

An Ethnographic Study of Collaborative Design: Multi-modal Generation and (Re)-attribution of Design Ideas

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Abstract. This paper presents an ethnographic study of a game design in a natural setting. Based on analyses of excerpts of interactions between designers, our approach combines content and interactional approaches to study collaborative creativity. The aim of this combined approach is to construct different interactional formats of creative interaction which account for both design content evolution and interactional dynamism. The analysis of two excerpts shows how ideas are generated, elaborated, delivered and received by designers.

Keywords: Collaborative design, video game design, production format, collaborative creativity

1 Objective and Theoretical Framework

This paper presents a study of a musical video game design. Our objective is to understand forms of collaborative design and interactional mechanisms enacted in creative design.

Group creativity design entails several processes such as divergent and convergent thinking (Paulus and Brown, 2003), emergence of different points of view (Nemeth and Nemeth-Brown, 2003) and uses of artifact (Vyas, 2009). These are considered important in creative design as they support elaboration and evaluation of ideas. These processes may be considered as collaborative when there is a symmetry of interactional positions between designers i.e. each designer contributes by generating solutions (Burkhardt et al. 2009) and when elaboration and evaluation are performed by several designers using complementarily modalities (Détienne and Visser, 2006). These processes can be encouraged at the social interactional level by phenomena such as vagueness and delay considered as 'encouragement-to-contribute' (McDonnell, 2010).

In group creative design, previous studies have not taken into account production formats. It may be used to understand how ideas are delivered and received by designers. Notions of animator (locutor), principal (someone whose position is established by the spoken

words) and author (someone who has selected words) (Goffman, 1981) could be used to highlight how a speaker can incorporate other speakers in their delivery. For example, designer A reads a proposal of another design team. Therefore, we could consider A as the animator, the design team as the principal and the one/s who wrote the proposal as the author/s.

The originality of our approach is to combine content and interactional analyses to study collaborative creativity in a natural setting. This approach will be applied on a pool of extracts characterized by new idea suggestions in the design team with different affiliated designers and uses of artifact. Our goal is to be able to construct different interactional formats of creative interaction. The content approach highlights the progression of design ideas and the symmetry of contributions. The interactional approach highlights how participants deliver their contribution and receive them. In turn, this combined approach highlights how ideas are generated, elaborated, delivered and received in a collaborative design. In this paper, we present the first application of this combined approach on two excerpts.

2 Context and Method

2.1 Design Studio and data collection

An ethnographic study is carried on in a small design studio in Paris. It aims to cover the whole design of a musical video game. The design group is composed of a creative director with one to three co-designers depending on the needs. Other participants, externs to the studio, punctually join the group for brainstorming, playtesting or coding.

Our data are collected during an immersion of the first author as an observer in the environment of designers. The immersion started in February 2009 and is still under way. The collection of data encompassing video-recorded sessions, informal discussions and a

variety of produced artifacts, etc., allows us to reconstruct the design process from its beginning.

Here, we study design content and interactions around the Audio-interaction-visual prototype (Tab.1). Its design ranges from a simple to a more concrete prototype. This prototype’s openness enables the designers to generate new ideas and to evaluate them. Three themes were explored by iterative cycles. We observed that each cycle encompasses four phases namely defining, implementing and testing new function and analyzing the results of tests.

Table 1. Themes in the Audio-interaction-visual prototype

Themes in Audio-interaction-visual Prototype	2009				2010		
	Jun	May	Sept	Nov	Jan	Mar	May
Visual representations	[shaded bar]						
Scene and character				[shaded bar]			
Music architecture				[shaded bar]			
Excerpts analyzed		1 st and 2 nd excerpts					

2.2 Data selection

The criteria of excerpts selection are the emergence of new and original proposals and the presence of different affiliated designers and different artifacts. We observed that the beginning and end of themes and iterative cycles (defining new function and analyzing the results) were particularly interesting in this regard. In these moments, we found that new ideas are brought up, different artifacts are mobilized, design team evolves, and information is taken from external sources (e.g. other games) or from tests. We selected two excerpts at the beginning of the first cycle of the theme ‘Scene and character’.

2.3 Excerpts

The two excerpts we analyze in this paper are taken from a meeting between the creative director (B) and an extern (A), a friend of B who is also a game designer. In this meeting, B presents to A a new prototype of the game encompassing a character. In the two excerpts, they discuss and develop various design alternatives concerning the replay mode of the game (when the player progresses from one play time to another). They develop alternative proposals concerning the type of gain given to the players at each replay (Tab.2) or depending on their progression score (Tab.3).

Table 2. First Excerpt (§ = designer B)

1B	t’as un mode de replay orienté gamer c’est-à-dire que you have a replay mode gamer-oriented that is to say
2B	tu vas avoir je sais pas le §droit de choisir un objet that you’ll have I don’t know the right to chose

	§activates sound
3B	par exemple qui va habiller ton perso§ et si tu veux je one object for example that will dress you character
	§ activates sound
4B	garde dans dans and if you want I keen in in
5A	ou des nouveaux sons/ tu pourrais remplacer un son de or new sounds you could replace a sound
6A	[base de base avoir le choix tu vois au lieu d’avoir un basis basis have the choice you see instead of having
7B	[peut-être § peut-être maybe maybe
	<§plays with prototype
8A	piano t’aurais un piano un un:n=a a piano you’ll have a piano a a=
9B	=mais ça c’était l’idée de Florent le Florent y disait y =but this was the idea of Florent a Florent he said he
10B	disait lui/ euh= said euh=
11A	=tu t’es fais racheter par par lui ou euh/ =you’ve been bought by by him or euh
12B	(inc) c’qui disait y disait euh:h § c’est overwhelming (inc)what he said he said it’s overwhelming we see
	stops playing§>
13B	on voit trop de chose au depart c’est mieux d’en avoir too much thing at first it’s better to have on or two at
14B	un ou deux au [début the beginning
15A	[oué tu pourrais les faire gagner yeah you can make them win
16B	les faire gagner à chaque fois qui rejoue peut-être on make them win at each time that they play maybe we
17B	fera ça\ will do that
18A	§c’est une récompense qui peut satisfaire à la fois le gamer It’s a reward that can satisfy at the same time the gamer
	<§plays with prototype
19A	aussi parce qu’y a des cacahouètes au bout et à la fois euh\ also because there’re peanuts at the end and at the same
20A	à la fois le casual parce qu’y sera content d’avoir des violons time euh at the same time the casual because he’ll be happy
21A	en plus du piano to have violin plus the piano
	stops playing§>

Table 3. Second Excerpt (§ = designer B *= designer A)

1B	peut-être qu’à ce moment là le perso se mettra (inc) cette maybe at this time the character is gonna (inc) this style
2B	barre de style se met à danser à faire des acrobaties j’en sais score does he will start to dance to do acrobatics I don’t
3B	rien quoi (inc) eum probablement ce que je vais faire aussi know (inc) maybe what I’m gonna do also when he will be
4B	quand y sera au fond= in the back
5A	=faut que tu gagnes [des bêtes =you have to win pets
6B	[il relève euh des quoi/ it lifts up euh what
7A	des bêtes pets
8B	non alors ça/ ça/ ce que j’ai envie de faire c’est § peut-être no here it it what I want to do is maybe some
	activates sound §
9B	c’est alors\= it’s then=
10A	=tu fais gagner des bêtes après tu vends des peluche =you make win pets after you sell cuddy toys
11B	t’as t’as joué t’as vu Jum-mping Maestro/ de Pasta Games

- 12B *have you played have you seen Jum-mping Maestro of Pasta (inc) français c'est un bon jeu musical et c'est sur DS/ et eux Games (inc) french it's a good musical game and it's on DS*
- 13B *y font ça (...) [t'as des:] and they do that (...) you have som :e*
- 14A [mm ouais c'est c'est ça que je pensais (inc) *mm yes it's it's what I was thinking (inc)*
- 15B *alors moi ce que je me disais § peut-être probablement ce then me what I told myself maybe probably what we gonna <§plays with prototype >*
- 16B *qu'on va faire c'est que ça sera parmi parmi les intruments\ do it's will be among among instruments that is to say that stops playing§>*
- 17B *c'est-à-dire que §tu va /happer un instrument et cet you'll snap an instrument and this instrument it'll be a pets <§plays with prototype >*
- 18B *instrument ça sera un pet qui va te suivre un truc qui va venir that will follow you one thing that will come and run with*
- 19B *courir avec toi ou euh= you euh=*
- 20A *=un mec qui joue un instrument\ *tu fais ton artiste qui coure =one man that plays an instrument you do your artist that <*gestural simulation >*
- 21A *derrière [toi avec le mec en costard qui joue du piano qui runs behind you with the man in a suit that plays piano that*
- 22B *[ça peut-être ça it can be that*
- 23A *roule* et /ça peut être marrant/§ roll and it can be funny *stops simulation> stops playing§>*

2.4 Methods of analysis

For the content analysis, we used categories of generate, argue, refine, reformulate to code each line of the transcription with one or two categories. Proposals, noted P, are distinguished according to their issues. We also analyzed gestures and uses of artifact of both designers. For interaction analyses, we took into account vagueness and delay to look at the forms of encouragement brought up in each generated proposal. Also, we distinguished the different kinds of speaker incorporated in each proposal generated with the notions of author, animator and principal.

3 Results

3.1 Symmetry of designers' interactional positions

The content analysis underlines how designers contribute to the design. The 1st excerpt (Tab.4) highlights that designers diverge by proposing at least one proposal each (P1 to P4) and then converge toward P2. It shows that designers refine and reformulate their own ideas or the other designer's ideas (15A, 16B, 17B). It also stresses collaboration as there is a symmetry of interactional positions between designers; both designers generate, argue, refine, reformulate proposals.

Table 4. Content analysis of the first excerpt

No. utterance and Designer	Issue		Initiation of sound tracks	
	Type of (players') gain			
	P1 proposal adding a player character's attribute	P2 proposal adding sound tracks	P3 proposal (reified) starting with all sound tracks	P4 proposal (Florent's proposal) starting with few sound tracks
1, 2, 3, 4 B	Generates (P1)			
5, 6, 8 A	Generates (P2)			
9, 10, 12, 13 B	Contradiction (P2-P3)		Argues - (P3)	Compatibility (P2-P4)
13, 14 B	Argues + (P2)			Argues + (P4)
15 A	Reformulates (P2)			
16, 17 B	Reformulates (P2)			
18 to 21 A	Argues + (P2)			

In the 2nd excerpt (Tab.5), divergence is highlighted by three proposals generated by both designers (P1, P2', and P2''). Refines is performed on all proposals by both designers (2B, 3B, 15B to 19B and 21A, 23A). The analysis shows that designers also undertake interactional positions in a symmetrical manner. Both excerpts show divergent thinking and are collaborative as they show symmetric contributions.

Table 5. Content analysis of the second Excerpt

No. utterance and Designer		Issue	
		Get a feedback on progression scores	
		P1 proposal Feedback on the character	P2 proposal Feedback in the surroundings
		P2' Pets	P2'' Artist playing instrument
1 B	Generates (P1)		
2, 3 B	Refines (P1)		
5, 7 A		Generates (P2')	
10 A		Argues + (P2')	
11, 12, 13 B		Evokes reification (P2')	
		Argues + (P2')	
15 to 19 B		Refines (P2')	
20 A			Generates (P2'')
21, 23 A			Refines (P2'')
23 A			Argues + (P2'')

3.2 Vagueness and delay as encouragement to contribute

We illustrate how designers use vagueness and delay in their generation of proposals to encourage others' contributions. In the 1st excerpt, when B generates P1, he uses vagueness and delay. Vagueness is seen in (2B) “*un objet*” [one object] and (3B) “*par exemple*” [for example] where B does not describe in detail the nature of the object, leaving open the nature of the object for further alternatives or refinement. Delay is also seen in 2B “*je sais pas*” [I don't know].

In the 2nd excerpt, designer B generates P1 by using delay in 1B “*peut-être*” [maybe], 2B “*j'en sais rien*” [I don't know] and 3B “*probablement*” [probably]. In these two examples, designer B generates his proposal by using vagueness and delay; by detailing more or less his proposal and by avoiding fixation on a solution which is considered to encourage contributions. These encouragements are followed by generation of alternatives by the other designer, designer A (in 1st excerpt, P2 and in 2nd excerpt, P2').

3.3 Co-elaboration of ideas through multi-modalities

We illustrate that designers co-elaborate proposals by bringing into play multiple modalities. For example, in the 2nd excerpt, designer A proposes P2' (20A) "*un mec qui joue un instrument*" [one man that plays an instrument] while designer B interacts in a way to simulate a context for P2' on the prototype. Then, designer A continues by refining P2' verbally and with gestural simulation (21A, 23A) "*tu fais ton artiste qui coure derrière toi...*" [you do your artist that runs behind you...]. This example shows how elaboration of idea can be achieved collaboratively. Designer A performs verbal and gestural simulation which is complemented by a visual context of P2' given by designer B (with the prototype).



Fig. 1 Verbal and gestural simulation of P2' by A

3.4 Co-elaboration through re-attribution of ideas

We exemplify how designers deliver their proposals by incorporating other speakers. In the 1st excerpt, the elaboration of P2 is divided in two parts. This proposal is generated by designer A in a way that makes him the principal, author and animator of P2. Then, B subsequently attributes the proposal to another participant (9B) '*ça c'est l'idée de Florent*' [this was the idea of Florent]. Thus, Florent becomes the principal of this proposal. Reaction to this dispossession is seen in 11A '*tu t'es fait racheter par par lui*' [you've been bought by him]. In the second part, B reformulates the ideas attributed to the absent designer Florent (16B, 17B), this way becoming himself the author.

In the 2nd excerpt, generation of P2' is also divided in two parts. First, designer A generates the proposal P2'. This proposal is generated in a way that makes A the principal, author and animator of P2'. Then, B re-attributes P2' to another game (9B) '*t'as vu Jumping Maestro...eux y font ça*' [have you seen Jumping Maestro...they do that], thus this game becomes the principal. In the second part, B reformulates the idea he attributes to a game (15 to 19) which makes him the author of P2'. In both excerpts, designer B removes A from being the final author of P2 and P2' respectively. Designer B also assigns an absent designer and a game as principals by the re-attribution of the idea.

4 Discussion and Perspective

Our Combined approach highlights a creative interactional format characterized by divergent thinking and symmetric contributions of designers, by co-elaboration of solutions using complementary modalities and by elaboration of proposals using vagueness and delay as encouragement to contribute by both designers. It also stresses re-attribution and re-appropriation of ideas. First, generation of proposal is re-attributed to a solution generated by a peer and to another game and then, the proposal is re-appropriated for further reformulation.

Our future analyses will focus on excerpts from different iterative cycles and theme. Our aim is to analyze more excerpts to see if we will find identical or different interactional formats. Also, we will carry on auto-confrontation interviews to assess to which extent designers are conscious of the interactional formats.

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