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The CRESSI project explores the economic underpinnings of social innovation with a particular focus on how policy and practice can enhance the lives of the most marginalized and disempowered citizens in society.

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From Common Framework to measurement and analysis

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Chapter 11 of:

Deliverable D1.1: Report on Institutions, Social Innovation & System Dynamics from the Perspective of the Marginalised

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Creating Economic Space for Social Innovation

From Common Framework to measurement and analysis

D1.1 Chapter 11

By Christopher Houghton Budd, C.W.M. (Ro) Naastepad and Cees van Beers

11.1 CRESSI's 'Common Framework'

One of the chief aims of the CRESSI Project Work Package 1 (WP1)[1] is to arrive at a common intellectual framework which (a) integrates the perspectives of Beckert, Sen and Mann, (b) would be useful for analysing marginalisation and social innovation, and (c) could guide the empirical measurement and analysis in subsequent work packages.

Perhaps the most comprehensive alignment of Beckert, Sen and Mann emerging from the papers in this report[2] (*D1.1 Chapters 3−10*) is the cross-analysis provided by Risto Heiskala (henceforth RH) in his paper "Relating Mann's conception to CRESSI". Michael Mann distinguishes four sources of social power, namely, ideological, economic, military, and political. RH's proposed cross-analysis is based, it should be noted, on an extension of Mann's IEMP[3] model of social powers, to which RH adds two more sources of power: artefactual power ('control over techno-structures') and natural power (the power of nature), while renaming two others ('ideological' becoming 'cultural' and 'military' becoming 'security-related'). It is important to make the distinction between Mann and Mann extended, because it is Mann extended and not Mann that is the basis of the framework proposed by RH. The framework thus departs from the 'primary' literature as regards the three main perspectives (of Beckert, Sen and Mann).

Sources of Power[2]	Kinds of:		
	Marginalisation (1)	Social innovation (2)	Capabilities (3)
1. Cultural (Ideological)	Cm	Ci	Cc
2. Economic	Em	Ei	Ec
3. Security-related (Military)	Sm	Si	Sc
4. Political	Pm	Pi	Pc
5. Artefactual	Am	Ai	Ac
6. Natural	Nm		Nc

Table 1: Integration of Sen, Beckert and Mann (1)[4]

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[1] Further details about the CRESSI (Creating Economic Space for Social Innovation) Project are available at: http://www.sbs.ox.ac.uk/ideas-impact/research-projects/cressi.

[2] Houghton Budd, C., Naastepad, R. and van Beers, C. (Eds.), *Report on Institutions, Social Innovation & System Dynamics from the Perspective of the Marginalised*, CRESSI Project Deliverable D1.1. Available at: http://www.sbs.ox.ac.uk/ideas-impact/cressi/publications-0

[3] Described in Chapter 9, *Ibid.*

[4] Described in Chapter 9, *Ibid.*

The essence of RH's argument can be expressed in a table (see Table 1), comprising a cross-tabulation of six 'powers', Sen's 'capabilities', and the general topics of the CRESSI project (marginalisation and social innovation). Six sources of power are related to six forms of marginalisation (column 1), five types of social innovation (column 2), and six types of capabilities (column 3). In RH's view there cannot be social innovation in nature; hence its absence from the table.

Within this framework, marginalisation (column 1 in Table 1) is the result of individuals', or social groups', lack of social power to command control over the six resources to achieve their life goals. Social innovation directed at overcoming marginalisation (column 2) can then be seen as enhancing endowments in terms of the six (or five) resources, which may lead to enhanced capabilities (column 3). Examples given by RH of such social innovations include new forms of education (cultural innovation); new forms of credit (economic innovation); new programmes for prevention of intimate violence or political terror (security-related innovation); new patterns of decision-making (political innovation); and new technological devices for the disabled (artefactual innovation). Social innovations can occur either separately or in some combination.

This framework is perhaps not yet wholly seamless, and some issues remain to be worked out. For instance, is Beckert's economic sociology to be equated with economics, as RH suggests, and does he therefore fit 'as a whole' into row 4 of Table 1? Or are Beckert's 'cognitive frames' an element of what Risto Heiskala calls 'Culture', which also includes but is not synonymous with Mann's 'ideology'; while 'institutions' are an element of what is called 'Political' (leaving open where 'social networks' would fit)?

Or would it be more appropriate to juxtapose Beckert's fields and Mann's powers (rather than subsuming one under the other)? The latter is proposed by Alex Nicholls and Rafael Ziegler in Chapter 2 of this report[5]. The idea is represented in their Figure 3, reproduced here.
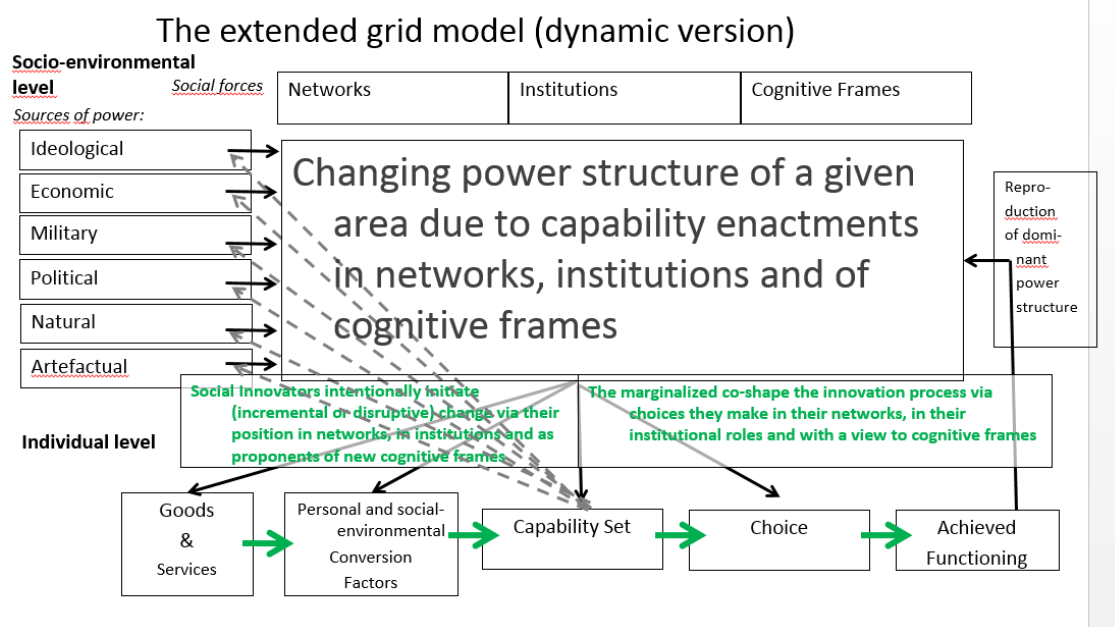

Figure 3: The Extended Social Grid Model and Social Innovation[6]

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[5] Houghton Budd C., Naastepad R. and van Beers C. (Eds.), *Report on Institutions, Social Innovation & System Dynamics from the Perspective of the Marginalised*, CRESSI Project Deliverable D1.1, Chapter 2. Available at: http://www.sbs.ox.ac.uk/ideas-impact/cressi/publications-0.
[6] *Ibid*

Another issue, raised in several papers in this report, is the relationship between Sen's 'individual agency', Beckert's 'social forces', and Mann's 'social powers'. Arguably, individual agency will be paramount in the five types of social innovation; but how exactly do individual agency, social forces and social powers interact to produce social innovations?

Finally, looking forward, one of the questions is how the (tentative) common framework outlined above leads into the later work packages, in particular measurement and analysis. The aims of the CRESSI project, as well as the papers included in this report, call for an analysis of the path from marginalisation via social innovation (such as socially innovative entrepreneurship) to overcoming marginalisation. Creating such a path will require, in terms of Beckert, changes in institutions, networks, and cognitive frames; in terms of Sen, individual agency; and in terms of Mann, changes in social power.

Although the integration of the three perspectives – Beckert, Sen and Mann − is perhaps not yet entirely complete, the frameworks that have been suggested seem to be a very useful and workable starting point.

By way of a first step towards the empirical operationalisation of the three core concepts in the CRESSI project (marginalisation, social innovation and economic underpinnings) and towards a framework for measurement and analysis, we give some suggestions for integrating the common framework outlined above with the 'capabilities equation' of the Capabilities Approach.

11.2 A first step towards the operationalisation of Mann's 'powers' and Beckert's 'fields' in Sen's capabilities equation

In this section we explore how the two (preliminary) common frameworks that have emerged from the CRESSI work to date can inform the empirical operationalisation of key concepts in the project − in particular, 'marginalisation', 'social innovation', 'economic underpinnings', 'social powers', 'fields', 'individual agency' − and guide the data collection and analysis to be undertaken in subsequent work packages.

The first step is to find out whether and how the two frameworks fit the 'capabilities equation' of the Capabilities Approach.[7] More specifically:

1. Could the two Beckert-Sen-Mann frameworks that are proposed be framed in terms of the 'capabilities equation' $Q_i(X_i) = b_i|\{b_i = f_i(c\,(x_i)\mid z_i, z_s, z_e)\}$ given by CMJ?
2. Could CMJ's equation encompass the many facets of marginalisation and social innovation investigated in the CRESSI project?

Regarding the first question, one possibility − suggested by, for instance, Chiappero and Von Jacoby (*D1.1 Chapter 3*) and by Nicholls and Ziegler (*D1.1 Chapter 2*) in this report − would be to treat Mann's social powers and Beckert's three fields as endowments (x_i) and/or conversion factors. Regarding the second question, both marginalisation and social innovation could be seen in terms of an interaction between (Mann's) 'powers', Beckert's 'fields', and Sen's 'capabilities' and 'individual agency'.

Let's see how Beckert's 'fields' and Mann's 'powers' may fit the 'capabilities equation' as given by

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[7] As described in Enrica Chiappero-Martinetti and Nadia von Jacobi (2014). 'How can Sen's 'Capabilities Approach' contribute to understanding the role for social innovations for the marginalized?' in Houghton Budd C., Naastepad R. and van Beers C. (Eds.), *Report on Institutions, Social Innovation & System Dynamics from the Perspective of the Marginalised*, CRESSI Project Deliverable D1.1, Chapter 4. Available at: http://www.sbs.ox.ac.uk/ideas-impact/cressi/publications-0.

CMJ:

$$(1) \qquad Q_i(xi\ ) = b_i|\{b_i = f_i(c\ (x_i) \mid z_i, z_s, z_e)\}$$

where the variables denote:

Q_i	an individual's capability set (defined over potential functionings i)[8]
x_i	a vector of endowments (individual and collective)
b_i	potential functionings
c	characteristics of endowments (which are a function of endowments)
f_i	conversion function (transforming endowments into potential functionings)
z_i	individual conversion factors
z_s	social conversion factors
z_e	environmental conversion factors.

Starting with Mann, if Mann's four, or Risto Heiskala's six, sources of power were treated as endowments, it would be possible to distinguish, for each individual i, six kinds of endowments:

$$x_i^p, \qquad p = Cu, Ec, Se, Po, Ar, Na,$$

where the superscript p refers to Heiskala's six categories cultural, economic, security-related, political, artefactual, and natural, denoted by *Cu*, *Ec*, *Se*, *Po*, *Ar* and *Na* respectively.

Such a framework would permit specification of the concept of marginalisation in terms of Mann's or Heiskala's powers. For instance, if individuals are considered, or consider themselves, marginalised, it would be possible to specify in what sense they are or feel marginalised – e.g. in terms of culture (*Cu*), the economy (*Ec*), security (*Se*), participation in political bodies (*Po*), degree of influence on the direction of technological change (*Ar*), and/or access to natural resources (*Na*).

The list of endowments may not be complete, and further clarification regarding, firstly, its conceptual relevance (in general and for the CRESSI project), and secondly, the conceptual and theoretical compatibility of Mann's and Beckert's frameworks, may be required. What is presented here is a first step towards measurement as it emerges from the papers in this report and from the discussion and sharing of perspectives that has taken place.[9] Questions raised during the second consortium meeting on 14−16 October 2014 in Delft that are yet to be conclusively answered include:

☼ What does 'Culture' stand for, and how does it relate to or differ from (Mann's) 'Ideology'? Are knowledge and Beckert's 'cognitive frames' also a part of culture? If so, what does it mean conceptually to juxtapose Beckert and Mann (as in Figure 3)? Where does education belong? And science?

☼ What does 'political' mean and how does it relate to what Beckert calls 'institutions', in particular if 'institutions' are defined (as they are by Nicholls and Ziegler) as "rules and norms" which "govern access to scarce resources"?

☼ Where do finance and access to credit belong? Are they part of the economy? Or do they belong to the political sphere if this is interpreted as the sphere of rights, including laws (approved by parliament) and "formal and informal rules and norms governing access to scarce resources"?

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[8] An individual's capability set may encompass more (potential) capabilities than the capabilities he actually uses. The capabilities that are actually used or realised are called *achieved functionings*. Which capabilities the individual uses is assumed to be a matter of choice.

[9] For instance, during (a) the meeting at the HDCA conference in Athens in September, (b) the London meeting of 16th September, and (c) the second consortium meeting in Delft on 14−17 October 2014.

Secondly, regarding Beckert, how would the three macro-fields (macro meaning that they hold for all individuals) fit into the 'capabilities equation'? If Beckert's fields or forces could be seen as conversion factors, the obvious candidates[10] would be social conversion factors (z_s) and/or environmental conversion factors (z_e), since individual conversion factors (z_i) are factors pertaining to the individual which are unchangeable (such as age or gender). We would then have, for each individual and for all individuals collectively, the following conversion factors:

$$z_i, z_s^f, z_e^f, \qquad f = Co, In, Ne \ ,$$

which says that Beckert's three fields (cognitive frameworks, institutions, and social networks, denoted by the superscripts *Co*, *In* and *Ne* respectively) are treated as, respectively, social conversion factors $\left(z_s^f\right)$ and/or environmental conversion factors $\left(z_e^f\right)$.

Both powers (endowments) and fields (conversion factors) will change as a result of social innovation (to be discussed in the next section).

11.3 A first step towards the operationalisation of 'social innovation'

How would social innovation fit into the 'capabilities equation'? Arguably, the endowments x_i^p will be functions of social innovation, so that they can be written as

$$x_i^p(si^\pi),$$

where the si^π stand for social innovations in five fields: cultural, economic, security-related, political, artefactual. Note that while the superscript p refers to six powers, the superscript π refers to only five powers.[11]

Similarly, if the conversion factors z_s^f and z_e^f are liable to influence by social innovation, they can be written as:

$$z_i, z_s^f(si^f), z_e^f(si^f), \qquad f = Co, In, Ne,$$

where the si^f refer to social innovations in cognitive frameworks, institutions, and social networks (denoted by the superscripts *Co*, *In* and *Ne* respectively).

Treating both endowments and conversion factors as functions[12] of social innovation, Eq. 1 becomes:

$$(2) \quad Q_i \begin{bmatrix} x_i^{Cu} \\ x_i^{Ec} \\ x_i^{Se} \\ x_i^{Po} \\ x_i^{Ar} \\ x_i^{Na} \end{bmatrix} = b_i | b_i = f(\begin{bmatrix} c^{Cu}\left(x_i^{Cu}(si^\pi)\right) \\ c^{Ec}\left(x_i^{Ec}(si^\pi)\right) \\ c^{Se}\left(x_i^{Se}(si^\pi)\right) \\ c^{Po}\left(x_i^{Po}(si^\pi)\right) \\ c^{Ar}\left(x_i^{Ar}(si^\pi)\right) \\ c^{Na}\left(x_i^{Na}(si^\pi)\right) \end{bmatrix} | [z_i], \begin{bmatrix} z_s^{Co}(si^f) \\ z_s^{In}(si^f) \\ z_s^{Ne}(si^f) \end{bmatrix}, \begin{bmatrix} z_s^{Co}(si^f) \\ z_s^{In}(si^f) \\ z_s^{Ne}(si^f) \end{bmatrix}),$$

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[10] As noted by Enrica Chiappero in personal discussion.
[11] Recall from Section 1.3 that 'natural power' is interpreted as the 'power of nature', which is given and not subject to innovation.
[12] To be specified theoretically and empirically.

According to this function, an individual's capability set is the outcome of six kinds of endowments (powers), which can be enhanced by social innovation in five kinds of power; and three kinds of conversion factors (fields) which can be enhanced by social innovation in the three fields.

Eq. (2) can be written more compactly as:

$$(3) \quad Q_i\left(x_i^p\right) = f\left(c^p\left(x_i^p(si^\pi)\right) \mid z_i, \; z_s^f(si^f), z_e^f(si^f)\right),$$

where the si^π and si_i^f and stand for social innovations which, in a measurable way, enhance powers (endowments) x_i^p and fields (conversion factors) $z_{s,e}^f$.

11.4 A note on statics and dynamics

This framework and its extension into measurement may give rise to a set of questions – raised also at the October consortium meeting in Delft – concerning the interaction between the various elements of Eqs. 1 through 3. First, do powers and fields operate separately or do they interact? How? A second question concerns the functional form of the 'capabilities equation'. Conceived analogously to a neoclassical production function, how mechanical are Eqs. 1−3? For instance, how much room is there for individual agency? What are assumptions, explicit or explicit, regarding choice?

In order to highlight the interaction between (social-innovation-enhanced) powers $x_i^p(si^\pi)$ and (social-innovation-enhanced) conversion factors $z_s^f(si^f)$ and $z_e^f(si^f)$, Eq. 2 (or its compact version, Eq. 3) is represented in table form in Table 2.

Consider, for example, the first row in Table 2 ('Culture'). The first cell in this row − the interaction of cultural power and cognitive frames − represents cultural power 'subject to', or given, cognitive frames. The assumption is that powers (endowments) are conditioned or at least influenced by fields. This is the meaning of the condition (indicated by the symbol |) in Eq. 2 (3). It also corresponds to the black arrows, in Figure 2 of the Grant agreement (Annex, Part B, p. 12), running from fields towards capabilities.

Endowments $\left(x_i^p(si^\pi)\right)$	Conversion factors $\left(z_{s,e}^f(si^f)\right)$		
	Cognitive frames (1)	Institution (2)	Social networks (3)
1. Cultural	$\left(x_i^{Cu}(si^\pi)\right)\|\left(z_{s,e}^{Co}(si^f)\right)$	$\left(x_i^{Cu}(si^\pi)\right)\|\left(z_{s,e}^{In}(si^f)\right)$	$\left(x_i^{Cu}(si^\pi)\right)\|\left(z_{s,e}^{Ne}(si^f)\right)$
2. Economic	$\left(x_i^{Ec}(si^\pi)\right)\|\left(z_{s,e}^{Co}(si^f)\right)$	$\left(x_i^{Ec}(si^\pi)\right)\|\left(z_{s,e}^{In}(si^f)\right)$	$\left(x_i^{Ec}(si^\pi)\right)\|\left(z_{s,e}^{Ne}(si^f)\right)$
3. Security-related	$\left(x_i^{Se}(si^\pi)\right)\|\left(z_{s,e}^{Co}(si^f)\right)$	$\left(x_i^{Se}(si^\pi)\right)\|\left(z_{s,e}^{In}(si^f)\right)$	$\left(x_i^{Se}(si^\pi)\right)\|\left(z_{s,e}^{Ne}(si^f)\right)$
4. Political	$\left(x_i^{Po}(si^\pi)\right)\|\left(z_{s,e}^{Co}(si^f)\right)$	$\left(x_i^{Po}(si^\pi)\right)\|\left(z_{s,e}^{In}(si^f)\right)$	$\left(x_i^{Po}(si^\pi)\right)\|\left(z_{s,e}^{Ne}(si^f)\right)$
5. Artefactual	$\left(x_i^{Ar}(si^\pi)\right)\|\left(z_{s,e}^{Co}(si^f)\right)$	$\left(x_i^{Ar}(si^\pi)\right)\|\left(z_{s,e}^{In}(si^f)\right)$	$\left(x_i^{Ar}(si^\pi)\right)\|\left(z_{s,e}^{Ne}(si^f)\right)$
6. Natural	$\left(x_i^{Na}(si^\pi)\right)\|\left(z_{s,e}^{Co}(si^f)\right)$	$\left(x_i^{Na}(si^\pi)\right)\|\left(z_{s,e}^{In}(si^f)\right)$	$\left(x_i^{Na}(si^\pi)\right)\|\left(z_{s,e}^{Ne}(si^f)\right)$

(1) $p = Cu, Ec, Se, Po, Ar, Na.$

(2) $\pi = Cu, Ec, Se, Po, Ar.$

(3) $f = Co, In, Ne.$

Table 2: Alignment of Sen, Beckert and Mann[13]

By way of example, one could think of a teacher whose power to teach depends on (given) cognitive frames, that is, on the cognitive frames which he himself has received or 'inherited' from his social environment (parents, schools, universities, etc.). Secondly, his cultural power will depend on institutions (rules, norms, laws, regulation) that govern his access to, for instance, (further) education, information, and scientific communities. Finally, his cultural power as a teacher will depend on the material or physical means (food, housing etc.) with which his social networks (in particular, the economic relationships in which he participates) provide him. These are the more 'static' and 'deterministic' aspects of Eq. 2 (3) and Table 2.

However, it would be very much against the spirit of Beckert as well as Sen and Mann to assume that such influences are wholly static and deterministic. Indeed, in the CRESSI project dynamic, innovative processes are centre stage. The dynamic or 'reflexive' aspects of Eq. 2 (3) and Table 2 come under two headings.

First, the different powers and fields will *mutually influence each other*. For instance, cognitive frames (taught in educational institutions, disseminated through the media, etc.) will influence which rules (laws, regulation) one thinks are needed and justified; while both cognitive frames (i.e. how we think) and rules will influence how we behave in social networks. *Vice versa*, how individuals behave may change which rules we think are needed or desirable, and modify how we think about human beings and society (cognitive frames).

Second, powers and fields may *change as a result of social innovations* (the si^π and si_i^f). The main question to be investigated in this respect concerns the source of social innovation. Sen's 'individual agency' will most likely play a decisive role here. If individual agency is a realised or actual capability ('achieved functioning'), its impact is represented by the green arrows in Figure 2

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[13] Described in Houghton Budd C., Naastepad R. and van Beers C. (Eds.), *Report on Institutions, Social Innovation & System Dynamics from the Perspective of the Marginalised*, CRESSI Project Deliverable D1.1, Chapter 9. Available at: http://www.sbs.ox.ac.uk/ideas-impact/cressi/publications-0

of the Grant agreement (Annex, Part B, p. 12) running from capabilities towards fields, and by the arrows in Nicholl's and Ziegler's Figure 3 running from capabilities to powers. Individual agency will be the factor preventing determinism in the relationships between fields (forces), powers, and capabilities.

11.5 Possibilities for analysis

Regarding analysis there are basically two possibilities:

1) Comparing two groups:
    (a) marginalised individuals (their endowments, their actualised capabilities), and
    (b) social innovators who transform aspects of marginalisation (reflected in endowments x_i^p) via social innovation (si^π and si_i^f) into a wider capability set and/or enhanced 'achieved functionings' (Q_i).
2) Showing how, over time, (previously) marginalised individuals improve their endowments and enhance their actualised capabilities through social innovation.

The CRESSI project explores the economic underpinnings of social innovation with a particular focus on how policy and practice can enhance the lives of the most marginalized and disempowered citizens in society.