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## What's the point? Balancing purpose and play in rule-based compositions

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In September 2000 Anton Lukoszevieze asked me to play in a concert with Apartment House. They were playing one of my pieces, but also needed some additional people to play in a composition by Gerhard Stäbler, *Hart auf Hart* (1986). I received the score and did not know what to do. It explained a wide range of possible interpretations of the notation, discussing the interaction between two groups, but in advance of the first rehearsal I was not sure what my role would be. When I arrived, I was directed to a balcony and given an airhorn to play at particular moments, cued by Stäbler. What I had to do was very clear, and I simply followed the instructions.

Looking back, this piece is unusual: my first encounter as a performer with an indeterminate score was one where the specification of actions required to perform the piece was quite open, but where there was a relatively clear explanation of why I was to do this. Stäbler notes in the score that there might be 'an attempt to eliminate individual players' and later that the piece develops 'the means to listening closely and working and communicating with acoustical material'. There is a purpose here, hidden among the practical description of actions, and a sense of play that emerges from this aim. But in practical terms, I just had to play the airhorn at specified points. I followed the instructions for actions.

I have made, played and looked at a lot of rule-based indeterminate scores since then, and I find it striking how few refer to an explicit purpose for players. Of course, there is an implicit purpose: follow the instructions in order to realise the piece and achieve an appropriate aesthetic result, in broad terms. But outside of this, what is it that players are trying to do? Is there any benefit in presenting an explicit purpose in a piece in order to inflect the way players carry out otherwise objectively described actions? My purpose here is to consider what some of the potential benefits of presenting an explicit purpose might be.

### PURPOSE

Looking through a wide range of rule-based indeterminate compositions reveals the lack of explicit purpose located in many scores. I looked at 120 instruction scores and found that only five included a reference to a purpose, such as the requirement to learn to skateboard in order to 'understand and absorb what you see with your body' to generate performance trajectories in Jennifer Walshe's *THIS IS WHY PEOPLE O.D. ON PILLS/AND JUMP FROM THE GOLDEN GATE BRIDGE* (2004). Eight included a contingent end-condition which implies a purpose but does not necessarily answer the question about why such an activity should be undertaken, such as in Gavin Bryars' *Far away and dimly pealing* (1970) which asks that you 'Cause sounds to occur at least one mile from the performer' so that 'The sound should be able to be heard by the performer'. Read through most rule-based indeterminate scores though, consider the actions that are required to be undertaken, and ask 'why?' Aside from following the instructions in appropriate ways, which is in itself a purpose, what is a player being asked to try to do? Most scores present instructions for *what* to do; very few scores give any rationale as to *why* the actions must be undertaken. For example, in Michael Pisaro's *Only* (2006), the player is asked

In a large, open space (possibly outdoors).  
For a long time.  
Sitting quietly.  
Listening.  
A few times, playing an extremely long, very quiet tone.

The location and nature of the activity is clearly specified, and what a player must do is relatively straightforward. There is however no indication of why they should sit in a large open space and listen, occasionally playing a long quiet tone (and the short poem by Kenneth Rexroth that precedes these instructions does not necessarily clarify this further). A common rationale might be that the composer deems it an illuminating or transformative activity for those realising the score or observing the realisation. I have realised this piece a number of times and would agree that this is the case. But I am not sure what I am trying to do past completing the defined actions. Here the nature of the listening is intriguing. Listening to what? Listening for what? This is an example of an activity which searches for a purpose, but who determines this, or what it is, is not stated.

Some pieces move closer to expressing a purpose by specifying an end-condition. Normally such pieces include a clause containing the word 'until', giving players a search algorithm to internalise that triggers the end of the piece when a condition is met. For example, Pauline Oliveros's *The New Sound Meditation* (1989) focuses on task-based breathing, sound-making and listening, ending with the instruction to 'Continue this cycle until there are no more new sounds'. Here there is a purpose of exploring the available sounds until the condition is met.

Pieces such as this point towards the kind of attitude found in the relatively few scores that do seem to express a purpose for the players. These pieces tend to focus on searching for something. In Alvin Lucier's *I am sitting in a room* (1970) there are four statements that are relevant to establishing a purpose. Lucier states that you should 'Choose a room the musical qualities of which you would like to evoke'. The purpose here is to evoke the musical qualities of a room. This is tied to an additional purpose which is more closely linked to an end condition. He says, in the text to be recited which also forms part of the score, 'I regard this activity not so much as a demonstration of a physical fact, but more as a way to smooth out any irregularities my speech might have.' This is then emphasised by the end condition which requires that the piece continues 'until the resonant frequencies of the room reinforce themselves so that any semblance of my speech, with perhaps the exception of rhythm, is destroyed'. So the overall purpose here might be defined as a composite of these three statements: choose a room, the musical qualities of which you would like to evoke, and complete the task until the resonant frequencies of the room reinforce themselves so that any semblance of your speech, with perhaps the exception of rhythm, is destroyed, in order to smooth out any irregularities your speech might have. He also describes the result of this activity as 'the natural resonant frequencies of the room articulated by speech.' Such examples are relatively rare. Other pieces by Lucier, such as *The Duke of York* (1971), also take this approach, giving the player a purpose as well as explaining the activity they must undertake. It is perhaps not surprising to find this in Lucier's work, given the close analogy with scientific experimentation.

The purpose here is still task-based however. The score asks us to complete the activity in order to reveal the stated characteristics, but even here we are not given an indication as to why we might want to do this. Perhaps this is simply implicit and unnecessary to state, or perhaps determining reasons forms part of the activity itself. It might, however, provide a deeper sense of purpose were reasons to be stated in the score, encouraging players to think about the value attached to the activity. In order to investigate why it might be beneficial for composers to suggest a purpose in their work in this way, I want to turn to some recent discussion of purpose in games, especially the growing field of persuasive games, as it is relevant to the development of purpose in indeterminate compositions.

## GAMES

Games are particularly useful as models of purposeful activities as they tend to be goal-directed, with players negotiating their way through the constraints provided by rules to complete a goal, or reach a win-state. A sense of purpose is embedded within games given such aims. Rule-based indeterminate compositions, however, are typically process-oriented rather than result-oriented: they specify conditions and constraints as opposed to aims and goals. Such compositions require players to negotiate their way through the constraints provided by the rules, making decisions that produce sonic or behavioural outcomes. While both games and rule-based compositions create a 'temporary world within the ordinary world, dedicated to the performance of an act apart' (Huizinga 1955, 10) and share some attributes, there are therefore key differences that are delineated by the way games and rule-based compositions are defined. In games players generally focus on achieving the win-state, while in rule-based compositions players generally focus on the aesthetic result. In order to consider how games might suggest models for purposeful play in indeterminate compositions, I will examine key definitions of games and their use of rules as a way to create decision spaces for players linked to goals. I will then explore how these systems might be applied to music to create pieces that promote purposeful play.

To determine the way in which compositions might relate to games, therefore, it is necessary to consider some possible definitions of games. Jesper Juul compares seven previous game definitions in order to develop his own *classic game model* which has six attributes: rules; variable, quantifiable

outcomes; value assigned to possible outcomes; player effort; player attached to outcome; and negotiable consequences (Juul 2003, 36).

The definitions he considers themselves also point towards rules as one of the core attributes of games. For example, Katie Salen and Eric Zimmerman define a game as 'a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome.' (Tekinbaş and Zimmerman 2003, 96). Here rules create a system by providing a constraint, resulting in a competitive situation with an end state. Equally Elliott Avedon and Brian Sutton-Smith's 1971 definition states that a game is 'an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequilibrium outcome.' (Avedon and Sutton-Smith 1981, 7) Again, a control-system is generated by rules, creating opposition and an outcome. Both definitions point towards rules as a means to delimit the available play space and constrain the actions of participants, with the aim of engineering an end-state for the ensuing process. They also produce a 'variable, quantifiable outcome' through the presence of goals and the notion of opposition and conflict.

Chris Crawford highlights these competitive attributes of games in his *taxonomy of creative expression*, which differentiates games from toys and puzzles through the presence of four attributes: interactivity, goals, competitors, and attacks. More informally he notes that games are conflicts 'in which the players directly interact in such a way as to foil each other's goals' (Crawford 2003, 8) and can be metaphorically characterised as situations in which the other guy 'shoots at you in a manner that convinces you he's out to get you.' (Crawford 2003, 8) Opposition and conflict also form part of Greg Costikyan's definition, which suggests that a game is 'An interactive structure of endogenous meaning that requires players to struggle toward a goal' (Costikyan 2002, 24). For both Crawford and Costikyan, impeding other players' progress towards a win-state is a fundamental attribute of games. The space in which this struggle is facilitated is controlled by the game's rules, and its purpose is to achieve the defined end condition(s).

## RULES

Understanding how rules function in games is therefore essential to any attempt to translate them to rule-based indeterminate compositions, and to consider how they might develop a sense of purpose. Principally, rules create a *formal identity* for a game. While each playing of a game of *Cluedo* is different, depending on luck and player decisions, the game itself is always the same. The rules remain constant, but the routes through the space they create are always different. Rules define the underlying structure of a game to create its formal identity. This identity is not articulated by the game's 'aesthetic qualities (such as the names of the suits) or representational identity (such as its ability to be recognized by an observer)' (Tekinbaş and Zimmerman 2003, 121), but the system which underpins it. This is important as it differentiates between superficially similar or different outcomes from rule sets.

Salen and Zimmerman (2003, 127-139) define three different levels of rules in games, and consider the way these intersect to present a game's formal identity.

*Constitutive rules* are the underlying rules that determine the abstract relationship between game resources. For example, the link between squares 29 and 52 by a snake in *Snakes and Ladders* is a fundamental constraint on the movement of players landing on square 52, but this does not form part of the game instructions as a specific case. Were the board to be set up with a different configuration or balance between snakes and ladders, the constitutive rules would be different.

The *operational rules* are the instructions for play. These are the rules communicated to the players that explain what they must do. This could be explained explicitly, as in a board game's rulebook, or more implicitly, as in a tutorial level in a video game.

The *implicit rules* are those that are not formally defined but are expected of players, such as not taking extreme lengths of time to make a move, the need to take turns, or not turning the screen off while playing a video game.

Salen and Zimmerman suggest that the formal identity of a game is determined by both its operational and constitutive rules, noting that 'As much as the formal identity of a game is tied to its constitutive logic, the material way that players experience that logic, as proscribed by the operational rules, is equally important.' (Tekinbaş and Zimmerman 2003, 135) Games are defined both by the underlying structure of the play space and the constraints on players' interaction with it.

Salen and Zimmerman also suggest six general characteristics of game rules: rules limit player action; rules are explicit and unambiguous; rules are shared by all players; rules are fixed; rules are binding; and rules are repeatable (Salen and Zimmerman 2003, 122-3). For example, in a classic game such as draughts, all of these characteristics are clear.

Some games seem to present exceptions to this framework however, such as the continually changing set of active rules and goals in card game *Fluxx* (1996), or the unequal resources and movement possibilities in traditional games such as *Tafel*. But these apparent variations are covered by the constitutive rules that account for such variation. It is, for example, part of the rules of *Tafel* that the two players have different goals, game pieces, and movement and capture rules, but that both players know this in advance. In stating these six characteristics, Salen and Zimmerman note that this represents 'quite a classical way of understanding games' (Tekinbaş and Zimmerman 2003, 123), and that it is possible to create games which do not necessarily demonstrate all of these characteristics.

When we translate these two frameworks to rule-based music, there are many similarities. Salen and Zimmerman's three game-rule levels also present a useful way to consider the formal identity of a composition. The constitutive rules present the underlying process or formal structure of a composition. The operational rules instruct players and are mostly articulated through the score. The implicit rules are found within the performance practice.

For example, in Alvin Lucier's *I remember* (1997), the constitutive rules define the setup for the piece: a collection of resonant found objects that can be activated by the players singing pitches into them. Once set up, these resources create the formal structure for the performance environment, resulting from the acoustic characteristics of the selected objects. The operational rules are located in the main part of the score that explains what the performers must do: sing slowly sliding pitches into the objects in order to discover and explore their resonant frequencies, occasionally interjecting prepared statements about personal memories. These rules are different from the constitutive rules as they determine player behaviours, rather than the constraint of the system that defines the space for their actions. The implicit rules are unwritten and include creating an effective balance between voices, appropriate player movements and staging, and an awareness of the broader performance practice of Lucier's work. These are in part communicated through documentation of previous performances to present a model, but they are outside of the core specification of the piece presented in the score as constitutive and operational rules.

Most of Salen and Zimmerman's six characteristics of game rules also translate clearly to indeterminate music. Some are traits of scores in general: rules limit player action in order to prescribe a specific space for the piece; rules are shared by all players, even if individual variations are prescribed (i.e. separate parts); rules are fixed, regardless of the variations they might create in realisations; rules are binding, in order to produce a valid realisation; and rules are repeatable to enable multiple realisations of a piece, however different these realisations might be.

There are, however, many instances of rules in indeterminate compositions that are not explicit and unambiguous. Obvious examples are found within some of George Brecht's event scores, such as *Concert for Orchestra* (1962) which comprises the additional text '( exchanging )'. Brecht's scores are often very ambiguous and deliberately problematize the relationship between rules and identity in verbal notation. In contrast to Salen and Zimmerman's view that constitutive and operative rules give a game its formal identity, with Brecht it is arguably the implicit rules – the performance practice – that determine the experience of the work.

## GOALS

Rules create the formal identity of a game, allowing us to differentiate between games at a fundamental level. But as Juul and his predecessors suggest, in addition to rules, games also require 'variable, quantifiable outcomes', or goals, and these are central to developing a sense of purpose. A

goal, in its simplest form, is 'a specific achievable state of affairs' (Suits 2005, 50). It needs a quantifiable outcome, such that it is 'designed to be beyond discussion, meaning that the goal of *Pac Man* is to get many points, rather than to "move in a pretty way".' (Juul 2003) While a player's actions might exhibit structure or direction when playing in an open-ended way (Crawford 2003, 7), a goal in a game is generally something that can be measured or tracked. Goals also imply the presence of conflict (Crawford 2003), whether this is between players attempting to reach a mutually exclusive goal, goals which themselves are conflicting, or where there is the possibility of not reaching a specified goal (Juul 2003). Goals in games might be simple, such as avoiding drawing an exploding kitten card such that 'if you explode, you lose ... if you don't explode, you win' in card game *Exploding Kittens* (2015), or they might be complex and multi-layered, such as completing many sub-quests in order to finish the overall quest in video role-playing games such as *Baldur's Gate* (1998).

Goals also vary in quality. In addition to the scope of a goal, from 'quick, low-level goals' to 'long-term, higher-level goals' (Church 2006, 373), and its permanence (Juul 2010), the compulsoriness of a goal shapes the ensuing game play. Juul suggests that there are three approaches to goal specification in games: obligatory goals, optional goals, and no goals (Juul 2007).

Obligatory goals are 'explicitly communicated' and the sole arbiter of success. Obligatory goals might measure progress or a final win state, although may not necessarily be achievable, such as in a game which generates increasingly difficult levels each time one is completed and where success is measured against a high score table.

Optional goals are found in games that 'let players decide for themselves what goals they wish to pursue' and can 'vary from player to player' (Bjork and Holopainen 2005). In such games the player is 'is free to deviate from the official goal of the game and make up personal goals' (Juul 2007). Typically role-playing games do this, allowing for 'a diversity of goals, allowing players to pick and choose among them, to find one that appeals.' (Costikyan 2002: 14)

Juul's final category, no goals, is perhaps the most significant for music. Although classic game definitions suggest the need for goals, Juul notes that this model is changed by removing goals or by 'not describing some possible outcomes as better than others.' (Juul 2003) He notes elsewhere that 'Games without goals or with optional goals can accommodate more playing styles and player types, in effect letting players choose what kind of game they want to play.' (Juul 2007) By making goals optional, or removing them completely, it presents a space for players who may 'care more about the aesthetic or sentimental value of game choices than about the optimal way of playing the game.' (Juul 2007)

This seems to suggest a point of contact with music. In rule-based compositions goals are not always present as they are not conceived explicitly as games. For example, in Antoine Beuger's *ein ton. eher kurz. sehr leise* (1998) two players are tasked with making a single sound in alternating 30 second periods. There is no aim here other than making the sounds within the constraints provided. The players are tasked with specific actions, defined by operational rules, but not necessarily required to strategize their articulation of these actions with regards to a goal. Rules are used simply to prescribe a set of activities. Players engage in these activities, and the piece is the result. There is no explicit goal presented, other than the successful completion of the tasks and an implied aesthetic result. This is not a game, but it is playful in the way the duo's sounds may be placed close together, only to force separation in their next repetition.

In other rule-based compositions however, the necessity of achieving a specified goal has significance for the way a realisation proceeds. For example, there is an obligatory goal in the fourth section of Christian Wolff's *Burdocks* (1970-71) which requires a group of players to 'play as simultaneously as possibly with the next sound of the player nearest you', before widening this activity out and culminating by playing with 'the player farthest away from you'. This obligatory goal is transient, with conflicting choices by other players making it hard to reach. Here the obligatory goal gives players a reduced amount of agency as all choices must necessarily resolve to the goal for the realisation to be successful, or at least valid.

In contrast, optional goals, or potentially no goals, are apparent in John Zorn's *Cobra* (1984), perhaps the single piece most commonly referred to when considering game compositions. *Cobra* comprises a set of rules for interaction between a group of improvising musicians and a prompter. The piece

presents a series of cues that the improvisers may request from the prompter, who then articulates these through showing coloured cue cards and giving downbeats that initiate the requested change. The improvising musicians are therefore controlled by the cues they are given but are also able to request cues to give. The prompter selects the cues to give from the available player requests but is also able to initiate cues directly. The types of cue Zorn uses define relationships between players, time and material. For example, the cue SX is 'Substitute Crossfade' which requires 'all must fade either in or out', resulting in a crossfade between those playing at the time of the cue and those that are not playing. The core rules may also be subverted by a player forming a guerrilla squad (by putting on a headband). When acting as a guerrilla, players can ignore the rules, capture other players, play anything, make any calls and form new sub-groups.

Clearly the options to ignore the rules, play anything, and silence other players create more individualised possibilities, despite the dominance of 'quick, low-level goals' (Church 2006, 373) that shape moment-to-moment interaction. But despite the richness found in the vibrant interaction, competition, and attacks, *Cobra* has no stated long-term goals. It creates a complex and ever-changing decision space for the players, enabling them to negotiate a musical output with respect to specific rules and short-term goals, but there is nothing for the players to aim for in an objective sense: no win-state, or even an end condition other than the three arbitrarily applied ending cues.

Although some of these examples conform partly to classic game definitions, as with games themselves the situation is more complex. The absence of clear long-term goals in pieces like *Cobra* point to what Juul, talking about games rather than music, terms an *expressive game* which 'allows players to arrange and combine the elements in the game in a large number of different ways in a way that players interpret to have a wide range of meanings.' (Juul 2007) This is also noted by Costikyan who suggests that the freedom found in a good game allows players to 'experiment with alternate strategies and approaches', making the game structure 'multi-dimensional, because it allows players to take many possible paths through the "game space."' (Costikyan 2002: 20)

This freedom, or player agency, is due to the interaction between constitutive, operational and implicit rules and obligatory, optional and no goals in both games and rule-based compositions. Obligatory goals present a clear aim for players, but the means of achieving them varies depending on the space afforded for action by the rules and conventions of play. Optional goals may also present clear aims, but an additional level of agency is presented to players as they select specific personal aims. Having no goals negates the gamelike state under some definitions but provides greater agency through developing an environment that promotes constrained play. Games and rule-based compositions balance these constraints in order to mediate the way players interact with their systems.

It appears then that there are two converging trajectories here: games that seek to create greater agency for players by opening up or removing goals, and rule-based compositions that use goals and decision-making to imbue a piece with values and direction. While some games and theory suggest that the 'aesthetic or sentimental value' of 'expressive games' (Juul 2007) is of increasing significance, rule-based compositions are beginning to explore this from the opposite direction, using rules and goals to create purposeful play within such aestheticized spaces. The convergence of these two trajectories suggests an interest on the part of game designers and composers in the ways that the relationship between playing games and playing music might be used to communicate and reflect on real-world values and identities. Embedding values might therefore be a way to create a sense of purpose in rule-based compositions.

## VALUES

The rise of *persuasive games* as a genre that considers purpose and values more centrally demonstrates both the will of games designers and their clients to think of games as systems for generating change. This might be conceived as a purpose, noting Juul's emphasis on 'negotiable consequences' (Juul 2003, 36). Persuasive games use what Ian Bogost defines as *procedural rhetoric*. Procedural rhetoric is different to verbal rhetoric, which uses words to persuade, and visual rhetoric, which uses images to persuade. Procedural rhetoric is the 'practice of using processes persuasively' (Bogost 2010, 3). Persuasive games seek to make connections with the world. They refocus the abstract safety of Huizinga's temporary world through presenting a wider purpose and considering the values a game embodies as part of the design process. In video games in particular,

they reference how computers 'run processes that invoke interpretations of processes in the material world' (Bogost 2010, 5). In contrast, non-digital games present 'human-enacted processes' such that 'the people playing the game execute its rules.' (Bogost 2010, 10)

For example, the persuasive game *Nova Alea* (2016) models 'the forces that shape our cities', specifically as a 'matrix of financial abstractions' that drive cycles of gentrification. Players buy and sell property, balancing their liquid capital and physical resources against the societal concerns of citizens. There are three possible endings: you become bankrupt by overspending as the property market crashes; you become rich and powerful at the expense of local communities; or you find a homeostatic state somewhere between where the system finds an equitable balance. The game is short and relatively intuitive, and through playing it the game system becomes intelligible as a translation of the basic economic model that underpins the real property market. But it goes beyond simply mirroring real world systemic transactions by referencing the human impact of in-game decisions: artists move into vacant spaces, rent control systems are established, and people are displaced from their homes. As Bogost notes, such procedural representation 'depicts how something does, could, or should work: the way we understand a social or material practice to function.' (Bogost 2010: 58)

This approach is also encapsulated within Mary Flanagan and Helen Nissenbaum's *Values at Play* (2014) framework, which suggests an approach to game design that might communicate values to a game's players and audiences. They consider values as the

properties of things and states of affairs that we care about and strive to attain. They are similar to goals, purposes, and ends, but usually they possess a higher degree of gravitas and permanence, and they tend to be more abstract and general. (Flanagan and Nissenbaum 2014, 5)

Flanagan and Nissenbaum suggest, for example, the values in football might be violence, antagonism, territoriality, cooperation, and teamwork (Flanagan and Nissenbaum 2014, 16-17). These values are encoded in the rules and architecture of the game, such that any change to rules results in changes in values and behaviours. Consider how having four smaller teams would alter the sense of territoriality and cooperation, or if there was a penalty for any physical contact how it would impact on violence and antagonism. Game rules and the conventions of their practice encode these values.

In Flanagan's board game *POX: Save the People* (2011) the aim is to show the value of herd immunity through sufficient vaccination levels within populations. Commissioned by a New Hampshire public health authority, the game uses player collaboration to 'reflect the ways in which members of a community stricken by a health crisis would work together' through embodying 'the values of collaboration, cooperation, community and health' (Flanagan and Nissenbaum 2014, 131). Their pre- and post-play questionnaires showed that players increased their understanding of disease prevention and the limitation of public health resources by playing and discussing the game, demonstrating that while 'information alone does not change behavior, interacting with the information may indeed change attitudes, beliefs and behavior' (Flanagan and Nissenbaum 2014, 133).

Persuasive games, such as *Nova Alea* and *POX*, can communicate values by modelling real world processes. As Bogost notes, 'procedural representation explains processes *with other processes*' (Bogost 2010, 9). By presenting simulations, games can help players determine the impact of their decisions in real-world situations. This approach presents a possible model for process-based music. As Karen Schrier notes

Games, and other designed experiences, may provide a necessary window into how other systems, such as cultural or political systems, can also affect how we interact with other people and institutions, or value certain objects, roles, or behaviors differently from others. (Karen Schrier in Flanagan and Nissenbaum 2014, 160)

'Other designed experiences' such as music might prove equally effective in translating everyday situations, concerns and attitudes as the subject of the work. This has the potential to provide a purpose in rule-based compositions. By presenting players with choices and the need to make decisions, purpose can be created if framed as part of a wider ethical consideration of the impact of such decisions.



This is something that I am beginning to explore in my own work. For example, in my piece *all voices are heard* (2015) I tried to embody consensus decision-making processes in the work with the purpose of exposing how the players move towards agreement through non-verbal negotiation. The values I wanted to communicate here were negotiating, sharing, disrupting and agreeing. The players are each given a set of identical materials (words, objects, pitches) and asked individually to create a short sequence in parallel with the other players. The sequence is continually repeated, with the players altering their ordering of the materials each time either by changing something to match another player, doing something new, simply repeating their sequence, or dropping out. Over time, the group achieves consensus by gradually rationalising their choices. In performance, the individual characteristics of players become apparent, as does the way they exert control over others.

In other pieces I have taken an approach where the purpose and values emerge from player choices while they work within the constraints provided by the composition, such as in the pieces in my *things to do* series (2014- ). Each of the constituent pieces uses a set of spoken instructions in different categories (such as noises, pitches, devices and processes) which govern the actions to be made. Players respond to instructions they can hear by realizing the defined actions as soon as possible after they are spoken. The differences in each piece, and the relationships between the players, are determined by constraints which govern who each player responds to and who gives instructions. It creates modes of interaction between individuals, allows group behaviours to emerge, and reveals the personal characteristics of each player in an immediate way. Here the values and motivations of individuals are made apparent. Some participants use the system to take control and exert their will on others, while others may blend in with the group, or be subversive. But there is no purpose specified: the piece creates a situation through which individuals have to determine their own purpose by being presented with choices.

These examples demonstrate two strategies for creating purpose: either to explicitly state the purpose, or to present a situation where players must determine a purpose. Flanagan and Nissenbaum frame these decision spaces in games as either *coercive* or *cooperative* (Flanagan and Nissenbaum 2014, 105-6). In coercive spaces designers 'may achieve certain behaviors through force (or tight constraints)' by channeling very specific interactions with the game environment or other players. In cooperative spaces they 'may encourage certain behaviors while still allowing players to exercise choice' by 'drawing on known motivators or rewards (such as points, penalties, and levels), feedback (sensory cues with direct pleasant or unpleasant associations), and cues with certain meanings (such as a doorway, green or red light, the sound of an explosion, and so on).' They characterize these two approaches as *obstacles* or *facilitators*.

Although many classic games are coercive through presenting a clear purpose for their players and providing a limited range of behaviours with which to achieve it, increasingly others are rejecting this position. This is common in roleplaying games, which are by definition cooperative, but board and video games also do this. There is a link here to indeterminate music. There may be some autonomy, with players exercising choice about how they might realize a piece based on internal preferences, or possibly a self-determined aim or purpose. Although many pieces do not present a purpose or goal, the activity that is defined may offer a chance for decision-making by the player, as in Pisaro's *Only*. We bring our own experiences to such work, and these experiences become transformative through the intersection between our personal perspectives and the activities defined in the work. Pisaro's piece implicitly encourages us to think about our relation between the sounding environment in both active and passive ways. This could be thought of as a purpose linked to wider environmental values, for example. The analogy here is with games that do offer modes of playing that are primarily expressive.

So we might view rule-based indeterminate music as either purposeless, as in my initial characterisation, or potentially flexible and open in purpose, encouraging those realising it to 'pick and choose' the way they might approach the work. But the latter possibility is not always apparent or possible, and grafting a personal agenda onto a realisation of an otherwise purposeless score may produce inappropriate results.

Earlier I asked why it might be beneficial for composers to suggest a purpose in their work. My hope is that through applying procedural rhetoric to rule-based compositions in order to explain 'processes with other processes' (Bogost 2010, 9), the possibility of translating real-world values through the

work in a more explicit way becomes realistic. How might a piece that models electoral systems allow us to understand and reflect on their topology? How does a piece of music allow us to experience and empathise with very specific kinds of social inequality? Given the importance of processes in much indeterminate music, procedural rhetoric could provide us with a way to inflect action-based pieces with a purpose which goes beyond simply carrying out the instructions.

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