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# Remixing Cinema: the case of the Brighton Swarm of Angels

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**Abstract**
As a result of the digital revolution, a radical alternative has emerged in movie making, the so called remixing cinema, which is based on the web, works as a social peer-production and distribution system and represents the most recent innovation in cinema history, an unstopped and generative dialogue between creativity and technology. We developed a case study of 'A swarm of Angels' (www.aswarmofangels.com), an ongoing project whose aim is to make a feature film with the collaboration, both creative and financial, of 50,000 people. Although the movie has still to be produced, the Swarm has been active and producing since early 2006. Our initial findings show that a movie, as a product and a process, is sufficiently modular and granular to be produced within a distributed problem solving approach. However, a first assessment of the governance of the Swarm and the underlying business model, points to the existence of unresolved and possibly critical issues. This is hardly surprising as A Swam of Angels is the first experiment of such complexity, in open content movie making.

**Keywords**
Disintermediation, web 2.0, distributed problem solving, collaborative creation/art, user-centred innovation, creative common.

JEL Code: L17, L82, Z11, O3,

## 1. Introduction

Cinema making is a 120 year old industry that has seen rapid development in terms of technological, economic and social factors. Its main outputs are products (documentaries, full length and short movies, animations, etc.), which, in order to 'reach' the end-user, need to be produced and distributed.

At the end of the movie value chain there is a user rather than a consumer; a movie, similar to other cultural goods, is not subject to the laws of entropy, which affect physical objects; its value remains constant (or may even increase) as time passes. The 'consumption' of a cultural product, such as a movie, often refers to the possibility of fruition. But, even in this case, the life-cycle of the consumed product is potentially endless, because after its decoding, its meaning potentially can never be lost by the consumer and often is expected to grow over time rather than to disappear. This does not mean that a movie has no material dimension. The necessary condition for its ability to follow such an intriguing immaterial life path, is that it has to be produced. First to be considered as cultural good, the film has to be treated as an economic commodity, or as many pointed out (Pendakur, 1990; Moran, 1996; Elsaesser, 2001) as both a tangible product and an intangible service. The realization cycle involves four main stages (treatment, pre-production, production, post-production) traditionally organized in a very hierarchical and expensive structure, and distribution, which can involve several channels, usually organized within the so-called 'windows' system (Currah, 2006; Peretti and Negro, 2003).

Cinema 2.0 is a new approach to movie/video making, and groups a set of more than 20 independent experiments[1] sharing some form of openness in the phases of the realization cycle, characterized by the collaboration of distributed and self-selected groups of people interested in: (1) participating in the creation of content (from the script to the editing process); and/or (2) being involved in the financing of the product; and/or (3) being active in the content remixing enabled by the openness of some distribution channels.

In order to investigate the Cinema 2.0 (also called collaborative cinema, open content cinema, etc.) phenomenon, we study the case of 'A Swarm of Angels' (ASOA - www.aswarmofangels.com). The reason for this choice is that ASOA embodies and challenges all three axes of the movement:

- the co-creation of content;
- the co-funding of production;
- the remixing/free distribution of results, even of work-in-progress.

ASOA is a project aimed at creating a '£1 million feature film and [giving] it away to over 1 million people, using the Internet and a global community of members'.[2]

The ASOA project began in January 2006 on the initiative of Matt Hanson, a 36 year old visionary director, based in Brighton, UK. His idea was to gather people from around the word desirous of taking part in a film-making process. Participation was supposed to be 'creativity/passion/curiosity' oriented, as opposed to being focused on profit and ownership. Distribution of the final film was expected to be free, because 'you can't control media these days. You need to go with it, rather than fight it. We're part of the remix generation, with the DIY digital tools to make our own digital

[1] See, e.g. My movie mash up – My space (http://www.myspace.com/mymoviemashup); Now the movie (www.nowthemovie.org/); Jathia's Wager Free Science Fiction Movie - Open Source Collaborative Filmmaking (www.solomonrothman.com/solomons-corner/jathias-wager/); The Role Player (http://www.theroleplayer.it/home_ita.asp); The collaborative web-movie project (http://webmovie.blogspot.com/); The 1 second film (http://www.the1secondfilm.com/); Strycinema (www.straycinema.com). These web sites and all the other referred to in the text were last accessed on 6/12/2007.

[2] From the ASOA project web site http://aswarmofangels.com. All quotations not associated to a specific source, refer to this web site and are attributable to Matt Hanson.

media, whether that's film, music, or whatever.'[3] 'Going with the media', means leaving the video free to flow over the Internet through the continuously improving digital communication medium. This means that the product is ready to be used, not just consumed, and the users can watch or remix it and, eventually, spin the wheel forward. 'If you look at the Greek epics', says Hanson, 'the story-tellers that were recounting their tales always put their own spin on it'.

Going along with the 'free culture'[4] movement raises the familiar problem of reward, and the incentives to invest money in the production. The ASOA business model, was designed to be 'a valid new alternative, maybe more enlightened' to the Hollywood entertainment world. It was not seen as a profit making business investment - although, as discussed below, this issue remains slightly controversial. 'I didn't want A Swarm of Angels to be a massively distributed investment opportunity' Hanson says. The solution to the problem of production money could only come from a genuine angel, an unfeigned person. 'Business angels', who play a very exact role in early stage business initiatives, take lots of risks but expecting very high returns. 'I'm for ROE (Return On Entertainment) rather than ROI (Return On Investment). Maximising ROI would likely clash with artistic decision': Hanson needed a real angel - or, better, a host of genuine angels, keen to give a reasonable amount of their money to sustain an altogether groundbreaking movie-making project in return for having 'an unprecedented opportunity to become involved in the creative process of making a feature film'. A veritable 'swarm of angels' was the answer.

The minimum subscription fee to participate in the experience and to micro-found the movie was set at £25. The project founders were given exclusive rights to participate in the decision process (through a web based polling system) and the script editing and all other creative/advising processes (through an online discussion forum), while visitors were allowed to assist, but not actively collaborate. 'One head one vote' is the governance rule within the community, but that is the only resemblance to the limited ownership model: 'this is a more unique project as a crowdfunded "subscription model". After all, plenty of films have tried the "many producers/investors route", but none have tapped into the wisdom of crowds.'[5]

Apart from the genuine intentions of the founder and the subscribers, such a distributed ownership seemed a good idea in order to avoid claims with possible opportunity for reward: 'It's [£25] the price of a couple of CDs, a DVD or a magazine subscription. I think people would rather pay £25 to be part of a more innovative, adventurous entertainment experience which also offers networking opportunities and media downloads', and anyone investing such a small sum does not usually expect to gain from it.

'Sites like Wikipedia and Creative Commons regularly get $100,000s in donations from thousands of people in supporting a common cause,' commented Matt Hanson in early 2006. 'The www.milliondollarhomepage.com showed me one man can raise a million using the Internet in less than four months. I thought if people will give money to buy a pixel ad on a simple homepage, then I should be able to get enough people from around the world inspired by this groundbreaking project to make my first feature film by raising a similar amount.'

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[3] Hanson's comment from the discussions forum on the ASOA web site. All quoted statements in the text not associated with a specific source refer to his comments on the discussion forum or his interview.

[4] *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* (2004) by Lawrence Lessig, addresses the social dimension of creativity: how creative work builds on the past and how society encourages or inhibits that building with laws and technologies. It is downloadable in digital format from http://www.free-culture.cc/freecontent/.

[5] *The Wisdom of Crowds* (2005) was written by the *New Yorker* business columnist, James Surowiecki. He explores the idea that large groups of people are smarter than an elite few no matter how brilliant, and are better at solving problems, fostering innovation, coming to wise decisions, even predicting the future.

Despite Hanson's comparison, the ASOA business model is different: the Wikimedia Foundation sustains the Wikipedia project, based on donations. The contributors to the free encyclopaedia do not pretend to be donors, and vice versa. The content is released with a GNU Free Documentation License, in order 'to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or non commercially .... derivative works of the document must themselves be free in the same sense.'[6] Such licences, like FLOSS (Free Libre Open Source Software) projects, are designed to radically disconnect the production of content from its distribution process.

The licence associated with ASOA content and its derivatives is the Creative Commons BY-NC-SA (non-commercial-share alike) 2.5.[7] SA means that anyone can remix and modify the content so long as the result is released under the same sort of licence. The concept is similar to 'copyleft'.[8] The openness of the product to future users' remixes is not just a statement in the terms/conditions agreement: it is a matter of community identity and recognition, it is a vision and a strong belief. The project tagline, voted on by the Swarm, is 'Remixing cinema'. The Creative Commons licence was chosen to protect and safeguard identity. NC means that the commercial exploitation of the product and/or its derivatives (by natural persons or legal entities) is not allowed without the explicit consent of – and likely negotiation with - the author(s). In other words the authors retain exclusive rights to gain, over the content or its derivatives, and licensees can freely copy, distribute, display, and perform the work and make derivative works based on it for non-commercial purposes only.

Every business and governance structure is grounded within a contractual framework, and the NC option represents a major difference from the Wikipedia and similar models. The Swarm identifies a multitude of creators *and* donors, entitled by the chosen licence to gain 'from media companies and distributors who might want to broadcast or use assets from the production for their own commercial endeavours', and from other 'opportunities for the project which don't conflict with ASOA's general principles, such as sponsorship, equipment partnerships'. The ASOA project seems to have a multi producer/multi distributor structure. Section 3.2 in this paper briefly describes how the issue of 'profit sharing' was dealt with. The legal framework that underpins the ASOA organization, which is an alternative to GNU, is new and offers new directions for analysis and investigation from both a juridical and an economic point of view, which would require separate investigations.

Hanson was the first subscriber to ASOA on 16 January 2006; the second angel emerged on 13 March. A milestone was reached on Saturday 6 May 2006 when the 100th person, *stevko*, [9] joined the Swarm. On 7 July 2007, when the second milestone of 1,000 members had been reached, Hanson announced that: 'We can call ourselves a movement now'. In managing such a project, the main recommendation is to 'be very careful how you balance and grow the community'. In Autumn 2007 membership was 'frozen' at this 1,000; the only new members are invited members until the leader decides to 'open the doors' again. In September 2007, project members numbered some 1,200, these last 200 having been invited to participate by 'senior' angels. The first development phase has been running for about a year, and the main outcomes are two draft scripts ('The Unfold' and 'Glitch'), the trailer and poster for the project, and a poster for 'The Unfold'. A few months after the project was launched, Hanson 'made a deliberate decision to concentrate on ASOA and cancel other work such as upcoming book projects, consultancy and other production', he is totally

[6] http://en.wikipedia.org/wiki/Wikipedia:Text_of_the_GNU_Free_Documentation_License.
[7] http://www.creativecommons.org.
[8] www.gnu.org/copyleft.
[9] In *italic*, the a.k.a. (nicknames) of project members.

committed to management of the project, and periodically engages in promotional events around the word.

Hanson has been classified by Forbes, the American publishing and media company, as one of the ten revolutionary people of 2007 along with inventors and researchers in such areas as producing stem cells without the use of embryos, trying alter human memories, measuring the universe, reprogramming life and giving the ecosystem rights.[10] Is ASOA a process or a product revolution? 'It's not just revolutionary in either aspect, it is experimental in both. Very rarely are the first attempts to do anything revolutionary. The revolution is just coming along after that. They are the first movers.'[11] ASOA can be seen as an experiment in process innovation to make a feature film: 'We would like a product to turn out as professional as possible, which means not widely different from a really good sci-fi film' (*gregr may*); 'the innovation will be mostly in process' *(Jean Philippe Drecourt*. leader of the 'Glitch' scripting process); the 'process will be the most original thing here, because it has never been done before. My past work has seen me doing much more experimental film work, but this is not the place for it in this project' (*Matt Hanson*).

ASOA, as an experiment in peer social production, presents some radical differences with other phenomena, such as FLOSS or Wikipedia, comparison with FLOSS as the most recognized example of social production is useful to set ASOA within a known economic and technological frame of reference. Both ASOA and FLOSS have participation from 'many individuals contributing to a common project, with a variety of motivations, and sharing their respective contributions without any single person or entity asserting rights to exclude either from the contributed components or from the resulting whole' (Benkler, 2006, p.63). So, how far can the open source (OS) model be transposed to other industries than software (Lerner and Tirole, 2004; Shah, 2005; Tapscott and Williams, 2006)? Does ASOA address the same model?

The production reference model in both experiments is peer-production: 'Radically decentralized, collaborative, and non-proprietary; based on sharing resources and outputs among widely distributed, loosely connected individuals who cooperate with each other without relying on either market signals or managerial commands. It refers to production systems that depend on individual action that is self-selected and decentralized, rather than hierarchically assigned'(Benkler, 2006; p. 60). To what degree is the ASOA project production model similar to a big FLOSS project and to what degree do both shift from the ideal/radical decentralized/collaborative/non-hierarchical structure? The main feasibility conditions of a peer-production project are said to be the 'modularity' and the 'granularity' of tasks (Benkler, 2006; Lerner and Tirole, 2002). The production of a movie is a modular project, which requires several different and complementary competences. Is ASOA sufficiently 'granular' with respect to participants' expectations and peculiar skills?

The rest of the paper is structured as follows. Section 2 provides a description of the development of the ASOA project. Section 3 explores the determinants of a process innovation in the movie making industry. Section 4 discusses the sustainability of such an innovative process with respect to the architecture of the product (the movie) and the production process.

## 2. ASOA development and organization

Movie incubation begins with the development of a script. When Matt Hanson was the sole member of the project, and there was no sign of a swarm, he wrote in the 'Script development' topic of the

[10] http://www.forbes.com/2007/05/23/innovation-world-changing-tech-cx_07rev_ee_0524worldchangers.html.
[11] *greg mary*, ASOA forum moderator - travel agency/ blogger/ IT programmer - hawaii/beijin – interview.

discussion forum:[12] 'I have been working on outlines for the two scripts to be developed. Should be posting final draft outlines for these screenplays this week soon. The working titles I have come up with: The Unfold, and Glitch'. He continued: 'Both could loosely be described as contemporary thrillers with "soft" sci-fi elements, although these basic frameworks may become twisted in development'. Only one will be produced, and the swarm will be asked to vote for their preferred one as soon as the final release of both are available.

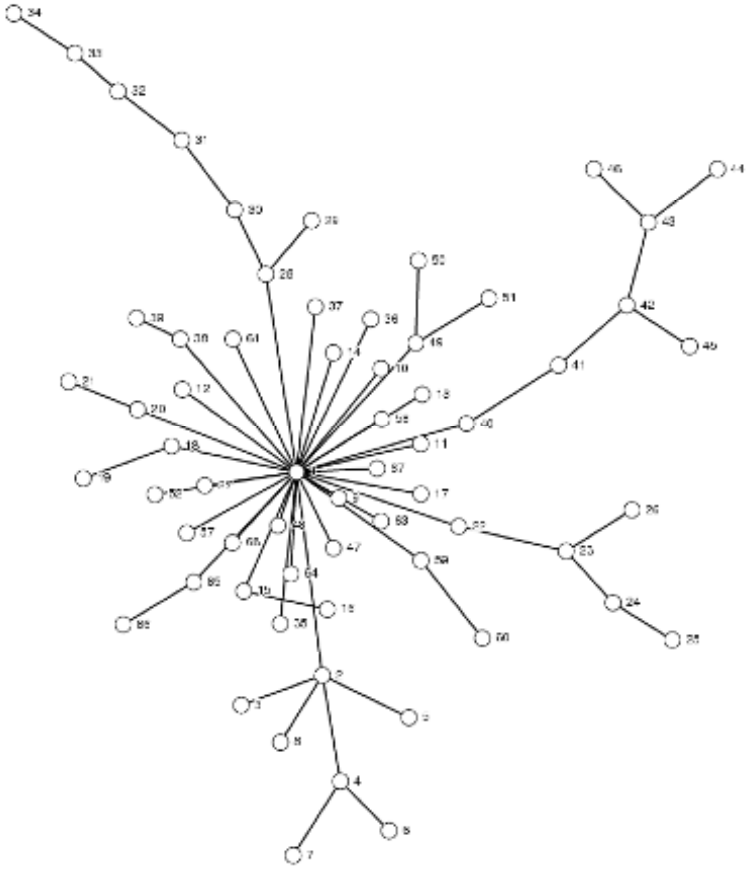
On 20 April 2006, Hanson published the two initial ideas, or rather 'notes/scene ideas ... themes and visual motifs'. *Chadu* (Alexandria, VA, USA) was the first to respond 15 days later, and to add the first spin to the development of the discussion. The initial debate about the two ideas took place in a thread that ran until June 2006, by which time 25 people (posters) were involved and were responsible for a total of 68 postings. *Chadu* was responsible for 26% of the contributions, while half of the 25 posters contributed 1% each of the total postings. The figures were similar within the other two threads into which the first discussion branched after June 2006 (i.e. 30% and 24% respectively). Figure 1 shows the centrality level of the discussion. Is there one person who speaks at the centre and many answering at the bounds, or do people 'socialize', i.e. cluster into several subgroups with different subjects and different centres? While a degree of decentralization is perceptible, the graph highlights a huge polarization on node number 1 – the topic starter, Hanson. However, while he is the hub of the conversation, he is not the main poster. The relative high posting numbers for Hanson are in part due to the fact that he has to answer to other angels' questions; he normally posts two or more messages within a few minutes in order to split the thoughts. But, he seems to find it 'really fascinating to see it develop, I've been trying to be quite non-interventionist so I don't step on any discussions too quickly, especially when they are so fruitful'.

*Gegrmay* (from Bejiin) tries to explain the role of the angel that decided to actively participate in the first development phase 'It's kind of a "prime mover" model - he sets the pieces up, we create the rules, and it starts out more efficient (if less democratic). So basically, yeah, Matt doesn't really need or care about our input at this point. He'll do his thing until he's ready to post his sketches, and then we definitely need to look at how to approach the script editing process (and the snowflake model looks interesting, seemingly obvious but brilliantly laid out)' (6 May 2006).

Nobody argues with that view, but several have raised questions about the process structure, which seems still to be unclear. When will the first script release appear, and how? What are the angels supposed to do? The answers change over time because 'some of the comments on wiki/script development are making me change my plans to incorporate more of the flexibility mentioned, while still providing spine/structure'. Anyway, 'The idea is to build the scripts up from skeleton to initial draft stage in this phase 2, and then develop drafts in phase 3 (1,000-5,000 members). So we are past a pitch, and I'm converting elements/script ideas/notes/framework into the initial drafts, based on monitoring threads/feedback now. I would like specific feedback in the appropriate script threads on everything I post, in terms of queries/suggestions/criticism/possible directions-plotpoints-characterisation. But I'm not going to input radical/random suggestions until we have the initial drafts (as I think this will keep things on course in terms of the vibe and general direction of the story I want to tell, and have a connection to directing)'.

[12] http://aswarmofangels.com/thenineorders.

**Figure 1: Discussion centrality for 'The Unfold' script writing thread**



In June 2006 the discussion split into two 'appropriate script threads': the first dedicated to 'The Unfold' and the second to 'Glitch'. Afterwards the debate on 'The Unfold' shifted into a Swarm-only dedicated space with three partial releases – 'anchor drafts'[13] - of the script (10 min, 1 Dec 2006; 28 min, 22 Dec 2006; 41 min, 2 Feb 2007) published and followed by comments/suggestions from the community. Some new entrants claimed that it was not easy to follow the script discussion or to find where it was taking place. The three releases of 'The Unfold' have been 'not for circulation'. Only 'final anchor draft and subsequent script releases will be freely distributable under: CC-SA-NC 2.5 (creativecommons.org)'.

At the end of February 2006 Hanson said: 'My initial drafts will be posted online as part of a wiki, so any writer input will be properly credited and tracked through "page versioning". This process should also highlight any areas that need special attention or additional expertise'. The final draft is still pending, as well as the wiki system that will enable angels to doctor it. It will open in phase 3,[14] the next phase, aiming at reaching the target of 5,000 angels and at finalising the scripts' development. Hanson makes it clear that 'The Unfold and Glitch script processes have diverged slightly. ... The Glitch story will be released in outlines and scene breakdowns, and the collaborative process will start in essence in a more nascent form. The spine of story strands and structure are more open to collaboration and suggestion in the first instance than The Unfold'.

[13] 'In essence these are pre-first draft, because they are deliberately less edited then a normal first draft would be as we want them to be more malleable as part of the participation process.'

[14] The project is split into 5 milestones, each identified by the target number of angels to be involved in the project, the creative activities to be accomplished and the promotional activities recommended: the first two milestones have been completed, while the third is 'beginning shortly' (http://aswarmofangels.com/fund/mission-milestones/).

The ‘Glitch’ development trajectory has been much more transparent, participative (70 posts and 31 posters, with *Jean-Philippe Drecourt* from Reading, UK playing the role of hub and biggest contributor, and two poll promoter), and regular – even if very slow, than that of ‘The Unfold’. The debate has been quite orderly and focused on the main characters and on scene breakdowns, and after the poll in early Sept 2007, *Jean-Philippe Drecourt* and Hanson worked to prepare the release of a ‘full synopsis’ (released in mid October 2007).

ASOA has collaboratively produced a project poster for ‘The Unfold’, released in May 2006 (covering Feb 2007-August 2007), and the trailer for the project (September 2006-July 2007). The production of these outputs is analysed in Section 4.

2.1 Organization

Matt Hanson is a film director and has worked in the TV and cinema industries for several years. He has directed and produced over 40 short films and two TV series. He founded the *onedotzero* digital film festival, which he directed between 1996 and 2002, and defines himself as a pioneer of digital films. However, he has never produced or directed a feature film until this ongoing experience of ASOA. He is chief script writer for ‘The Unfold’ and will be the movie director.

In trying to justify to potential new members/investors that he should be considered a good project leader and director he claims: ‘Previous projects I’ve initiated or being involved with have been innovative and critically acclaimed’.

It is not known how many angels joined the project based on Hanson’s reputation or, perhaps more interestingly, how many would have joined the project if the leader had been a much better known director. The interviews showed that most angels did not check up on his reputation; their joining was done on impulse.

For a traditional film producer, who is used to investing millions of dollars and wants to make a profit, or for an angel, investing only £25 and wanting some enjoyment, having the services of a director with a good reputation does not reduce the risk associated with a film project outcome. The statistics are contradictory as to whether such a choice will or will not influence probable success (in terms of distribution > profits) of a movie; Shugan (1998) says that a famous director is more likely to produce a successful movie, while Litman and Kohol (1989), Litman (1983) and Sochay (1998) found no such evidence for this correlation..

Hanson’s day-to-day responsibility is to keep the Swarm together and to manage the community. In the case of ASOA, as in other OS projects, there is no doubt that open does not mean flat. He refers to himself as a ‘benevolent dictator’, borrowing a definition usually applied to leaders of big OS projects (Ljungberg, 2000). Hanson is by far the most active poster and topic initiator. The interviewees were in complete agreement about the importance of his leadership and did not feel constrained by it. As *Marc* pointed out: ‘I think strong leadership is needed in any collaborative project. Most decisions made throughout the lifecycle of the project are subjective decisions, there is no right or wrong. The project could never finish unless there is someone at the top with the ability to make the final decisions. In my experience with directing live theatre, it’s always been important for me to have a firm vision of the project. Collaboration is always well and good, but when a difference of opinion starts to get out of hand, it’s for everyone’s benefit the director to be able to say ‘that’s my decision, let’s move on’.

As in other OS projects, the governance structure is characterized by ‘A strong centralization of authority ... While the leader has no ‘formal’ authority, she has substantial ‘real authority’’ (Lerner

and Tirole, 2002, p. 220).There is a leader who takes care of the process and consistency, and basically 'moves it on'.

Hanson seems to encompass the main features considered favourable for a FLOSS leader: he provides vision (the project needs to be challenging to attract other contributors), attracts other programmers and keeps the project together and alive. In FLOSS it is quite common for the leader to assemble a critical mass of code to which the programming community can react. Matt Hanson, like Linus Torwald (Linux), Larry Wall (perl) and Eric Allman (Sendmail), launched his project because of 'personal need' – he had never made a feature movie and wanted to make one; he did not have enough money to do this, but did have a vision. Also, like most other FLOSS leaders, he was a 'sophisticated user'[15] (Von Hippel, 2005). However, unlike Von Hippel's lead users, his main aim currently is not only to make a (better) product - the movie, but also to invent a new production process. This aim is shared by the Swarm.

For the majority of decisions involving:

- critical aspects of project management (e.g. how to deal with the project timeline, with developing community rewards, or with profits likely gained from film distribution, etc.);
- nodal points in the creative development (e.g. which of the two or three proposals of trailer/soundtrack/poster to choose, which of the multiple versions of the script should be promoted, etc.);

Hanson asks the advice of the angels through a poll system. He accepts the outcome as a final decision (even if it differs from his personal preference). He has veto power, but so far has not used it. As at December 2007 there had been 17 polls in the community, with an average quorum of 15%, although second year polls had much lower participation. The decision-making process is intended to be transparent. While Hanson takes a wide view of goals and expectation (especially in relation to time horizons), and tries to improve the organizational structure on the hoof, he makes every endeavour to provide regular updates and share with the community what he is doing and what are his plans for the future of the Swarm. On this basis, The voting process seems quite robust.[16]

The polls are often grouped in voting weeks. Within the best attended voting weeks (21-9 and 28-9 2006) the Swarm was asked to vote on two important points relating to the definition of the business model. The first was 'Profiting from the Swarm', wondering how to deal with possible extra-community earnings. The project leader, based on in depth discussions with the members, offered six options from profit sharing 'to enrich existing angels', to the founding of the forthcoming Open Movie Foundation (the 'mozilla of entertainment', suggests *pavedwalden*). The 43% winning choice of the 187 voters was to reinvest the profits in another film with the same project brand, a sort of 'Swarm of Angels 2'. The second poll referred to as 'Bounty, Bonus or Reward', was to decide the type of reward for an angel for the 'extra mile 'contribution to the realization of the movie. The level of effort might differ. For those angels whose contribution constitutes 'going the extra mile', the Swarm voted for a form of reward consisting of 'A gift, item, or experience rather than a purely monetary transaction' (76% of 195 voters). Such form of reward is not of course free in terms of money, neither are the DVDs that each angel will receive when the movie is released; however, it could be included in the category of 'ROE: Return of Entertainment'.

[15] Hanson defined himself a 'digital pioneer'. In 2003 he published *The End of Celluloid, Films Future in The Digital Age*.

[16] 'I've looked through the forums but I can't see the vote thread'(*dadioflex*), 'A more sophisticated voting mechanism would be nice, especially in situations when the community has two or more choices with fairly equal support. … I would also recommend a hidden vote structure so that voters don't know the results of the vote until it is over' (*RyanKelln*).

This category also includes fun, learning, sense of community belonging, friendship and other forms of personal reward.[17]

Finally, in terms of concerning the speed with which the project is progressing there is no clear view about whether this should be faster. Hanson began the ASOA enterprise with the aim of achieving a movie within one year; however, he thinks that the duration of the project so far, is not alarming compared with the time taken to complete off-line movie projects. It is consistent with experience in the film industry where, from the first idea to the release of the film, can take a long time. For example, Ravid (2005) recalls how in 1995 the historical novelist Patrick O'Brian met with Chalton Heston and Samuel Goldwyn Junior in Hollywood, to discuss the translation of his literary work into the language of a movie. Despite the book's huge success, it took eight years for O'Brian's work to be translated into the film *Master and Commander: The fair side of the world*, finally released in December 2003.

**3. Peer-production innovation in movie making**

The 'digital revolution' is offering the opportunity to transform traditional movie-making practice (the result of a century of industry development) into a radically innovative process. The impact of digitization has been studied and analysed from the media and legal perspectives, focusing mostly on piracy and illegal copyright, but 'the revolution is perhaps somewhere else' (Ravid, 2005, p.52). Following the first legal action against unauthorized copying (1908) (Ravid, 2005), when technology enabled the easier reproduction of intellectual property (IP), changes in legal and business models in relation to both movies and music have continued. The most recent adjustment to the legal framework and business model concerns legal music downloading services and, despite resistance from the movie industry (Currah, 2006; Wasko, 2005), it is expected that there will be similar arrangements in relation to movies (Daily, 2007). Whether illegal downloads of movies affect producer revenues has not been proved although in the case of music some evidence indicates a small negative effect (Bangeman, 2007; Cooper, 2005).

The real impact of the digital revolution, however, is occurring at the production cycle level and could threaten the actual organizational structure and related business model, which are far from perfect. Hollywood is being criticized more and more for the poor quality of its products, for the core rigidities of its production/distribution process, and for the distortions in resources (overpayments, etc.) that are 'drugging' the production sector. Many independent film producers claim that in this new technological age billion dollar budgets are not necessary to produce a good movie, but are needed to justify the existence of the studios. And, there seems to be no clear relation between budget size and the quality of the end product.

The origins of open distributed collaborative movie making can be seen in the so-called web cinema. Web cinema is 'cinema created specifically for viewing on the Internet. Stories are always shaped by the medium in which they are presented and the technology of that medium and the web cinema is no different' (Barry, 2003, pp. 554-555). The spirit of this definition could be applied to early cinema. According to Barry (2003), from 1997 the history of web cinema can be split into several main periods, each of which bears examination in the context of its technological and financial environment. The trend in 1997-1998 was influenced mostly by TV, with soap opera becoming one of the first online video streaming experiments. New forms and narratives, many of them interactive, were experimented with up to 2000, when it seemed that everyone, and especially those involved in the USA movie industry, wanted to participate and satisfy the accelerating

[17] For a preliminary investigation of angels' motivations and expectations with respect to the Swarm see Cassarino and Geuna (2007).

demand for online content. From the end of 2000, when Internet content began to lose its appeal, the only web-cinema showcases were Streaming Cinema[18] and in 2001 there was a new category in the Sundance Film Festival devoted to Net films.[19] In the early years of web cinema American and Canadian voices dominated, probably because of the cheaper telephone and Internet costs, which made it easier for artist to be on line. But from mid-2000 and the advent of flat-rate Internet access in Europe, European filmmakers became more active, receiving encouragement from festivals and showcases around the continent. In 2001, the feature film was an impractical format for the digitally networked medium, and shorter mixed video-animation formats were preferred. Since then, web filmmakers have continued to experiment and construct their stories, challenging the technology to mirror the reality they want to portray. Their demands have pushed engineers and developers to expand the capabilities of the technology, whose refinements have inspired new art, and new contexts in which this art can flourish. As Dixon said in 2001, "what we are witnessing now, is nothing more nor less than the dawn of a new grammar, a new technological delivery and production system, with anew series of plots, tropes, icons, convention and stars" (p. 366). The ultimate evolution is web 3.0, and the rich, loosely connected information environment that resulted from the web 2.0 paradigm.

Cinema has been described as the art of dream and illusion (Wasko, 2005). A common illusion is that cinema is a democratic form of entertainment because customers vote with their wallets from among a wide offering oriented to audience demand. Audience choice is in fact constrained by the basket of films that producers perceive to be profitable or to represent low risk, which makes some genres more available than others until demand is saturated (e.g. the production of westerns). Since the industry's main target is young people, the focus is on action, sequels and remakes, and movies featuring current stars, while other segments of demand are ignored. So audience choice is limited to choosing among the movies that are actually available. As Moran (1996, p.2) describes, in the cinema 1.0 system 'production exists to meet the demand created by the mechanism of distribution rather than distribution existing to serve production'.

Another of the controversial effects of this system is that because Hollywood is a dream factory, films tend to provide a vision of the world as it should be and the lessons they offer related to living in that world. Movies not only have an economic importance, they are also 'ideological products and thus socially and politically significant as well' (Wasko, 2005, p. 18). They constitute powerful instruments to generate and spread ideas and the way they are produced and distributed affects the freedom of our society (Benkler, 2006).

In other words, films - like other forms of entertainment - are produced for the masses by an elite of creators. This proportion is fragile because the mass of users is becoming split into many elites (Anderson, 2006) that demand targeted products, and creators are becoming a crowd, asking for the right to express themselves (Tapscott and Williams, 2006). These latent and essential needs are demanding satisfaction because this is now seen as entirely possible in the networked information economy, thanks to information technology (IT).

Although we do not have exact figures for the movie industry itself, a recent study (Boschma and Fritsch, 2007) estimates that on average, in a sample of five European countries, only 0.5% of workers are employed in 'Bohemian' occupations (the description commonly applied to those working in the creative industries (UK Design Council, 2005; Creative London, 2002)). Clearly, given job opportunities, a person with creative, Bohemian skills may pursue a career in the much wider class of 'creative occupations' (Florida, 2004), outside the creative industries, which involves

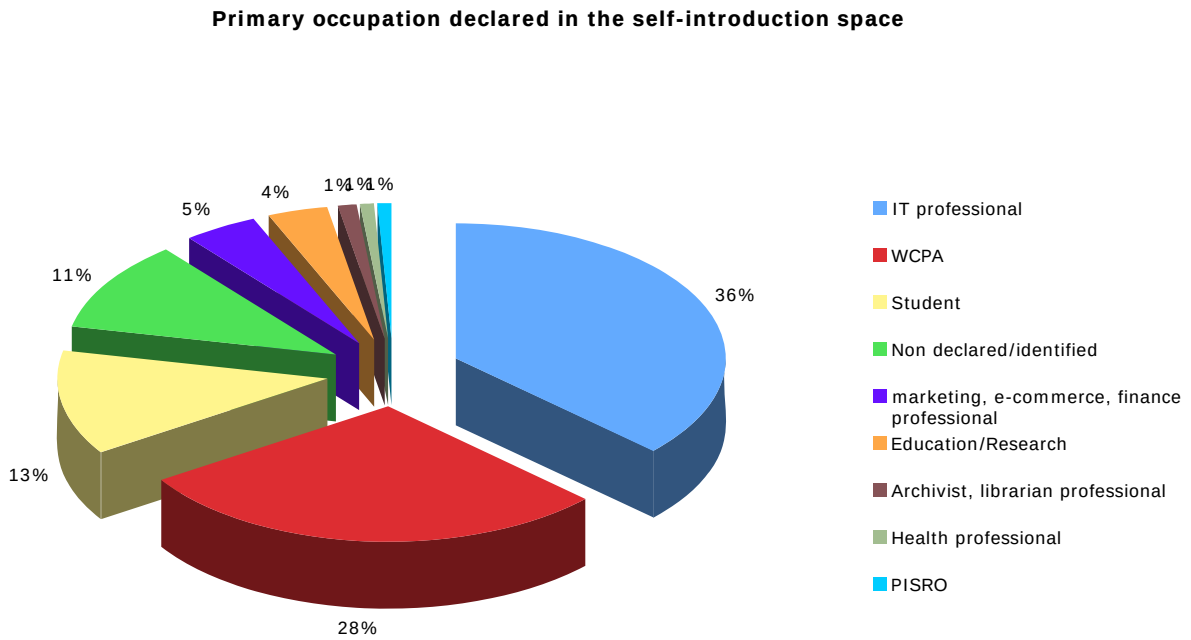
[18] www.streamingcine.com.
[19] http://www.filmfestivals.com/sundance/2001/index.shtml.

them in 'identifying problems, figuring out new solutions, and combining pieces of knowledge in new and innovative ways' (25% of overall employment) (Boschma and Fritsch, 2007, p.6).

On the basis of the descriptions that 100 angels (10% of the members) gave in the 'Angels Introductions and Projects' thread in the ASOA forum, we can largely identify their occupation(s) and how they got to know about the project.[20] The most common profile is of a young male (20-40 years), keen on music/movie/design making, who chooses to indulge his passions in his spare time, and/or studied arts or a related topic and/or has an information and communiction technology (ICT) background. Figure 2 depicts the distribution of typical professions and skills.[21]

For participants declaring an occupation in the arts which straddled two or more 'creative industries', we adapted Boschma and Fritsch's (2007) taxonomy which splits Bohemian occupations into: writers and creative or performing arts (WCPA in the figure), photographers and image and sound recording equipment operators (PISRO), entertainment and sports associates professionals, and fashion and other (not applicable to ASOA). The sample of the 5% top contributors (in terms of number of posts) surveyed (response rate 30%) confirmed this to the extent that 37% of them are IT professionals and 21% are employed in the WPCA sectors. Their average age is 32.

**Figure 2: Day job**




[20] One example is *Terry*: *'I could post my resume or do a little shameless self-promotion ... I have my degree in computer science; done web design and technical support. Currently, I work for a printing company providing customer service and web support. Been a big film buff for the past 20 years and have been known to blow an entire paycheck on movies! I like to reference IMDB regularly and am guilty of using it when playing 6 degrees... My biggest reason for joining is first, read a great posting on BoingBoing and second, I'm interested in seeing the future of cinema. I do get tired of reading about how the big studios or record labels are suing the very same people who purchase their products. Anything that can show the big boys how to do it differently-I'm for!'*

[21] We interviewed 15 participants who provided self-descriptions; they confirmed what they had written.

There is a relationship between ICT and creativity. As *urzumph*, 20, said: 'I am a creative person, but I am terrible at art or music. IT requires a certain level of problem solving, and problems solving opens up a lot of opportunities to be creative, especially to make simple and elegant solutions to problems'.

Since Bohemian occupations require expensive resources to deploy/show off the creative skills, in the past there was little opportunity for creative individuals to emerge or receive training outside the creative industries. The introduction of ICTs, however, has provided them with:

- cheap digital equipment (a dedicated and passionate team with complementary skills and a good idea, can produce a short movie of average quality using a £500 camera, and a personal computer (PC) for the editing/post production work). Digital cameras enable film makers to repeat shots at low or no cost (Ravid, 2005);
- cheap network infrastructure[22] and broadband (good network capacity is required to distribute medium quality content and the bandwidth now widely available is adequate. This has been proved by the 10 million or so 12-minute videos that can be viewed on U-tube and the even greater and growing number of pornographic content videos available on the net);
- cheap data storage capacity;
- OS software for editing (video, photo, audio).

Use of ICT means that in the context of digitally alterable cinema, it is possible to envisage a progressive 'flattening' of the movie production process, giving increased importance to the editing over the shooting of a film (Hanson, 2003; Ravid, 2005). This is enabling a more horizontal and participative structure to the process, with several participative editing platforms available on the Internet.[23]

As the experience of Straycinema[24] shows, it is possible, over the web, to offer a series of film shots on a server, to numerous editors located around the world and for each to propose his or her personal version of the movie based on these clips. One director, many editors, many different movies.

ICTs are having an effect on the capacity and potential of individuals. They are enhancing people's capacity to produce by themselves, enabling loose organizational forms, making non-market coordination easier (Benkler, 2006), constituting a community of people who can become peer-contributors in the co-production of a result, can co-own it and can freely share it within the community. If the community is open, then the ownership belongs to everyone and sharing 'rights' can be extended to anyone.

This is not to say that producing a movie is easy: it requires strong artistic-technical-organizational skills. But the new technologies are empowering people to organize, produce and distribute

[22] In early 2006, there were more than 1 billion Internet users. On average, they are quite active: about 40-60% put content on-line (a few lines of text, music, videos, lyrics, blogs, etc.), and a recent survey showed that 32 million US citizens define themselves as creative people (Horrigan, 2006). In the OS software system the figures are similar: the number of professionals software developers is about 15 million, but there are some 100 million who are able to make limited interventions to software scripts.

23 see e.g.: http://www.eyespot.com/ , www.kaltura.com/, http://www.jumpcut.com/ - and in the music sector: http://www.kompoz.com/, http://musigy.com/..

[24] Straycinema (www.straycinema.com) allows users to download and re-edit raw footage from a film shot in New Zealand. The 2006 edition was shot in London and artists from all over the world posted 70 different editions of the short movie. They are all available at the Straycinema website and on the U-Tube video sharing platform.

content.[25] This trend, which is increasing, represents the transition from the web 2.0 to the web 3.0 era.[26] From the point of view of web cinema, in the web 2.0 scenario the main actor was the individual filmmaker who wrote, shot or created, directed and edited; the web 3.0 context emphasizes the concept of distributed intelligence since it makes it technologically possible to interact and organize more loosely, even when large quantities of data (images, sounds) are involved. In the former scenario we could identify a clear individual voice; in the latter we should expect a chorus.

## 4. ASOA sustainability issues with respect to process and product architecture

To be suited to distributed peer production, the process needs to be sufficiently modular and granular (Lerner and Tirole, 2002; Benkler, 2006).

### 4.1 Modularity

Feature film crews are often identified with a small group of actors and a director. However, the actors and director are the apex of a pyramid of people that work collaboratively and include writers, audio/video/lighting technicians, costume designers, editors, lawyers and so on. All these people have complementary capabilities, which are all necessary. In November 2007, a scriptwriters' strike substantially paralysed Hollywood.[27]

Movie as a product can be split into several smaller parts (and then small production processes), each requiring different competences. For example, pre-production involves the selection of the cast, the crew and the location, production of the trailer, the poster, and so on. And each of these phases can be split into smaller parts. The movie poster, for instance, is the result of a visual concept, a background image and their graphic elaboration. The Swarm produced the poster for 'The Unfold', exploiting different competences, and thus different pools of people. *Palla*, 38, an architect, from Osaka was the coordinator of the process. He has a studio and works in 3D modelling and architectural rendering. He joined ASOA in May 2006 (as a pay back for a contribution that Hanson had given to support one of his books in 2003). Noting *Palla's* membership in ASOA (and remembering that he had been impressed by his work), Hanson decided to ask him if he wanted to contribute actively to ASOA. Although his command of English is not good, it was decided that this is not a problem for the contribution required of him.

In February 2007 in a web poll the Sswarm voted on the five photos contributed by *Palla* for the poster (see Figure 3).[28] The third one was selected.

[25] The networked information economy improves the practical capacities of individuals along three dimensions: (1) it improves their capacity to do more for and by themselves; (2) it enhances their capacity to do more in loose commonality with others, without being constrained to organize their relationship through a price system or in traditional hierarchical models of social and economic organization; and (3) it improves the capacity of individuals to achieve more informal organizations that operate outside the market sphere (Benkler, 2006).

[26] 'Web 2.0 is well documented and talked about. The power of the Net reached a critical mass, with capabilities that can be done on a network level. We are also seeing richer devices over last four years and richer ways of interacting with the network, not only in hardware like game consoles and mobile devices, but also in the software layer. You don't have to be a computer scientist to create a program. We are seeing that manifest in Web 2.0, and Web3.0 will be a great extension of that, a true communal medium…the distinction between professional, semi-professional and consumers will get blurred, creating a network effect of business and applications.' Jerry Yang, founder and Chief of Yahoo, in Dan Farber and Larry Dignan TechNet Summit: The new era of innovation, ZDNet blog, November 15th, 2006.

[27] J. Steinhauer, Nov 16, 2007, Writers' Strike Opens New Window on Hollywood (http://www.nytimes.com).

[28] http://www.pallalink.net.

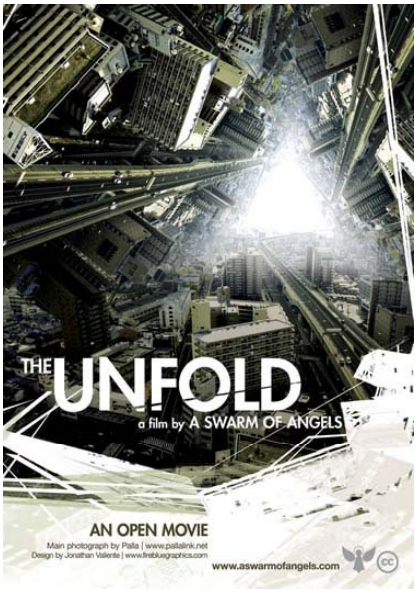
**Figure 3 - Author: *Palla***

In March 2007 *Palla* began to work on the background, posting his work in a forum thread and improving it on the basis of feedback from the angels. This resulted in Figure 4.a, which *Palla* agreed to release under a CC-SA-NC licence for the poster competition, in April 2007.

**Figure 4 (a,b)**

**4.a: Winning image, by Palla**

**4.b: Winning poster, by J. Valiente[29]**




The poster competition took place in July 2007 and was open to non-angels through a public wiki.[30] It resulted in 34 entries and 41 different proposals. *Palla* chose a shortlist of five proposals, which were voted on by the angels in August 2007, the winner being Figure 4.b above.

Why did these competitors give their work for free and agree to release it under a CC licence? Who were they? The following is taken from the information gleaned in interviews.

Jonathan S., is 25 and comes from Washington DC and is a design and marketing consultant: 'I was interested in participating mostly for the challenge, but also because of the views of ASOA. I did enjoy the experience!' Tim F., 22 from Oregon, USA, is a Digital Arts student and edits an on-line magazine: 'It looked to be a bunch of fun. It would have been a great piece to use in portfolio too. It

[29] Jonathan Valiente, http://www.firebluegraphics.com.

[30] The proposals submitted can be viewed and compared at http://aswarmofangels.com/2007/05/the-unfold-poster-design-contest/.

was a great experience, I love competitions when artists are taken seriously' Paul, 32, from Brooklyn, USA is a professional film director and a designer: 'It has been one of the only real opportunities to contribute to ASOA so far. I love to design and I thought it would be fun. I always enjoy creating, it was a nice little challenge'. Vincent, 23, from Montreal, Canada is a student, and works for a not for profit design company: 'I was looking for some kind of context to test my skills against some other designers'. Maribeth, 26, from Davao City, the Philippines, is a professional designer and one of the few women that participated in the competition: 'I did it because it was fun, challenging, and it offered international exposure. Well, I just love joining these. As long as can I do it.' Peter, 20, from Slovenia, is an Arts student: 'I found it a great idea to try and make something for the community, as well as being a challenge and the photograph was so great!'. Finally Vincent, the winner, is a freelance graphic designer and illustrator, who said: 'I was interested in the project mainly because of the beautiful image by Palla and at that time I was trying to expand my portfolio by creating new pieces and joining contests'. Most of these answers indicate that 'fun' and 'pleasure' were incentives, but that competition and reputation also play a role in explaining why people submitted their work.

The project trailer was achieved in three phases, and drew on three main capabilities. In September 2006, through a web poll, angels voted for the project slogan tagline from five proposals put together by Matt Hanson from an angels' discussion thread. 'Remixing cinema' was the winner. In January 2007 Mark Hough, a professional video designer from London who had been contacted by Hanson, began work on two visual versions of the digital trailer, the 'geometry' and the 'vertex'. In February 2007 geometry was chosen by an angels' web vote and in March 2007, they were asked to vote on the music genre from four proposals. The 'orchestral-minimal' type was chosen.

Using the same discussion thread, Hanson appealed for a music editor, and received a reply from Timo Hummel from Germany. Hummel is 27 and, despite his young age, is very experienced.[31] In May 2007, after several test pieces shared with Hanson and the angels within the forum or through personal messages, the music was released, and the completed trailer (tagline plus digital animation plus music) have been available online since June 2007.[32]

The examples above show how the product splits into several parts, each requiring different competences. Although not completely independent, some can run simultaneously (script, trailer, poster) and have an independent life beyond the movie project of the script, music and shooting, and especially if they can be circulated under the appropriate licence. For example, *Jean-Philippe Drecourt* has invested and continues to invest a great deal of time in editing one of the two scripts ('Glitch'). What if 'The Unfold' is selected? 'Oh, it's 50-50 actually. I don't mind, it will be CC. Another director might choose it', was his reply.

4.2 Granularity

The product architecture for the product released up to the present, is sufficiently modular. In order to evaluate whether the process can also be considered to be granular, it is necessary to look at the breadth of the contributions to product development, in terms of time and attention devoted by a potential contributor. The process seems to gain even from minute contributions. As Drecourt put it: 'It is very useful even if someone reads the script and says: 'yes, cool!' or 'I don't like it''. We can identify four levels of contribution/responsibility levels, related to different levels of personal commitment.

[31] 'I'm doing music and sound-related work for nearly 10 years now, so I would consider myself as a semi-professional. Doing techno for a long time and also being a DJ, I also produced a lot of music which was mainly, but not limited to, electronic music. I also did a lot of digital mixing and mastering. I quit techno music production 2 years ago. I am working as computer engineer, and always operated my music business in my spare time.'

[32] http://aswarmofangels.com/sting.html.

The first is leadership of the various tasks. Matt Hanson, as the project 'entrepreneur' is the main leader and coordinator, but there is a system of meritocracy similar to that in OS software communities: 'In a way this scripting process is similar to programmer involvement in open source software. A programmer could get involved in coding through bug-testing and correction, then move up to responsibility over a particular role/section of code, as they prove themselves this scope for input increases corresponding to a level of trust and evidenced application of a skill' (Matt Hanson). This applies to the script for 'Glitch'. *Jean Philippe Drecourt*, 32, has a doctorate in IT Sciences. Two years ago he decided to quit his academic career in order to write (he has written another script while working on 'Glitch', which was released in November 2007). He resides in Reading, UK and makes a living from translation work. He joined the Swarm in 2006, because it was compelling, exciting and promising, and in 2007 he was given leadership of the most experimental process in ASOA: collaborative script editing. How did this come about? By 'just asking Matt, proposing ideas and trying'. He sees his ASOA experience as a positive addition to his CV.

The second level relates to the contributions to tasks related to content production and applies to the work of *Timo Hummel* and the 34 individuals that submitted poster proposals. The third level is the forum attendance and occasional posting, as *Fiona May*, 45, says 'I join in the forums whenever there is a new post, sometimes I give it some thought first, sometimes I research, sometimes I just respond intuitively, I post occasionally.' The fourth level of contribution to the project, which has the finest granularity, is the yes-no suggestions/poll voting. *Dadioflex* said about it 'Wow a poll at last: I have no time to contribute to the discussion but a like voting because it is a way to live the process!! '.

Summarizing the structure of the three spaces in which discussion of the script took place (see Section 2), the scripts ideas/process involved a total of 58 (about 5% of total members) people and 164 posts. Seven per cent of these 58 posters were involved in all three discussions spaces, and 12% were involved in two of them. The remaining 79% has clustered around a particular discussion topic, which is an index of 'devotion', involvement and interest (non-indifference) to the particular creation process. In addition, if we explore the content of these threads more deeply, we can see that these contributions, however small, are all useful. From an analysis of the postings we can see that none of them can be categorized as 'spam', 'destructive', 'impolite' or 'irrelevant' and that the quality of the contributions is very high.

The biggest group in the ASOA community is the occasional posters; 5% of the community members are responsible for 80% of the contributions (in terms of posts in discussion forums). This indicates that, in ASOA, as in many other open and distributed project (e.g. FLOSS, Wikipedia), the production of content is fairly elitist, even in absence of market entry barriers. However, unlike traditional movie production the elite content producers are self selected and benefit from a myriad of individual contributions, which may very well affect the overall characteristics of the final product.

## 6. Conclusions

From its birth in 1890s, cinema has been characterized by a generative and continuous dialogue between art and technology. The current development is so called web cinema, which is related to descriptions such as participative, collaborative, peer-produced cinema.

As in the case of early cinema, it is not rewarding to try to establish who 'invented' web cinema; what is interesting is to examine the different experiments rendering the possibilities offered by an

ever-changing technological and economic context. Open distributed collaboration in movie making via distributed problem solving is the core of current radical change.

This paper is a first attempt to analyse what is probably the most complex and important of the ongoing experiments, 'A Swarm of Angels', which is coordinated by Matt Hanson, who is located in Brighton, UK. The Swarm of Angels distributed collaboration is particularly interesting because it encompasses: (1) collaborative peer production of content by a self selected group of creators; (2) collaborative and distributed micro-funding of the production; and (3) open access to the content by anyone that wants to see it or remix it. ASOA is the only case that we have found that aims to implement all these aspects.

The composition of these three elements generates two layers of complexity: the first relates to the feasibility of collaborative peer production of a movie as a peculiar combination of several types of content; the second pertains to the governance structure and the underpinning business and legal framework. ASOA is an ongoing experience, but the architecture of the product released so far, and of the production process, seems to fit the basic requirements for benefiting from a distributed collaborative production model. Our analysis shows that both are sufficiently modular and granular. Although from the demand and technology side it would seem that such innovations should flourish and succeed, only further analysis and observation of the progress of this project will allow us to assess whether open distributed collaboration is applicable even to the production and post-production phases of the realization of a movie, resulting in the production of a feature film.

In this paper we have shown that ASOA's organization differs from the established FLOSS or Wikipedia examples in critical aspects of the contractual framework (business model and management of IP). In Cassarino and Geuna (2007) we develop a fine grained analysis of the governance model, to assess the rationale for and weakness of such a different approach.

In order to get a more exhaustive view of the remixing cinema movement, we need to give greater attention to the many different ongoing experiments. Although not all will succeed as mainstream alternatives to the Hollywood film industry, such an examination is fundamental to our understanding of the future of movie making. In 1896 Luis Lumière forecast that 'the cinema is an invention without a future'; and it was said first that TV and then the Internet would kill the cinema. We may be on the verge of a redefinition of what cinema is and all of these predictions may prove to be as mistaken now as they have been in the past.

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