MODELLING CIVIL SOCIETY’S TRANSFORMATIONAL DYNAMISM AND ITS POTENTIAL EFFECTS

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ABSTRACT
The paper proposes three ‘non-conventional’ patterns to model using System Dynamics: (i) transformational dynamism of civil society organizations; (ii) regulations effectively limiting disruptive effects of platform firms; (iii) policies facilitating new patterns of value creation through genuine sharing. The combination of SD and Agent Base Modelling may improve the effectiveness of analysing agency as complex interplay among “high-order, nonlinear, feedback systems” and actors who’s interactions co-create them. Such dynamic hybrids may enhance the effectiveness of modelling feedbacks among the civil society entities’ transformational dynamism and legislative and policy processes. Models may contribute to regulations limiting disruptive effects of platform firms and to policies enhancing alternative patterns of value creation in genuinely sharing economy similar to platform cooperativism and Commons Based Peer Production.

INTRODUCTIONS
“...we do not live in a unidirectional world in which a problem leads to an action that leads to a solution. Instead, we live in an on-going circular environment. Each action is based on current conditions, such actions affect future conditions, and changed conditions become the basis for later action. There is no beginning or end to the process. Feedback loops interconnect people. Each person reacts to the echo of his past actions, as well as to the past actions of others” (Forrester, 1998:2-3). “...interactions in a social system correspond to those purposeful decision making processes that convert information into action - such is the definition of “decision making” of Forrester (1961) - through the exchange of resources, materials, information, meanings, communications, etc.” (Olaya and Gomez-Quintero, 2016:2). Since complex non-linear feedback systems unfold as continuous aggregation of the actors’ interactions System Dynamics facilitate to explore agency as complex interplay among “high-order, nonlinear, feedback systems” (Forrester, 1991) and the actors who participate in and also co-create them (Olaya and Gomez-Quintero, 2016). Goals of modelling process are inherently social (Vriens and Achterbergh, 2006) so System Dynamics can serve as effective instrument to elaborate and shape policies and legislative acts. Hybrid variants combining System Dynamics with Agent Base Modelling enable to model policy and legislation processes (Misuraca and Kucsera, 2016), their interplay with transformational dynamism of civil society entities.

MODELLING AND SIMULATION OF THE TRANSFORMATIONAL DYNAMISM OF CIVIL SOCIETY ORGANIZATIONS
The System Dynamics’ focus on underlying non-linearity makes it a proper analytic tool to explore, model and simulate sources, mechanisms, and outcomes of the civil society entities’ transformational dynamism. The volunteers’ (self-) empowering non-wage work unfolds as passionate and sharing co-creation improving life quality as the analysis of self-organizing communities exemplifying civil society entities (Veress, 2016) indicates. The interactions -, which presuppose and simultaneously regenerate motivation and trust - aggregate into the civil society entities’ and networks’ continuous emergence. The volunteers’ interactions generate multidimensional feedback change processes. Their mutually catalytic character turns them into self-re-enforcing feedback loops and facilitates their aggregation into continuous emergence of civil society entities. Consequently, the civil society entities are “high-order, nonlinear, feedback systems” (Forrester, 1991) - subject to System Dynamics and the deployment of SD facilitates more ‘fine grained’ elaboration on diverse aspects of the transformational dynamism of civil society entities.

Motivation and self-communication in community
The community members’ voluntary cooperative interactions improve their perceived life quality in multiple ways. Their readiness to volunteer feeds back...
with self-communication, which “…multiplies and diversifies the entry points in the communication process. This gives rise to unprecedented autonomy for communicative subjects to communicate at large”(Castells, 2009:135). The self-communication facilitates to recognize mutual benefits which collaboration provides. It generates awareness of an associational - rather than competitive - advantage. The awareness (R1) enhances motivation to volunteer (Figure 1). Growing motivation catalyzing more intense contributions to voluntary activities enables to increase the rate of cooperative interactions (R2) creating life quality improvements. Growing rates of cooperative interactions presuppose self-communication, catalyze its growing intensity (R3). Since these interplaying phenomena are mutually catalytic their feedbacks may aggregate into self-reinforcing loops (Figure 1).

The intertwined dialogues aggregating into self-communication enable cooperative interactions catalyzing life quality improvements. The self-communication re-creates the volunteers’ awareness of associational advantage their cooperation brings about. Consequently, the awareness creates (also serves as) demonstrative effect which (re-) generates and amplifies motivation to volunteer. The enhanced motivation catalyzes participation in collective efforts and increases the rate of cooperative interactions (R5). The individuals who voluntarily join to a community serving as domain of cooperative efforts obviously have an inclination to collaborate. Due to such positive disposition toward cooperation their intra-personal dialogues enact (primarily) association-prone institutional settings. This constellation brings about the community members’ readiness to (mutually) advance trust which is imperative to start to communicate (Luhmann, 1995). The (mutual) advancement of trust enables to launch inter-personal dialogue, which is generative and constitutive of their self-communication (R6).

Association-prone institutional settings which intertwined intra- and inter-personal dialogues enact play multiple important roles. They serve as social capital, as “…informal norm that promotes cooperation between two or more individuals… [is] instantiated in an actual human relationship… [generates and sets the radius of] trust …epiphenomenal, arising as a result of social capital but not constituting social capital itself”(Fukuyama, 1999:1) (R7).

Consequently, the association-prone institutional settings (i) serve as social capital which re-generates trust and sets its radius; (ii) ‘catalyze and calibrate’ self-communication; (iii) facilitate the volunteers’ communicative interactions and those aggregation into - continuous emergence of - their community, i.e. (iv.) serve as institutional-type, soft organizing platforms. Actively catalyze multi-dimensional process feedbacks which carry out, aggregate into continuous (re-) emergence of the self-organizing community. This constellation provides the first instant dynamic character of communities as professor Gábor pointed out commenting the research.

Enhanced effectiveness of resource enactment

The volunteers’ interactions usually are of small scale as empirical data and literature indicate. Benkler (2011) coins as “modularity of contributions” such limitation of the particular contributions’ size. Since such modularity allows minimizing the particular tasks’ resource intensity the volunteers are ready to take care also about resourcing. I.e. their interactions carry out also identification, accession, mobilization and sharing of resources. The interactions and the resourcing are in
a sense identical voluntary activities. Consequently, the cooperative logic aims to decrease both individual tasks and their resource intensity. The decrease of burden related to particular tasks in turn may increase the number of contributors, i.e. increases both the frequency and overall number of contributions. Due to low resource intensity of tasks more people volunteer and mobilize limited volumes of required resources. Paradoxically by decreasing the tasks’ resource requirements the modularity of contributions improves the effectiveness of resourcing and extends the mobilized resources’ overall volume (B1) (Figure 3).

Figure 3: Enhanced Effectiveness of Resourcing

The extensive sharing makes obsolete to establish and maintain resource ownership. The horizontal and decentralized patterns of resourcing where interactions enact and share resources simultaneously allow avoiding accumulation and redistribution through vertical hierarchies (B2). The horizontal and decentralized enactment and sharing of distributed and locally available resources provide multiple ways to expand and upgrade collective resource base and improve the effectiveness of resourcing. Cooperating volunteers through vivid networking may mobilize also resources located in the ‘inter-organizational space’. Although these frequently are dispersed into small quantities their overall volumes may be significant (B3). The community members frequently capitalize on various ‘soft resources’ similar to knowledge, information, creativity, and psychological energies (B4). Since these are non-depletable and non-rivalrous (Bollier, 2007:28) they are also multipliable or even self-multiplying as knowledge plausibly demonstrates. It is freely sharable; its pieces could be recombined into new knowledge. The knowledge through its implementation becomes even more ‘voluminous’ and of higher quality instead of decreasing and becoming ‘worn out’. Additionally, the knowledge often may serve as ‘ultimate substitute’ enabling to decrease the required volume of or fully replace other resources.

The collaborating community members may co-create new capabilities improving collective resource access (B5). The growing awareness of feed backs among improved effectiveness of resourcing and increasing associational advantage may strengthen the motivation to cooperate, i.e. unleashes “cooperation trap” (Csányi, 1989). Self-enforcing feedback loops of innovative capability co-creation, improved (effectiveness of) resourcing, and enhanced functional (rather than organizational) complexity are characteristic also for broader evolutionary tendencies (Nowak, 2006). They may operate as driver(s) of emerging, self-organizing evolutionary tendencies and developments. In explored communities such feedback loops are important drivers of continuous self-organizing emergence providing robust translational dynamism (Veress, 2016).

Recursive, multi-staged deployment of System Dynamics enables to explore sources of the dynamism of communities representing broad array of civil society organizations. Causal and stock and flow diagrams may facilitate to shed new light on the civil society organizations’ dynamism and broader social transformational effects. The SD facilitates to analyse (i) the civil society players’ ability to effectively fulfill various and altering needs in context of rapidly changing social dynamics; as well as (ii) the role of civil entities in affecting and shaping social dynamics. Recursive mapping of causal loops and feedbacks among levels and rates may help to identify ways and tools of quantifying and measuring variables, construct and run quantitative model(s). The ‘inverse logic’ of modelling efforts may facilitate recursive fine-tuning of analytic tasks and tools, identify relevant data sources. Such attempts should consider also effects of time distribution and relevance of metamodeling.

CAN SYSTEM DYNAMICS CONTRIBUTE TO POLICIES AIMING TO ENHANCE GENUINELY SHARING ECONOMY?

Sharing economy became the “...corporatization of the sharing movement ...sharing evolves from a peer-to-peer enterprise to a place where established market participants seek to assert themselves in the sharing economy’s new domains”(Miller, 2016:149). The platform firms’ business models robust disruptions among other on labour market. In the US during the last decade the “…share of workers in alternative work arrangements in their main job increased by 5.7 percentage points (or by over 50 percent) from 2005 to 2015. A striking implication ...is that all of the net employment growth in the U.S. economy from 2005 to 2015 appears to have occurred in alternative work arrangements [italics in original]” - conclude Katz and Krueger (2016:7). These developments amplify robust disruptive tendencies created by “large corporations [which] have shed their role as direct employers of the people responsible for their products, in favor of outsourcing work to small companies that compete fiercely... The result has been declining wages, eroding
benefits, inadequate health and safety conditions, and ever-widening income inequality”(Weil, 2014). “Low labour costs discourage investments in labour-saving technology, potentially reducing productivity growth… the rapid technological progress can coincide with lousy growth in pay and productivity”(Avent, 2016:2).

The ballyhooed ‘sharing economy’ consists of ‘hollow companies’ ‘redesigning…corporate responsibility and accountability…’ [these start-up] companies are dramatically claiming a new corporate »right«: set up operations first…and figure out the laws and tax requirements later…Uber does pay federal corporate income tax on the considerable business earnings generated from its cut of each fare (about 25 to 30 per cent of the bill). But just like Apple, Google and other companies, Uber (as well as Airbnb) has constructed a complex web of 30 foreign subsidiaries and tax havens, many of them no more than mailboxes in the Caribbean, as a way to greatly reduce its US tax obligations.”(Scholz 2016:7).

Negative socio-economic consequences are even more explicit in long term. As Galbraith (1987:290-291) points out: “In the modern industrial economy production is of first importance not for the goods it produces but for the employment and income it provides. …In the industrial countries most people, when employed, are not primarily preoccupied with the size of their income. …Their principal worry is the danger of losing all or most of their income - of losing employment and the consequent loss all or most of the means of their livelihood ….factors affecting the security of employment are now socially far more important than those determining the level of reward. This being so in the present, so it will be in the future. …All suffering was identified with the interruption in income - with unemployment. …Time and increasing well-being will… overtake the concern about how their proceeds are distributed.” As Galbraith (1987:285) emphasizes: “The great dialectic in our time is …between economic enterprise and of those who direct its operations. The enemy, the wonderfully and dangerously rewarding role of military production apart, is government …that reflects the concerns of a constituency that goes far beyond the workers - a constituency of the old, the urban and rural poor, minorities, consumers, farmers, those who seek the protection of environment, advocates of public action in such areas of private default as housing, as transportation and health care, those pressing the case for education and public services in general. Some of the activities thus urged impair the authority or autonomy of the private enterprise, others replace private with public operation; all…are at cost either to the private enterprise or to its participants. Thus the modern conflict between business and government”. This broader context enables proper interpretation of recent assertions of the White House chief strategist, Stephen K. Bannon “…declaring that the new administration is in an unending battle for “deconstruction of the administrative state”…”(Rucker and Costa; 2017).

No regulation! – key factor of the on demand economy’s business model

The loud marketing of ‘sharing economy’ transform - rather deform - the concept and practice of sharing, as well as employment, and its regulation. “…Uber and its ilk offer …a nearly magical user experience, but their innovation lies just as much in evading regulations as in developing new technology. Behind the apps lies an army of contract workers without the protections offered to ordinary employees, much less the backing of a union. This…on-demand service economy …spreading market relations deeper into our lives. …new middlemen [are] sucking profits out of previously un-monetized interactions, creating new forms of hyper-exploitation spreading precarity…” (Ehmsen and Scharenberg; 2016).

The platform firms’ business models create ‘platform monopolies in the absence of a physical infrastructure of their own’ [by] running off your car, your apartment, your labour, your emotions, and importantly your time” - emphasizes Scholz (2016:2-3). These logistics companies decouple productivity from income by “[u]sing the language of entrepreneurship, flexibility, autonomy, and choice …[they] shift …the burden of the biggest risks of life: unemployment, illness, and old age from the employee…to a more contingent worker, the freelancer…independent contractor…or gig worker”(Scholz 2016:5-7). Its crucial to re-make “…labour protections, including a portable safety-net, for the digital age. …New forms of work, such as »crowd work«, require new regulations. Minimum standards for wages, health and safety, working hours and social security must be established to prevent this form of work from becoming exploitative and the jobs precarious. …all workers must be included in a new kind of portable and universal safety net, including solo self-employed persons and crowd workers, ensuring co-financing of their social security contributions by the businesses that hire them” - points out Hill (2016:13).

These companies are very consistent and successful in preventing and escaping regulation (Hill, 2016). By “…using their apps as political platforms …activate their clients to oppose any regulatory efforts against them”(Scholz 2016:7). “…within the academic literature… has been almost no discussion of how the sharing economy businesses relate to existing local
government regulatory structures …which is a surprise given that many sharing economy businesses have violated state or local government laws…” - points out Miller (2016:149). By analyzing “how, or if, the mass scale of the sharing economies’ non-compliance with local government laws can be rectified” Miller (2016) capitalizes on empirical data from San Francisco and Portland (Oregon). He indicates that legislative efforts aiming to provide effective regulation for platform economy provide rather controversial outcomes.

The platform companies and their lobbists stress that “outmoded labor laws are imposing costs on the gig economy …introduce a great deal of uncertainty …discourage the creation of the flexible and varied job opportunities that Americans increasingly need …do a poor job of benefiting the workers they are intended to protect”(Kennedy, 2016:2). The expert of Washington based Information Technology and Innovation Foundation proposes three practical variants to handle the problem of regulation: “1. … to create a new category of worker, between full employee and independent contractor… 2. … Congress to revisit each of the country’s major labor laws and carefully tailor them to achieve their specific goals. This would be ideal, but it would involve a long and difficult political process… 3. … to draft a carve-out for workers who depend on Internet platforms to find gig work …None of these would entirely solve the problem, because each state also has its own labor laws. Without similar changes at the state level, many of the benefits of reform would remain out of reach. But any of the three paths would jumpstart the process of updating U.S. labor law…”(Kennedy, 2016:2). From the platform firms’ point of view a long process with no genuine outcome is the second best option, while the very best one remains: No regulation! Indeed, various US and EU legislative attempts reached at best partial and disputed solutions if any. However, as the Taiwan experience justifies effective regulations exist.

**Platform democracy, crowd legislation in Taiwan**

Taiwan in 2015 elaborated a comprehensive new legislation on activity of Uber and Airbnb on local market. “With this regulation, other Uber-like apps, some created by the civil society, are entering the market” - sums up Tang (2016) the outcome of mass deliberation exercises. “The hardest hack is to hack into the society, especially things concerning the government. Still, “g0vtw”, an open source community, has significantly empowered the civil society in Taiwan since 2012” - points out Yun-Chen Chien (2015) analysing “How Open Government Movement Has Made Civil Society in Taiwan”. The g0vtw, a self-organizing network facilitated the civil society efforts of self-empowerment. “Following the model established by the Free Software community over the past two decades, we transformed social media into a platform for social production, with a fully open and decentralized cultural & technological framework…” - sum up major milestones the members of g0vtw (http://g0vtw.asia/tw) by adding 2013 was the year of “Dismantling our Government and Building It Anew”.

Describing what made “Uber respond to vTaiwan’s coherent blended volition” Tang, (2016) the Digital Minister @ Taiwan points out: “Modeled after Cornell’s RegulationRoom, vTaiwan is a g0v (gov-zero) project run by volunteers that works with… administration on crowdsourcing internet-related regulations”. G0vtw developed a technology enabled platform providing tools for mass deliberation. Volunteering facilitators successfully catalysed the emergence of “a coherent set of reflections, expectations and suggestions”. The facilitators using AI supported systems focused on identifying mutually acceptable points of emerging consensus. The process aiming for coherence (rough consensus) not convergence (coordinated consensus) aggregated mutually acceptable constructs into “blended volition”. Various groups of citizens “fully explored all aspects of each stage, before moving on to the next”.

Transparency and mutual trust were preconditions and outcomes of cooperation. Technology platforms provided full transparency of data and relevant knowledge by enabling substantive debate. The readiness of the government and legislation to formalize, endorse and approve the co-created legal constructs and mechanisms enhanced participative democracy in Taiwan. “The key to the vTaiwan model lies in its ‘symmetry of attention’ - points out Tang (2016). Through live streaming and remote participation citizens can see how stakeholders present their views, how much effort invest in the process. Actual face-to-face meeting agenda itself are crowdsourced by online discussion. The participants may exert genuine influence by discussing policies which are in the stage of problem-identification and the ministries are committed to give an official response within seven days to any question during discussion.

Successful mass-deliberation created a wish to raise on higher level “crowd legislation” efforts. “As vTaiwan went on to deliberate transnational issues such as Uber and Airbnb, this model was proven to be feasible. …Is there a way to institutionalize this model? …Taiwan’s efforts for open government and public participation are at frontiers of the world. An innovative democratic system - born among conflicts and oppositions - can become a gift that we share with all humanity. We must keep accelerating our efforts” - conclude Tang and Kao (2016) discussing how to go beyond crowdsourced laws and participatory budgets.
**Platform cooperativism-return to genuine sharing**

The Internet offers technology background to renew value creation driven by genuine sharing and participation. “There isn’t just one, inevitable future of work. Let us apply the power of our technological imagination to practice forms of cooperation and collaboration. Worker-owned cooperative could design …apps-based platforms, fostering truly peer-to-peer ways of providing services and things” - emphasizes Scholz (2016:2). “We need to build an economy and an Internet that works for all… take lessons from the long and exciting history of cooperatives and bring them into the digital age. …Platform Cooperativism…is an emerging economy …cooperatives employ more people than all multinationals combined …It’s too hard to fix what you do not own …[but] cooperative ownership models of the Internet would address many of these issues…”- argues Scholz (2016:10).

Worker-owned cooperatives “…can offer an alternative model of social organization to address financial instability. They will need to be (i) collectively owned, (ii) democratically controlled businesses, (iii) with a mission to anchor jobs, and (iv) offer health insurance and pension funds and, a degree of dignity”(Scholz, 2014:7). The platform cooperativism is a “core location for development of new ideas in pursuit of an open social economy” of communities and commons (Benkler, 2016). Network pragmatism enables massive experimentation, rapid iteration utilizing knowledge generated by applied inquires of volunteer cooperators. Local communities know best about their needs, use reflection through practical experience - trial and error. Flexible organizations continually adapt and innovate while engaging with investor capital. They may withstand pressures arising from the logic of “tyranny of margin”, i.e. the need to compete in market and maximize profits. There is sufficient room in current market situation “…platform cooperatives will neither kill nor be killed by investors firms…”(Benkler, 2016:1). Platform cooperatives may allow overcoming inequality caused by extreme extraction of wealth by the top 10 %.

A Platform Cooperativism Consortium adopted nine priorities for 2017: elaborate legal templates to help communities to launch platform co-ops; establish a donation channel for systematic fundraising; catalyze active networking among members of emerging ecosystem; map platform cooperative initiatives and projects; launch a European sister organization and support events in various cities; prepare a Massive Open Online Course about platform cooperativism economy (Llewellyn, 2017). A major challenges is to determine how to contribute to commons acting in “soft enclosures” by insulating populations from economically hostile surroundings. Diversity of organizational forms, an “organizational bricolage” in cooperation with solidarity economy and pro-commons movement facilitate to capitalize on alternative ways of value creation (Benkler, 2016).

**Modelling and simulation in policy making and legislation**

System Dynamics may facilitate in multiple ways to explore and re-describe the civil society organizations’ robust transformational dynamics as interplay among and aggregation of feedback loops of nonlinear changes. Findings provided by deploying SD confirm outcomes of previous qualitative analyses capitalizing on methodological pluralism combining process and variance approaches (Veress, 2016). The paper assumes that legislative efforts regulating platform companies and on demand economy, and policies aiming to facilitate sharing economy related initiatives similar to platform cooperativism or Commons Based Peer Production may capitalize on models enabling to better understand transformational dynamism of civil society entities. Modelling and simulation of similar dynamic process constellations require “a methodological pathway in dynamic model development that combine qualitative (CLD) and quantitative (stocks and flows and agent based models) approaches” - point out Misuraca and Kucsera (2016:9). “Dynamic Simulation Modelling …the combination of System Dynamics (SD) with Agent Based Modelling (ABM) would be the most appropriate approach…for modelling and simulation …the 'ecosystem' in which social protection 'organisms' operate…in the EU …characterized by …human behaviours and the unpredictable impacts they …have …on system”(Misuraca and Kucsera, 2016:46).

This approach of System Dynamics indicates the actor-driven nature of social systems ‘producing’ the problems to be modelled. It helps to improve conceptualization, which “…guides the model building process and leads to a shift from “variables” to “decisions rules” and “actions”…”(Olaya and Gomez-Quintero, 2016:1). Combined methodologies by analyzing agency should reflect the process character of (continuously emerging) social systems.

**CONCLUSIONS**

The civil society is ‘uncharted territory’ for modelling and simulation in general and for System Dynamics in particular. The SD may contribute to quantitative analyses deepening findings from qualitative analysis of the civil society organizations’ transformational dynamism. Modelling and simulation of civil society entities create numerous challenges. The very concepts of civil society, volunteering and social capital are rather elusive not to mention challenges related to their measurement and quantification. The limited size and
non-homogenous character of available data, lack of reliable sources may turn building models of civil society entities into ‘non-standard exercise’. One can foresee the necessity of capitalizing also on “less traditional” solutions and sources, including open data, log analysis, accession of survey and poll results. More thorough study of the civil society organizations’ transformational dynamism through concrete cases probably should consider also effects of time distribution and check relevance of metamodels.

Legislative efforts limiting and preventing disruptive effects of platform firms such as participative democracy related efforts in Taiwan and sharing economy related initiatives similar to platform cooperatives or Commons Based Peer Production providing alternative patterns of value creation may capitalize on the civil society entities’ transformational dynamism. Each of them and their interplay could be more successfully analysed by deploying innovative dynamic hybrids combining System Dynamics with Agent Based Modelling the paper assumes.

REFERENCES