implies an equal investing of both parts as well as subtle and complex strategies of working jointly, from the idea of “parental power”. The latter is a shock political slogan which essential function is to recall the parents their rights, but the utility of which is reduced because it has aggressive accents and it addresses the school and local authorities a negative message and also because the
reforms success requires dialogue and reflection and cannot be imposed through a unilateral “power”.

In particular, the politicians must keep in mind the fact that an unlimited parental power would be liable to thwart other aspects of the education policy or of policies in general, as the reduction of public expenditure. In particular, the choice of the school can widen the gap between the more or less efficient schools (OECD, 1994) and reinforce the social segregation (Ball, Bowe & Gewirtz, 1996). Some parents, often among the most influential and cultivated, are sometimes in favour of various forms of segregation [...] (Hirsch, 1994, p. 61)

Even if the ideas from public choice theory and the application of market mechanisms are not followed to the letter by putting all one’s money on approaches like free school choice, merit pay of teachers, or voucher systems, they may still be seen as pointing at a few important more general principles. Concern with the needs of parents and other stakeholders, the importance of external pressure to improve, as well as the need for school to operate with a certain degree of autonomy were considered as important elements for a conceptual model of effective school improvement.

The next theoretical principle to be discussed replaces “market mechanisms” by “evaluative control and information provision”. This principle is still to be seen as belonging to the rational model, but it is more retroactively (learning from experience) rather than proactively oriented.

The Cybernetic Principle: Retroactive planning and the learning organisation

A less demanding type of planning than synoptic planning is the practice of using evaluative information on organisational functioning as a basis for corrective or improvement-oriented action. In that case, planning is likely to have a more “step-by-step”, incremental orientation, and “goals”, or expectations, get the function of standards for interpreting evaluative information. The discrepancy between actual achievement and expectations creates the dynamics that could eventually lead to more effectiveness.

In cybernetics, the cycle of assessment, feedback, and corrective action is one of the central principles. Evaluation—feedback—corrective action, and learning cycles comprise four phases:

- measurement and assessment of performance;
- evaluative interpretation based on “given” or newly created norms;
- communication or feedback of this information to units that have the capacity to take corrective action;
- actual and sustained use (learning) of this information to improve organisational performance.

In the concept of the learning organisation, procedural and structural conditions thought to be conducive of this type of cycle are of central importance. Examples are:
encouragement of openness and reflectivity, recognition of the importance of exploring different viewpoints, and avoiding the defensive attitudes against bureaucratic accountability procedures (Morgan, 1986, p. 90).

When the cybernetic principle is seen as the basic regulatory mechanism, there is room for autonomy and “self-regulation” at lower levels in the system. This is a particularly helpful phenomenon in education systems, given the usually large degree of professional autonomy of teachers, and tendencies to increase school autonomy as a result of decentralisation policies.

Learning organisation theories have a positive attitude towards heterogeneity, which is deliberately created inside each school to make capital out of it. Effectiveness is linked with management of the heterogeneity of pupils in each school as opposed to public choice theories, where effectiveness is linked with diversity in the offer, which means creation of various school types in which heterogeneity is small.

The functioning conditions of a learning organisation are on the one hand based on the autonomy left to schools to organise methods such as differentiated pedagogies, and on the other hand on the ability to produce institutional knowledge. Learning to learn pedagogies may be implied as well. At the student level, this means learning high taxonomy level strategies such as metacognitive thinking. Teachers have to organise their practices to help pupils to integrate such strategies (Palincsar & Brown, 1992).

Contrary to behavioural theories that take place in a stable/secure economical context and promote pragmatic objectives, learning organisation theories develop objectives centred on adaptability to change. Moreover, objectives that are worked towards by those innovation-oriented theories, have passed beyond the individual orientation to become more socially oriented.

From closed programmes and strict conformity regulation we move progressively to a more systemic approach involving also goals’ adaptation and self-regulation. A greater and greater number of actors are recognised as partners, not only to execute orders but also to define goals and means.

Learning organisations turn into different types of directions with the concept of pilotage better understood in French-speaking countries or with the more Anglo-Saxon concept of development. According to Demeuse and Baye (2001), the French term pilotage refers to a model which aims at providing the systems with the possibility of reaching their objectives. At this level, the organisation is mainly characterised by the ability to modify its objectives during the course of development. This adaptation of the objectives requires a continuous anticipation of the constraints of the environment.

Figure 1 proposes a schematic view of the regulation model called “Pilotage du système éducatif [Monitoring of the educational system]”. This diagram is adapted from an initial model proposed by D’Hainaut (1981, p. 13). It clearly shows the circle principle of the regulation mechanism. There is neither a start nor an end, but rather a sequence of ranged steps which link together in a way to get to a balanced dynamic state. This balanced state can be effectively modified by a redefinition of the objectives in accordance with the current state of the system. Thus, for example, the general growth of the access to primary education in developed countries induces a general
Figure 1. A piloted system: general concept (adapted from L. D'Hainaut, 1981, p. 13, by Demeuse & Baye, 2001)
growth of demand dealing with democratisation of the access to higher education. According to the authors, from an initial state of the educational system, about which a series of information is gathered (i) it is possible to compare the current state, measured by different indicators, with the desired state, defined by “standards” (ii). Of course, this supposes that a definition, even if provisional, of a balanced state is available. If differences are noticed, activities are proposed to improve the system in accordance with the prospects described in the desired state (iii). These activities are carried out with a view to “(having) the system progress, improve, (making) it more conformable to a more perfect model” (ibid, p. 13). The implementation of “remedial” measures must also be controlled and possibly, experimented on a part of the system, before being generalised (iv) in accordance with the improvement prospects described earlier.

Reflection on the cybernetic principle and the ideas on organisational learning bring “cyclical improvement processes” to the fore as an essential element of effective school improvement.

The rational model is now left behind, as the emphasis focuses on processes that are explicitly seen as lacking specific prestated intentions or goals, and are seen as “unfolding” from inside the organisation rather than imposed or controlled from outside.

**Autopoiesis**

The concept of autopoiesis originates from biology and, in this discipline, was coined to refer to the process of generation and regeneration of living organisms. Attempts were made to “translate” the use of this term to the fields of sociology and law (Luhmann, 1984, cited by Kickert, 1993). The term was also used in a more metaphorical sense in organisational science to indicate a specific “image” of the functioning of organisations (Morgan, 1986). In this context, the term was used as the alternative to the common view of organisations as open systems. Instead of “adaptation” in order to survive environmental changes, “closure”, autonomy, and “self-reference” were seen as key mechanisms of organisational functioning. In more recent interpretations (cf. Kickert, 1993), this kind of “closure” is not altogether seen as the complete opposite of an “open” systems view. Instead, the organisation is seen as taking a “self-centred” view of the external environment; the organisation perceives and uses the environment as a projection of itself. Ultimately, in organisational and public administration interpretations, autopoiesis is a term that is seen as a helpful metaphor to come to grasps with processes of self-organisation of (semi-)autonomous systems.

For organisational study and analysis, the theory of self-organisation and “autopoiesis” has the following implications:

- recognition of the importance of autonomy, stability and organisational identity; a perspective that bears correspondence with views on school improvement emphasising cultural aspects in which the “theories in use” of actors have a central place (Van den Berg, Vandenberghhe, & Sleegers, 1999);
• recognition of organisational phenomena aimed at the protection and “buffering” of the existing state of affairs against external influences;
• explicit reservations with respect to the importance of external and hierarchical control;
• reservations with respect to the assumption that organisations are goal-, productivity-, and efficiency-oriented; these criteria are seen as secondary to maintaining the existing social ordering within the organisation.

With respect to school improvement and school effectiveness, the perspective of autopoiesis can be seen as a basis for explaining resistance to change and less “intrinsic” interest for enhancing effectiveness. It could also be seen as a philosophy that underlines the importance of available concepts and cultural preferences of key actors enforcing the status quo in organisations, which defy “easy” transformations.

Concerning the ESI-model, the autopoiesis perspective gives reason for less optimism concerning the adoption of a “culture that favours improvement”, the expected impact of external pressures, and the application of rational techniques like goal setting and assessment.

“Autopoiesis” offers a more evolutionary perspective than rational planning. To the extent that its premises are operationally verifiable, it could have an important function in understanding the realistic scope and tempo of school improvement. Intrinsically, autopoiesis is also very much related to the idea of organisational autonomy. In national contexts, where schools are given more autonomy, school improvement initiatives should try to take into consideration both constraints (e.g., resistance to leave well-established patterns of behaviour and culture) and opportunities (changes that penetrate to the cultural identity of the organisation) of self-organisation.

Integration of Empirical Models on School Effectiveness and School Improvement

The integration of the results from two fields of educational inquiry, school effectiveness research and school improvement analysis, was approached in a straightforward way, going back to earlier analyses of this relationship (Creemers, 1992; Reynolds, 1996). According to these analyses, school improvement and school effectiveness are basically seen as consecutive causal processes: School effectiveness yields school characteristics that optimise particular learning outcomes, and school improvement addresses factors and processes that establish these effectiveness-enhancing factors. Effectiveness-enhancing factors at the school and classroom levels are depicted as the “intermediate outcomes” of school improvement at the school and classroom levels.

The scientific merit in this linear modelling of school improvement and school effectiveness is the heuristic value for designing research studies. School improvement activities, when empirically assessed for stimulating effectiveness-enhancing factors (the intermediate outcomes in the diagram), could realistically be
expected to provide “effective school improvement”. This research approach could free the field of school improvement from its current predominant dependence on case studies and “holistic” normative reflections. The practical merit is that an integrated view on school improvement and school effectiveness would provide a substantive direction for school improvement (next to promoting change for change’s sake, and promoting the capacity for schools to keep up with environmental dynamics).

Brown, Duffield, and Riddell (1995, p. 6) stress the fact that “school effectiveness research offers policymakers the engaging prospect of being able to identify the characteristics of effective schools and then make use of these findings to bring about improvements in less effective institutions”. Nevertheless, to know what is effective and what is not, does not offer the assurance to know how to move from one position—less effective—to another—more effective—by the most efficient way. In other words, the knowledge of a static (or steady) state, following a good diagnosis, does not offer a prescription of an effective action to move to a better state. It is important to consider a more complex model, as was tried in the ESI project, and to take care as well of the states and the transitions between them.

The fact that a good solution in one situation could be a very bad one in a different context is not a reason to skip all attempts to formalise the field of school improvement, but it is an excellent incentive to study in more depth all contextual aspects as in the field of school effectiveness. It is also a good reason to pay attention to socioeconomic variables and other “external” aspects usually neglected in the field of school improvement. By making this point, we suggest, with Brown et al. (1995), that improvements are not “context free”.

The theory-based mechanisms that were discussed in the main body of this article provide a basis for establishing and verifying more generally, effective ways of school improvement.

**Conclusion**

Analysing social scientific theories that lay bare the basic mechanisms of change indicate some key principles for a conceptual model of effective school improvement. Basic mechanisms and key principles are summarised in Table 2.

Apart from these factors relating to change mechanisms, a subsequent model of effective school improvement would be likely to contain instrumental factors of effective schooling as substantive categories. This coincides with the linear view

<table>
<thead>
<tr>
<th>Theory-based mechanism</th>
<th>Key principle of effective school improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synoptic planning</td>
<td>“Goal setting for improvement”</td>
</tr>
<tr>
<td>Market mechanism</td>
<td>“Pressure to improve”</td>
</tr>
<tr>
<td>Cybernetics</td>
<td>“Cyclical improvement processes”</td>
</tr>
<tr>
<td>Autopoiesis</td>
<td>“Autonomy”</td>
</tr>
</tbody>
</table>

Table 2. Control theories and principles of effective school improvement
of effective school improvement: an inner circle process of effective schooling and teaching, and an outer circle process of factors and mechanisms that further secondary conditions for change. (See other contributions in this thematic issue on the ESI project.)

These ideas have helped in shaping the ESI-model as a multilevel framework in which school effectiveness and school improvement perspectives have become integrated to form a dynamic framework. Details of this framework are described elsewhere in this volume.

Notes
1. A more extensive treatment of the implications of public choice theory for school effectiveness research is given in Scheerens (1992, chap. 2).
2. To take into account the idea of progress in a definite direction, it is used to draw the model as a spiral instead of a circle (the “corkscrew model”). Evaluation, in this context, is a permanent mechanism to insure quality and progress. The process could be conducted in a way that the systemic objectives, and not just the methods, are modified. We put objectives in the centre after a first attempt where we do not show them in our model, following D’Hainaut’s one (Demeuse, 1997). In this way, the pilotage is close to Dalin’s approach of institutional development (Dalin, 1994; Dalin & Rolff, 1993; Dalin & Rust, 1983).

References