



The experience of rural squats in Collserola, Barcelona: what kind of degrowth?

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ABSTRACT

The focus of this article is on rural–urban (rurban) squatting. The article explains how and why semi-autonomous, small scale, collective economic systems have been established on the Barcelona hills of Collserola which a posteriori can be considered as practical implementations towards degrowth. The authors are first-hand participants in these projects. A qualitative description of the Kan Pasqual and Can Masdeu squat realities is provided, together with an empirical study of energy and time consumption. The results suggest that it is possible to live well within a low-intensity economy. We use the experience from the two squats to question the meaning and definition of degrowth. We argue that degrowth should be a collectively consented choice of life, not an externally-imposed imperative. Degrowth should not be the primer social objective but the outcome of a general transition towards a more democratic and autonomous social and political organization.

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Introduction

A set of indicators has been showing since the middle of 2008 that an economic recession has been turning into a global crisis in the markets. GDP, industrial production and consumption have been falling sharply in almost every country, while unemployment is expected to grow steadily. The crisis of 2008 is an opportunity to think of degrowth, in the context of personal fulfilment and sustainability. This article shares the experience of collective self-management as a tool towards a low-intensity economy, strengthened through semi-closed cycles of matter, energy and time interchanges. We provide a radical critique of degrowth, which like growth, is not an end in itself. Degrowth in the case-studies investigated here is the result of practical collective experiences that have arisen from the antagonistic intentions of their participants.

The paper is divided into the following sections. **Section 1** defines the theoretical framework justifying “*la joie de vivre*” (the enjoyment of life) as the end of an economic system, which is not centred solely on money circulation. **Section 2** describes briefly the methodology with particular reference to a form of auto-ethnography. **Section 3** sets the context of squatting abandoned buildings in the context of Barcelona’s sprawl and real-estate

speculation. **Section 4** presents a qualitative description of the two communities and some organizational insights, while **Section 5** contributes a quantitative analysis of time and energy consumption. Finally, **Section 6** provides some critical perspectives towards degrowth.

Oikonomia: a mean to an end, “*la joie de vivre*”

The concept of degrowth is quite old: in 1979, Grinevald and Rens recompiled and translated into a book a series of essays from [1] and called it *La Décroissance*, based on the material limits that an ever growing economy would reach. Cheynet, Clémentin, Latouche, Bonaiuti, among others highlighted the positive non-monetary effects related to ‘living well’, and restoration of the Earth’s natural capital proposing a non-concentrated market system, without commercial advertising, made up of small-scale economic actors. They are aware of the oxymoron of “sustainable development” [2].

Facing the entropic limitations on the material output of the economic system, Georgescu-Roegen insisted on the importance of the enjoyment of life as the real output of the economic process. Previous to that, Aristotle defined *oikonomia* as the *art of living well* – where goods had a use value – and which was morally superior to *chrematisticae* – the *art of making money out of money* – where goods only had an instrumental exchange value [3,4]. *Oikonomia* can vary from the use of money and the markets to *Do It Yourself*,

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barter, mutual aid or reciprocity; the final end is always the satisfaction of human needs. The experience of rurban squatting helps highlight which possible means (collective-decision making, material economy, decreasing needs, degrees of autonomy from money and wage labour) can be employed in order to achieve the end of living well. The numerical formulation of energy consumption and time use will document that this is possible in a low-intensity economy.

The term *economics* refers to the financial aspects of allocating scarce resources within market interactions. Mainstream economics pre-analytical vision sees profit-maximising market agents interacting in a survival-of-the-fittest Darwinian competition. Competition is seen as the driver of economic growth and the expansion of the market frontiers. GDP growth represents the increasing flow of goods and services channelled through competitive markets. There are several contributions which have criticised this perspective and help structure the theoretical framework of rurban¹ squatting. According to [5] the competitive market is not a natural institution, but a social institution formed through political struggle, the economy increasingly dis-embedding itself from social control. The Domestic Mode of Production, adopted by traditional societies, is a less materially intensive alternative to massive industrial production or market exchange; these societies need less rather than want more [6]. In society, like in nature, mutual aid is a determining factor of evolution [7]. Kropotkin, recognising the co-existence in nature of competitive and co-operative behaviours, provided an extensive list of examples from nature and from some indigenous or past societies of mutual aid as a factor of evolution. However, social Darwinist ideas of competition and survival of the fittest, that Darwin himself would hardly share, dominated market economics.

Economics as a science was only born in the 18th century [8]. The word *economics*, in English is restricted to this dis-embedded – and too often mathematical – science. In Latin *oeconomia* refers to a social reality, and in Ancient Greek *oikonomia* is the management/ruling of the house. In neo-Latin languages, *économie* or *economia* are understood both as a managerial practice and as a theoretical science: if the meaning of *economics* is to be maintained as that of a dis-embedded science, we then define *oikonomics* as an English neologism for *oikonomia*, the Aristotelian “art of living well”. The *oikonomic* importance of living well or *la joie de vivre* is of fundamental importance for the theory of degrowth. *Oikonomia* focusses on human subjective needs, often not of material nature [9,10] and which should deserve a primary role with respect to the competitive production and exchange of goods and services. The latter are economic objects, instrumental to the capitalistic accumulation of money and not necessarily related to human well-being.

On the social and political agenda, popular movements are investing on the degrowth idea. Some examples are the marches for degrowth in France and Catalonia and the organization of collective debates on degrowth, contributing to its public acknowledgement in France, Italy, Switzerland, Catalonia, or Brussels [11]. The degrowth agenda includes the identification in society of practical examples where something akin to degrowth is already happening. The practice of co-housing is scientifically interesting (Lietaert, this issue), as well as the creation of co-operatives (housing, consumers, worker). So is rurban squatting, presented here, which is

a combination of collective practices of alternative lifestyles, political motivation and social activism. Degrowth is conceived here as what needs to be done, aiming at the realization of heterotopias [12], that is, if an utopia has no place, heterotopias exist as local substitutes. The squatting experience shows that the utopian replacement of capitalism is a concrete and practical path towards another form of well-being. A material utopia refers in Bloch's terms [13] to the condition of “*having the possibility*” of realizing it. He explains the difference between abstract utopia, or wishful thinking, which, by definition, conceives matter as not mediated, and concrete utopia, which has been mediated by historical material processes – in this case constructive ones – which allow an alternative that, without aiming for it, realizes degrowth.

Collserola rurban squats and the squatting phenomenon in general have theoretical affinities with general anarchist thinking: [14], a post-anarchist famous for his concept of T.A.Z. (Temporal Autonomous Zone), aiming at the creation of temporal spaces that could avoid formal structures of social control; [15], a Spanish Luddite critical of technological progress often State-imposed considering it as the root of the destruction of nature and the imposition of external control on rural life; to some extent [16], an anarcho-primitivist critical of agriculture (Zerzan is maintained only as an inspiration, since the realization of his ideas is impossible except in low-density population with an abundance of natural resources). Rurban squatters cannot be exactly identified with any single line of thought. Different individuals belonging to these communities might perceive different background motivations for their participation in these projects. [17], presenting the Spanish naturist thoughts in the XXth century, highlights the existence of very different positions, ranging from moral reformism to social revolution, while [18] focuses on the human ecology in the history of Iberian anarchism and highlights how already, from the end of the XIXth century, there was widespread support for the ideas of the Garden City (setting somehow a precedent for “rurbanism”) or for neo-Malthusian ideas of population control through the freedom of abortion, a right proclaimed by women and still a controversial issue for Spanish conservatives.

[19], highlighting democratic gaps in the political organization of the State, explained that “Democracy, in the primal sense I shall intend by the term, is necessarily most visible in relatively small communities and groups, whose members meet frequently face to face, interact freely, and are known to each other as people. As soon as large numbers are involved, democratic association must be supplemented by a more abstract, depersonalized form.” Social ecologist [20], seeking to rescue the depressed “apoliticism” of voters without expectations, grasps the idea of libertarian municipalism as “an effort to work from latent or incipient democratic possibilities toward a radically new configuration of society itself—a communitarian society oriented toward meeting human needs, responding to ecological imperatives, and developing a new ethics based on sharing and co-operation.”

On the line of anti-globalization movements, [21] presents cases of resistance from all over the world, a network of activists whose principles are often in line, and in co-operation with rurban activism. There is a wide literature on practical applications towards change in society. Mixing the desirability of social change with the provision of tools for this goal is the aim of the [22] working on empowering people, through popular education, to be the actors of a transition. Focussing on responsible consumption and well-being [23], gives practical explanations and contacts for a range of needs, from how to self-manage personal health, how to live more simply and towards self-sufficiency, to providing new perspectives for work, employment and alternative economies, resources for living in communities or eco-villages, as well as hints on water, energy and material consumption. [24] and [25] are more

¹ With the term *rurban* we refer to the presence of rural features within an urban context, such as agricultural infrastructure at the verge of a city. Such characteristics allow a closer link between urban lifestyles, often unaware of farm-like environments, with rural characteristics, often isolated from the majority of population. A rurban context is the connecting point between the centre (a city) and the periphery (a farm or a village).

concerned with self-organized collective processes for alternative agricultural practices and with the possibility of an agro-ecological movement.

What could be considered as degrowth has been occurring, among grass-root movements, before it was presented as an idea at the macro political agenda. Representing the Collserola rurban squats practices, our aim is to enrich the debate on degrowth.

Methodology

The methodological perspective of this article is *ex-post*: what the authors are here putting into words (theorizing) is a representation – from the degrowth point of view – of some realities that existed before this issue arose and in which they are embedded. Differently to deductive processes that define universal rules and try then to set them in a particular context, the present methodological context follows an inductive process: stemming from the observation of an already existing particular reality, the aim is a general representation in academic terms. The mix of personal lives, academic work and political action relates to three qualitative and one quantitative methodological tool.

1. Participant observation. This methodology stresses the subjectivity of the author's perceptions in social research, creating a contrast with objectivity and detachedness in pure science. [26] states that “among all systems of social research participant observation is possibly the most subjective. For this, participant observation is an ideal tool to recover the sentiment in social sciences. If gender stereotypes were certain, participant observation would be feminine: it is flexible, ductile, intuitive, no rational. Participant observation opposes to rigid masculine positivism an epistemological tolerance that prefers to pact reality before imposing it” (personal translation).

Author subjectivity in social research is the opposite to the goal of objectivity – through detachedness – in pure science. There are several issues correlated to the role – either participant or detached – of an author in research. Particular reference is made by [27] to the case of dealing with unequal power relationships between the researcher and the object of study, both in knowledge and in social intervention. Her metaphor of being “in the belly of the beast” refers to this ambivalent position. Feminist science, which in the words of Guasch is connected to participant observation, does not deny the political essence of scientific inquiry: [28] investigates the epistemological question of whether politicised inquiry can produce more complete and less distorted research results. Conventional understandings of a hegemonic science are political: “all claims for intellectual hegemony [are to be put] in their proper place – that we understand that such claims are, by their very nature, political rather than scientific” [29].

2. Ethnographic investigation. As expressed by [30] ethnographic research is characterized, in opposition to the model of the “magistrate that interrogates”, by a personal implication of the ethnographer, by seeing a culture through the eyes of those who live it and not of a scientific observer, and by the desire to represent the totality of the social reality under study. The ethnographic process is characterized by four functions: extensively describing a reality, translating it into the categories of the researcher's discipline (in this case economic degrowth), explaining it in comparative terms (in this case rurban squatting compared with the macro social reality of which it forms part, but from which it is diverging) and finally interpreting it, with the use of normative and policy statements. Both this ethnographic process and the feminine

perspective of participant observation constitute a wider reference for the aim and the contents of this work that includes a combination of qualitative descriptions, quantitative facts and critical analysis.

3. As a form of auto-ethnography [31,32], the authors are first-hand participants in rurban squatting. This last methodological context can be properly identified as *participant observing* [33] which is both a subset and an extension of participant observation but where the logical subject is the participant while the observation is its attribute only. In this line, while a participant observation might imply a researcher to look for degrowth cases among rurban squatters (the primary objective is the observation, and the participation is the way the author uses to get the information), participant observing refers to the participation in a social reality independently from the need to say something about degrowth. It is only later that the participant decides to reduce her reality in an observation from the perspective of degrowth.
4. Metabolic profile. Rough estimates of time use and energy consumption are derived for the two squats. This has been possible without the use of a measuring tool – the only one used was the electricity meter – but by approximation and by common statistics – i.e. gas bottles or litres of petrol consumed per average month (which could be more precise if detailed financial statistics were available). Time-use statistics are also an approximation of what the authors perceive as a result of their living experience and no more accurate test or device to measure the total amount of time spent in the squats has been attempted or used. The hypothesis tested is that the rurban squatters' economy is low-intensity. This is shown by comparing exosomatic energy figures (consumption of non-renewable energy and consumption of renewable energy) with the bodily consumption of calories (endosomatic/metabolic energy) and with Catalan statistics. The results prove that the exosomatic energy intensity is little. So little that is in the same order of magnitude as in pre-industrial societies, where the main contribution to energy consumption were human calories.

The context of rurban squatting in Barcelona

Stemming from a critique of the increasing dominance of government and market institutions, squatting is a window through which a range of opportunities opens up for the development of ideals and projects, without the need for initial financial capital or the responsibility to comply with external regulations. This goes against criminal law; nonetheless it occurs because the costs of breaking the law are de-valued with respect to the benefits of creating socio-political projects as an alternative to growth-capitalism and to representative democracy. The political-economic system within the squatting community is more simple and is implemented through collective self-organization where the decision-makers are identified with the users of a space.

Even if politically quite autonomous, urban squatters and, to a lesser extent rurban squatters, are far from realizing an autonomous, self-sufficient ecological-economic system.

Real-estate speculation over the last decade made housing costs increase dramatically in Barcelona. As a side-effect, the number of squats dedicated to provide a roof increased. But squats in Barcelona arrived before that. An *okupa* (squat) can be a *vivenda* (home) and/or a *centre social*: for a couple of decades the squatting movement has used private property to build autonomous spaces of collective growth. [34,35].

[36] offers a more complete picture defining some configurations of squatting. “Deprivation based squatting”, based on a top-down

help of activists for helpless people in need for a roof, is the oldest configuration but that did not occur in Barcelona. “Squatting as an alternative housing strategy” is a more self-organized configuration promoted by people with different interests: this is quite typical in Barcelona, especially after the increase in housing prices or among young people interested in alternative experiences. “Entrepreneurial squatting”, where many activities are offered, is centred around social centres but is likely to end in legalization or in de-politicization: although this configuration widely occurs in Barcelona, the entrepreneurial reason being one of those behind squatting, legalization and de-politicization have hardly occurred at all. “Conservation squatting”, in the preservation of a cityscape or a landscape and “political squatting”, for the desire of confrontation with the state. These last two configurations have also occurred in Barcelona, but not as the main reasons for squatting and, when they did occur, they were promptly evicted, for example the “*Espai alliberat contra la guerra*” (Freed space against the war) in the midst of the anti-war protests of 2003. Finally, “tourist or crash squatting”, by drug addicts or young tourists travelling on low budget, who are not socially neither politically motivated, not related with the neighbourhood life and only interested in finding a free-roof or in having some fun in the city. These worsen the image of squatting among the neighbours and are used by mass-media in Barcelona to manipulate the genuine image of squatting. In Barcelona the dominant idea of squatting is to free a place from market capitalism or government control and to experiment with new forms of social relationships and collective-decision processes. The managers and decision-makers of the social centre are those who use it, with full responsibility for their actions and decisions, self-organized through a non-hierarchical assembly -an example of direct and deliberative democracy. To synthesize, beyond the simple financial problem of not being able to pay for a roof, there are political reasons for squatting.

Barcelona’s urban sprawl is limited by the sea and, opposite to it, by the hills of Collserola, where rural spaces have traditionally flourished within natural landscapes. There, the Social Centres of Kan Pasqual (since late 1996) and Can Masdeu (since late 2001) combine cosmopolitan features, i.e. their members are Catalans and foreigners, come from cities and villages, with agro-ecological practices. Fig. 1 shows where the two social centres are located, with respect to the Barcelona Metropolitan Area and the Collserola Park.

Collective management of the commons is widely practised in society and in nature. Far from being destined to end in a tragedy [37,38] shows that, following proper management rules, governing the commons can be successful. The common is an institution with access to a material resource different both from private property and from open access. Within it, co-operation, mutual aid and self-organization among the different agents are work-saving strategies. On the other hand, the free exchange of information contributes to building agricultural know-how handed down to the next generations. Access to its material and immaterial resources, such as the land and the know-how make the survival of the commons critical, due to the growth of urban population and commercial patenting in present society.

Rurban squatters focus on learning and on the recovery of lands and local farming practices, incorporating modern solar and wind technologies with new perspectives – not widely explored in scientific literature – such as permaculture [39,40]. Both the Kan Pasqual and the Can Masdeu groups are in a learning process for the self-management of time, food, water and energy. Each individual creates tools to collectively incorporate – in the short and medium term – increasingly independent lifestyles. In line with Ivan Illich’s thought [41], where high quanta of energy become undemocratic, self-organization and self-management support daily routines and create new relationships with political and physical power.

Qualitative description

Table 1 below is a comparison of how vital elements – water, shelter, heat, electricity and food, to be understood as ends – are achieved in a small-scale community like Kan Pasqual, mainly depending on natural flows and in the petrol-based current civilization, depleting stocks and funds: different *oikonomic* means are employed which represent different ways of using and disposing of differing amounts of material resources; different ways of creating business opportunities (or not) and of relating to different types of markets.

Different organizational and physical structures have arisen from and have been adopted by the two communities/social centres. With a roughly male majority of 2–1, 15 adults live in Kan Pasqual with 6 children, and 25 in Can Masdeu with 2 children. The population number has fluctuated during the years, but only slightly: a large part of the present inhabitants have been living there since the beginning although in the early years the turnover rate was high and many people moved in and out.

By experiencing Kan Pasqual one would notice the strong convivial links with its neighbourhood, made of several *vivenda* squats dispersed in the forest and the achievement of energetic autonomy, understood beyond an ecological perspective, as part of a wider political-economic positioning. In fact, boycott and denunciation campaigns against transnational energy corporations and their impacts in other parts of the world, are part of the social militancy of some of its members. [42,43]

Alternatively, Can Masdeu squat, closer to the city and the metro, is devoted to an active cultural/social centre, open most Sundays, where cheap meals are served in the *Rurban* (rural-urban bar) and socio/cultural and educational activities, such as video forums, health workshops, legal advice and debates are offered. In addition the amount of arable land and the relatively abundance of water allow a community gardens project, made up of 31 little plots, organized in a monthly assembly, and resembling a successfully managed common.

Energy is an issue that motivates Kan Pasqual just as food is for Can Masdeu. The 400 m² house gardens (equivalent to another 10 plots within the community gardens project) provide most of the vegetables consumed in the community, and are open once a week and during some Sundays to participants. Can Masdeu has valued the transmission and diffusion of practical knowledge, weaving a network that blurs the land and the city.

Closing cycles

In Kan Pasqual and Can Masdeu permaculture techniques are widespread in the garden and the household. As proposed in permaculture design, closing matter and energy cycles is important in order to strengthen the sustainability of a project. In this way waste is reconverted into resources. Some examples are the gardens, where the waste of food is composted and given back to the soil; the chickens, who restore their calcium level by eating powdered egg-shells; horse manure, fertilizing the gardens and feeding a methane digester; the German carpenters-built dry toilets, that save the water wasted in flushing, – avoiding the delicate treatment of grey water – and allowing the recycling of high-entropy faeces into low-entropy fertilizer for fruit trees; grey water is purified through biological filters and stored – more or less efficiently – for irrigation. Sun-light is absorbed by the thermal solar panels for hot water showering. Most renewable energy infrastructure – thermal solar panels, windmill, PV system – or renewable materials facilities – compost piles, dry toilets, chicken yards – have been self-built or self-assembled.



Fig. 1. Location of Can Masdeu and Kan Pasqual

Wild nature is being used. The woods surrounding Kan Pasqual are an important source of wild fruits, mushrooms, medicinal and edible herbs, and firewood. The self-seeding of plants is favoured in the gardens while small water ecosystems are created where insect and mosquito predators are nourished. In these ways, the creation of permanent agricultural systems are promoted.

Self-managed economy

Kan Pasqual has a collective economy where income from selling bread and occasional trade fairs contribute to a fund for household expenditure (mainly food) and another fund for extraordinary expenses. The interchange of manufactured products or of labour hours for agricultural products is a common practice.

Table 1
Comparison of vital elements

| Vital element | Sustainable community | Petrol-based civilization |
|---------------|---|---|
| Water | Self construction and restoration of rainwater collection systems. Purification through grey-water systems. No black-water production | Great infrastructures of river channelization. Sea water desalination. Dams and reservoirs. Chemical and organic depuration of grey and black waters. |
| Shelter | Bio-construction with innocuous materials. Reparation of old houses. | Great real-estate investments. Construction with toxic and polluting materials (cement, petrol metals, synthetic fibres). High prices. |
| Heat | Wooden stoves from local woods. Passive solar heating. | Massive burning of petrol derivatives, thermal and nuclear power plants. |
| Electricity | PV panels, home-made wind generator. | Massive burning of petrol derivatives, thermal and nuclear power plants. |
| Food | Organic gardens, recollection from woods and fields. Interchange. Consumption in co-operatives. | Large scale wind farms. Industrial food of low nutritional quality. Great supermarkets. Food miles. High consumption in refrigeration or processing. |

The result is the possibility of economic self-sustainability, individually and collectively, with very few labour hours per month. As a consequence of earning collective money at home and of needing less money, – for instance there is no need for rent, packaged food or new clothes, – its inhabitants sell as small proportion of their time in the labour market, constituting a case of “useful unemployment” [41].

Can Masdeu inhabitants live, on average, on 200–250 Euros per month. Each month they pay 30 to the collective kitty (overall 750 Euro) and spend the rest elsewhere. Each member, two Sundays a year, opens the *Rurbar* in a group of 4 (Out of 25–30 *Rurbar* openings per year, roughly 15 are destined to the community income and the rest are offered to other social movements with affinities to the rurbar project). This, on average, contributes to a benefit of 1000 Euro per month for the collective economy, which runs on an average of 1500–2000 Euro per month. The collective economy provides food, cooking gas, cleaning products, cheap phone and internet connection, garden equipment, tools and materials for the workshops. In Kan Pasqual, without having to individually pay to the collective kitty, around 100 kg of bread are sold almost every week at 3 €/kg, requiring 6–8 people for one day of good-quality working.

Energy and tools

In both groups the split between endosomatic and exosomatic energy consumption is less than in urban life. In Can Masdeu there is one motor-vehicle for every 8 persons and a bicycle for every 0.9; in Kan Pasqual a motor-vehicle for every 2.5 and a bicycle for every 1.2. Commuting and transportation needs are reduced due to self-consumption and work at home. Many tasks are performed manually, such as most gardening operations, food processing or material handling and with the use of simple tools that do not require petrol combustion engines or electricity, and can often be repaired by a squat resident rather than requiring external intervention. When external professionals are required, non-monetary ways for payment of their service are traded. Possibly the most concrete and significant contributions in terms of degrowth are low consumption of non-renewable exosomatic energy combined with low monetary

requirements. This degrowth practice does not occur as an ecological imperative, but as a collectively consented choice of life [44].

The practice of self-organization

Thanks to collective organization the time dedicated to conventional household chores is widely reduced and is in turn employed for personal growth, education or leisure. Collective money to run the projects is earned internally, by selling wood-oven, organic bread to co-operatives or fairs, or by opening the *Rurbar* in Can Masdeu. Because of the specific self-organization of both projects, based on a partially collective finance and a lot of domestic production, the basic needs of the groups are covered, with little material consumption, and little amount of work. Instead, non-material related goods are widely consumed, in the long after-meal conversations, in the many occasions for social relations, cooking in the kitchen or preparing a celebration, party or ritual, or on the job which, with respect to professional rhythms, is more time inefficient. Personal conflicts are normal, and talking helps in addressing and solving them.

The lack of a clear ecological imperative also shows some contradictions: Kan Pasqual is energy autonomous, but being quite far from the city, and its inhabitants being quite connected to it, implies owning a vehicle for every second adult (often used for taking children to public or free schools). In Can Masdeu, electricity is not paid for and as a result year-by-year electricity consumption is growing at a fast pace: from 7 kwh/day in 2003–2015 kwh/day in 2006, to 20 kwh/day in 2009. Other contradictions lay in the little use of the Can Masdeu solar oven and pedal washing machine and in the Kan Pasqual methane digester: the original value of these inventions lays in their condition of being self-built at nearly no material or financial cost and in their potential use in case of a severe energy crisis, but for the moment they are not replacing electricity consumption in the conventional washing machine or gas consumption in the kitchen. Squatters do not pretend that they can do everything perfect; they try, and so can everyone if properly organized.

Organizational insights

Kan Pasqual is organized mainly in a voluntary scheme, where people have no commitments to collective work, because they are supposed to be self-responsible and self-controlled. After 12 years this system is still working pretty well, and provides motivation for creating a living alternative, where people need no formal specialization, nor ought to have formal obligations towards the community. The strategy of this apparent no-organization is permanent communication and a quick and transparent resolution of conflicts between people or in the weekly assembly.

Bigger-sized Can Masdeu is more structured and organized on a set of minimum commitments that people should comply to: a fortnightly participation in the house meeting, cooking twice or three times a month, cleaning a part of the house once a month, opening the *Rurbar* twice or three times a year, working for maintenance and infrastructure on Tuesday mornings and for gardening on Thursday mornings – or late afternoon in the hot summer months – and, finally, assuming one or two responsibilities (with some responsibilities having more than one or two people). Among the social responsibilities are: planning the social centre openings and its programme; managing the infrastructure, provisions and incomes of the *Rurbar* and co-ordination of the different groups opening it; participating in the community gardens activities; participating in the environmental education project; maintaining the external relations with the neighbourhood – Nou Barris

– and with the media, lawyers and the squatters assembly; among the domestic ones: managing the household provisions; cash phone and bank accounting; vehicles co-ordination and maintenance; co-ordination of guests and visitors; computer network maintenance; co-ordination of the working day; co-ordination of the orchards; running the chicken yard; enabling communication and conflict resolution processes.

While initially there were no minimum requirements or responsibilities, and each person was acting on their own motivation to work and participate, obvious imbalances in tasks, or in time dedication, generated conflicts – among 25 people communication would not always flow – and a need for formal structuring was perceived. A process to define minimum requirements began, and more or less successful evaluation processes were adopted each year to present, understand and discuss different personal implications in the project. Personal differences in working time were reduced. This also implies a growing complexity in planning and control systems, needed to counterbalance the complexity – and the complications, doubts and worries – of living a precarious, collective and alternative life-project.

The latest development in collective organization (autumn 2009) is marking a milestone. After years of increasing specialization through responsibilities – necessary after the chaotic beginning – a collective process has begun, aimed at enhancing motivation, participation in the working days and personal capacity building: previous household responsibilities such as gardening, beer or bread making (managed by a narrow group of “experts”) have become three affinity groups working on Thursdays; the organization every three months of different affinity groups, working on water infrastructure, electricity, wood collection and building repairs is suggested for the working day on Tuesday; a general redistribution of the other household and social centre responsibilities is being discussed. The importance of this milestone rests on the possibility of understanding growth and its limits (in this case specialization), even within an alternative and young collective project.

The organizational difference between Kan Pasqual and Can Masdeu can be explained by ideological motivations as well as by the size of the groups. Can Masdeu is nearly twice as big as Kan Pasqual. However, the total amount of one-to-one relations among 15 people is 105 while the total amount of one-to-one relations among 25 people is 300: nearly three times as much.

Quantitative analysis

The empirical study reported here has involved painstakingly collecting data about energy and time consumption. The Can Masdeu figures are drawn from [35].

Table 2 shows the yearly energy consumption in Kan Pasqual and Can Masdeu. The table provides the figure of endosomatic (body) energy consumption, whose magnitude is relevant in the two squats (as it was in pre-industrial societies) in comparison to exosomatic (renewable and non-renewable) consumption. The object of analysis is the physical sites of Kan Pasqual (household and social centre) and Can Masdeu (household and social centre), not their inhabitants. Time estimations and energy consumption are not counted when the inhabitants are not there and are counted when non-inhabitants are there. In addition, time and energy to take both inhabitants and visitors to and from the communities (public and private transport) are not measured, though the petrol used for the van and cars of the communities is included.

The table presents different type of energy consumption in each row, grouped in “renewable energy”, “non-renewable energy” (both are exosomatic energy) and metabolic or “endosomatic energy” (i.e. human energy). In our societies due to the large

Table 2
Time and energy consumption in Kan Pasqual and Can Masdeu.

| Energy type | KP per year (different units) | CMD per year (different units) | Conversion To MJ ^a | KP (MJ/year) | CMD (MJ/year) |
|--|----------------------------------|-----------------------------------|----------------------------------|----------------|----------------|
| Endosomatic (hours)^a | 95,000 | 189,070 | 120 × 0.00418 | 47,652 | 94,838 |
| Electricity (kwh) ^b | | 7,300 | 3.6 | | 26,280 |
| Butane (L) | 420 | 511 | 34 | 14,280 | 17,374 |
| Petrol (L) ^c | 500 | 810 | 34 | 17,000 | 27,540 |
| Exosomatic non-renewable | | | | 31,280 | 71,194 |
| Electricity (kwh) ^d | 750 | | 3.6 | 2,700 | |
| Hot water (kcal) ^e | 500,000 | 1,000,000 | 0.00418 | 2,090 | 4,180 |
| Wood (kg) | 11,000 | 4,000 | 19.3 | 212,300 | 77,200 |
| Manure (kg) | 3,000 | 2,400 | 0.72 | 2,160 | 1,728 |
| Exosomatic renewable | | | | 219,250 | 83,108 |
| Total | | | | 298,182 | 249,537 |
| Non-renewable/Total | | | | 10% | 29% |
| Endosomatic/Total | | | | 16% | 38% |

* Notes: The table converts different energy units (kcal, kwh, litres of butane or petrol, kg of pine wood, kg of manure) into MJ at a conversion rate expressed in this column. Bold values are the sum of the non-bold values just above.

^a Total hours spent locally at 120 kCal/h (2.880 kCal/day) converted into MJ at a rate of 0.00418 MJ/kCal

^b 20 kwh/day Given by 2 fridges, 3 washing-machine cycles, 30 computer-hours, low-consumption light bulbs, some electric stove hours and some machine hours in the workshop (drills, welding machine...).

^c Petrol used for the chainsaw, for the electricity generator (Kan Pasqual), water pumps (Kan Pasqual, 50 L), tractor (Kan Pasqual, 50 L) or transport of materials. However, it is difficult to differentiate automotive petrol consumed for personal reasons and for collective reasons.

^d 2 Kw Of installed capacity, times 4 h of sun per day, efficiency of transformation 25%

^e Kan Pasqual: on average 50 L of water heated daily from 15°C to 45°C (100 L in Can Masdeu) Source: personal empirical experience and interviews to the KP and CMD inhabitants.

consumption of exosomatic energy, human energy is not relevant, and is normally excluded from energy statistics. Table 2 shows that endosomatic (metabolic) energy is relevant in Kan Pasqual and Can Masdeu compared to exosomatic energy. This is due to a high participation to the household and social projects -which adds up many hours of people's presence in the two squats - and to the choice of low material-intensity living - so that not many energy consuming appliances, powerful tools or energy inefficient devices are employed.

The two left hand columns represent for Kan Pasqual - KP - and for Can Masdeu - CMD - yearly energy consumption in different units (hours of metabolic activity, kwh of electricity, litres of fuel, calories of hot water, kg of wood and manure) while the right hand ones represent their correlation to MJ, resulting from their multiplication by the factor of conversion indicated in the central column.

As a result of its energy autonomy, in Kan Pasqual only 10% of energy consumption is non-renewable (even if the total energy consumption is higher because, for climatic reasons and for extensive bread making, more wood is required). In Can Masdeu metabolic energy is the most relevant source of energy due to the presence of many inhabitants, several openings of the social centre and a highly participative and hand-worked community gardens project.

Total time use is the sum of different time-use categories: sleeping and personal care, child care, leisure and education, household chores, gardening, collective self-employment and non-inhabitants participation in the social projects (*Rurbar* openings, cinema, workshops, overnight visitors) which amounts to 50,000 h per year in Can Masdeu (mainly one hundred people staying 5 h during thirty Sundays per year, and 5 visitors staying nearly every day every s month during 20 h) and to 10,000 h in Kan Pasqual (two hundred people for 6 h during 2 parties per year and fifty people during 30 h for 3 workshops and 10 visitors per week during 5 h).

The exosomatic metabolic rate (EMR) indicates the speed at which exosomatic energy is consumed. It can be easily compared with Catalan statistics [45,46] which divide between household consumption and productive sectors consumption. In 2006 an average Catalan household consumed energy (excluding personal

transportation) at a rate of 1.79 MJ/h (that is, 13,386 MJ/capita/year). The productive sectors (agricultural, industrial and service) would consume at a rate of 165.47 MJ/h, 338.85 MJ/h and 74.05 MJ/h respectively. For society as a whole, EMR would be 18.58 MJ/h. EMR in Kan Pasqual is equivalent to 2.6 MJ/h (250,000 MJ, mainly renewable, over 95,000 h, roughly 15,500 MJ/person/year) and in Can Masdeu to 0.81 MJ/h (6,200 MJ/person/year). At a first glance, consumption per capita is equivalent to a Catalan household. However, part of this energy consumption goes for "home-made" production: these squats include productive orchards, workshops and social centres, so that they are not equivalent to a household. It is impossible to detail exactly which part of the aggregate time and energy figures refers to the households, which to the agricultural and workshop activities and which to the social centre services. The key conclusion is that the mainly non-commercial production of food, goods and services that takes place in the squats does not consume energy at the fast rate of the commercial productive sectors (roughly between 75 and 340 MJ/h), but at a pace typical of the household sector (roughly 2 MJ/h) that is, up to more than one hundred times slower.

Even if both projects consume very little, their energy, material and money consumption have been growing as time has gone by. This trend might not reverse, possibly as a consequence of young people turning, with the passing of the years, into adults and parents, and needing more comfort, rest and different rhythms. In terms of degrowth, the life story of their inhabitants has been, a long growth in consumption prior to joining one of the projects, interrupted by an absolute consumption crash when joining or creating the communities and a very slow recovery recently. However the community, rather than consumption, is the real incommensurable value of these experiences. The community has the potential for infinite growth [47]. It is in the support to a high quality living standard where consumption in the two squats is far below society's average.

Scaling up and benchmarking limitations

How a change in a part (rurban squats and their principles) can affect a change or a transition in the whole (the rest of society and its governing principles) is a complex issue. Integrating the two

experiences with the possible broader significance requires further work focussed on multi-scale analysis [48].

The two communities are more autonomous than a conventional household – from the material, monetary and, especially, political point of view. Also, being social centres and having several stores (wood, metal, glass), workshops (bakery, bicycle, carpentry, welding) and access to land resources (orchards, water, wood, earth, stones) they are more complex than a simple household. Some production associable to the agricultural, industrial and service sector is carried on at an extremely low EMR but still, cannot be compared to society as they are partly dependant on the rest of society. Table 2 provides useful data for comparison but only to a limited extent. For example, the squats still depend externally for most of the food consumed – Can Masdeu gardens and chicken yard produce only 5% of the calories required by its inhabitants [35] – Kan Pasqual and Can Masdeu spend, respectively, an average of 1000 and 2000 Euros per month in order to buy food, cleaning products, gas bottles, petrol, tools, building and electric materials and telecommunication services. Other materials – food, clothes, furniture and manufactured objects – are recycled from the city's waste. Between 150 and 250 L of olive oil per year are earned working in other farms, and a few hundred kilograms of apples and citrus freely picked as left-over in commercial crops.

A cleaner production is achieved through the “Domestic Mode of Production” [6]. To some degree similar to stone-age societies, the inhabitants of the two squats satisfy some of their needs without requiring the energy-intensive production of the agricultural, industrial or service sector. Rather than buying beer and bread, these communities buy malt and flour and then do it themselves. Rather than paying for the service of a plumber, an electrician or a mechanic, they pay for the tools and then do it themselves. Along the processes that start from a raw material in its natural state and end in a finished good or a professional service, these communities achieve some degrees of autonomy (namely the “Do It Yourself”) in the sense that they do not depend on the supply of a finished good or service, as conventional households do. In business terminology, these communities are “vertically integrated” along the chain of processes that add value to the final product. For this, less money and more skills and know-how are required. Labour time, rather than sold in the market, is employed in home-made production. The squats are also social centres, and provide non-members with a socio-cultural service that, if produced in the commercial sector, would have a higher material, energetic and financial cost.

Difficulties in benchmarking apply also for the use of money. A comparison with the rest of society is possible only to a limited extent. Waste re-use and recycling reduce the financial expenditure, but this level of recycling may not be possible at a larger scale. Rent and most taxes are not paid by the squatters, but public services (health, education, infrastructures, security) are enjoyed for free. On the other hand, public services are not used more than the average resident in Barcelona, because alternatives in terms of transport, education or health are practised. Also, the social centres provide free public services without receiving tax-payer support from the State.

Last but not least, the political value, the originality and the antagonism of the squat projects can neither be monetized, nor reduced to energy figures. At the societal level it is contested whether this represents a cost – for subverting the *status quo* – or a benefit – for driving social change. In any case, the maintenance of political and social-organizational diversity is good *per se* as it is a source of innovation and social evolution. Yet the attempts of the State to repress squats carry a significant cost for taxpayers: Can Masdeu suffered an eviction attempt in May 2002 with the intervention during 60 h of roughly 70 policemen that must have cost society thousands of Euro.

Energy and time figures should be understood in terms of power; power in political and in physical terms. Political power is associable to decision-making power. Physical power is defined as the combustion of energy per unit of time, that is the speed of energy consumption, as the EMR can show. In a rurban squat both political and physical power are more equally distributed than in society at large. This is true for political power with respect to other members (democracy sphere) and for physical power with respect to other societies, future generations or the rest of nature (sustainability sphere). The connection between enhancing democracy and enhancing sustainability is not a coincidence or an ecological imperative. It is likely an innate characteristic of small-scale self-organized societies, as [49] noted in comparing hunter-gatherer societies with chiefdoms, kingdoms and States.

Conclusion. what kind of degrowth?

The film *The Matrix* shows a materially de-grown society in the far future. Let us consider the Matrix society as a “thought experiment”, a possibility scenario (see Spangenberg, this issue). After an ecological crisis where natural resources have been exhausted, life continues through the development of virtual technology and of artificial intelligence. Machines take control of the planet and function with the energy supplied by plantations of human bodies whose brains, senses and nerves – plugged into the Matrix, a programme of virtual reality – experience what resembles our present world. The Matrix economy is dematerialized and works with renewable energies. However, people are slaves working for free at the service of the machines that produce, control and defend the Matrix. The economy does not need money to work, just the control of human minds. This extreme scenario shows the limits of degrowth: economic and material degrowth must consider power, democracy and the role of corporations and States (and supra-State organizations) if it is not to lead to an eco-dictatorship.

For reproducing the two particular squat experiences in a generalized context, self-management and co-operation are necessary, beyond energy or monetary performance. This emphasises self-sufficiency instead of the exploitation of external regions and mutual aid instead of capitalistic competition. A challenge for degrowth is how to facilitate processes of “substitution of the market” in households and in the society through a more productive employment of non-paid labour time. Markets should resume a human scale of interaction: a local consumer co-operative or a street market are places for more social interactions; e-commerce is not.

The rurban squats enable a critique of the degrowth concept for having a too limited focus: degrowth should not be the sole or even the primary objective but the outcome of a general transition towards a social and political organization, where autonomy, freedom from wage labour, and collective-decision-making are key. Alternative political systems and the capabilities to provide and organize them should be promoted. The experience of rurban squatters stems from their understanding that not only capitalism and the presence of the market have grown too far, but also the role of the State which, with its size, representative democracy and its bureaucratic slowness, deprives the community level of its power.

Degrowth occurs in Collserola rurban squats as a desire for autonomy in individual or collective allocation of time, under which a full-time job becomes a waste of time. Time is the central *oikonomic* end; in capitalism it is sold to the labour market. In rurban squats it is employed directly for the satisfaction of needs. Its recuperation and freely consented collective management should be a basic principle for a degrowth society. The rurban example could be scaled-up towards a small-scale self-organization of networks of collectives, a bottom-bottom model of social

change, as an alternative to either top–down or bottom–up hierarchies. Such a grass-root network could co-exist with a de-growing macro political–economic system. Diversity in parts can be scaled up to diversities within the whole. Metaphorically, there is room for the rural seed to be spread in the field of capitalistic monoculture, but it is not imperative to colonize the whole lot. A society based on the rural squatters living model would be radically different. It depends on the will of citizens and on processes of collective social choice to determine the structure of society and the extent of alternative living arrangements within it.

As the radical critic and militant opponent of the power of the banks [50] states: “In an exceptional context, such as the actual crisis of the system, different strategies for action must come together. Joining disobedience with alternative organisation, we could build a change for society. Alternatives without conflict will only turn into an escape. We have to combine action in conflict with action for the creation of alternatives. From self-management in commercial enterprises to the rural community, all these are necessary actions.”

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