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# Using a Multi-user Virtual Environment to Research Approaches to Ethical Dilemmas

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## ABSTRACT

Resolving ethical dilemmas is difficult because people must select a response from a range of unacceptable options. Ethical position theory states that people will select a response that is consistent with their perspectives on idealism and relativism. Ethical dilemmas are usually presented to learners and research participants in the form of written scenarios or vignettes. This approach has some limitations, including abstraction of the situation and written rather than enacted responses. Multi-user virtual environments (MUVEs) present opportunities for contextualisation and action that may be applied to the simulation of ethical dilemmas. A theoretical framework based on activity theory and ecological psychology will be used to develop and refine a MUVE simulation of a morally toned situation. This paper outlines an ongoing research study that focuses on understanding (a) the possibilities and constraints of the technology in relation to the simulation of ethical issues; and (b) the extent to which the simulation can be used to assess the alignment between participants' ethical perspectives and their behaviour.

**Keywords** Multi-user virtual environment, Ethics, Second Life, Activeworlds

## INTRODUCTION

The use of multi-user virtual environments (MUVEs) such as Second Life or Activeworlds, is becoming widespread. MUVEs would seem to offer opportunities for simulation of scenarios and circumstances to conduct research and enhance educational offerings. One such opportunity is simulating situations involving ethical dilemmas.

The research study will use a MUVE to investigate the relationships between people's ethical perspectives and their behaviour when engaged with an ethical dilemma. The study will address the following questions:

1. What are the possibilities and constraints in using a MUVE to simulate a scenario involving an ethical dilemma?
2. To what extent can a MUVE be used to assess the alignment between a person's ethical perspective and their behaviour when responding to an ethical dilemma?

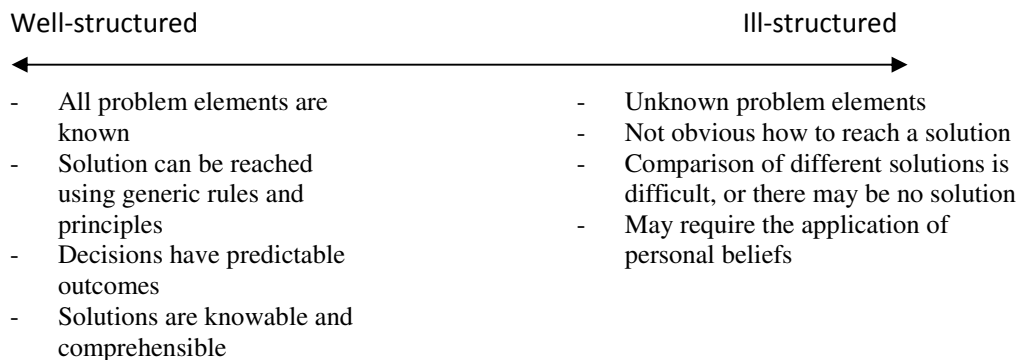
## BACKGROUND

### Ill-structured problems

Problems have two critical attributes (Jonassen, 2000):

1. There is an unknown entity in some situation, related to a difference between the current state and a goal state.
2. There is value in finding or solving the unknown.

Problems may be defined as well-structured or ill-structured (Figure 1). Many of the real life problems faced by people are ill-structured and ambiguous, with many possible solutions (Jonassen, 2000).



**Figure 1: Problem structure (adapted from Jonassen, 2000)**

Problems should be considered as contextually situated within the environment in which they occur (Jonassen, 2000). An individual's perception of a problem is influenced by the way the problem is represented, the characteristics of that problem and the characteristics of the individual. A person may perceive different problems when presented with similar situations within different contexts; given a similar situation within a similar context, different people may perceive different problems.

Dilemmas present us with one the more difficult aspects of our lives: problems in which each potential solution contains unacceptable trade-offs. They are the "most ill-structured and unpredictable type" of problem (Jonassen, 2000). Ethical dilemmas require consideration of ethical values (MacKay & O'Neill, 1992):

- Purely ethical dilemmas are problems that "involve an apparent conflict of ethical values";
- Mixed ethical dilemmas "involve a conflict between an ethical value and some nonethical consideration".

One way to conduct research into how people approach ethical dilemmas is to provide research subjects with simulated experiences that involve consideration of ethical issues (Mumford et al., 2006). However, many of these simulated experiences to date involve text-based scenarios or vignettes that require each participant to self-report their reasoning and how they intend to act (O'Fallon & Butterfield, 2005). This type of simulation leaves open the possibility that description of intentions may be fundamentally different to explicit actions (Miner & Petocz, 2003) and potentially omits important social and contextual factors. Multi-user virtual environments may provide a more robust platform with which to observe people's responses to simulated ethical dilemmas.

### Multi-user virtual environments

Virtual environments (also called virtual or synthetic worlds) are "electronic environments that visually mimic complex physical spaces, where people can interact with each other and with virtual objects, and where people are represented by animated characters" (Bainbridge, 2007). Some allow many people to access the world simultaneously from distributed locations (multi-user), while others have a single user. Most commercial virtual environments cater for non human characters, often called intelligent agents or bots.

Users can explore a virtual environment by moving their animated character (avatar) by methods such as walking, flying or teleportation. Possible camera perspectives include first-person, third-person and free control of camera (i.e. independent of the avatar). Communication between users is facilitated by text and often audio. Some virtual environments allow objects to be built by users.

There are indications that multi-user virtual environments (MUVEs) can immerse users in situations that involve ill-structured problems such as ethical dilemmas. Simkins & Steinkuehler (2008) report that individuals can perceive ethical dilemmas in virtual environments when interacting with non human characters within a narrative. Distributed role-plays (not conducted in a virtual environment) have been used to simulate situations involving socially complex ethical dilemmas (e.g. Fannon, 2002).

**Ethical perspectives and behaviour**

Ethical position theory states that there are individual differences that influence the way people make decisions in morally toned situations (Forsyth, 1980; Forsyth, O’Boyle, & McDaniel, 2008). These individual differences are referred to as a person’s ethical perspective. Ethical perspectives can be compared and contrasted along two dimensions (Forsyth, 1980).

- *Idealism* – “concern for consequences” (Forsyth et al., 2008)
  - Highly idealistic individuals believe that following the “right” action will lead to desirable consequences.
  - Less idealistic people take a more pragmatic approach and recognise that undesirable consequences may be unavoidable.
- *Relativism* – “concern for principles” (Forsyth et al., 2008)
  - People who are oriented towards relativism “reject the possibility of formulating or relying on universal moral rules when drawing conclusions about moral questions” (Forsyth, 1980).
  - People who reject relativism “believe in and make use of moral absolutes when making judgments” (Forsyth, 1980).

The two dimensions (idealism and relativism) can be used to categorise people into four distinct ethical perspectives (see Table 1).

Idealism	Relativism	
	High	Low
High	<p><b>Situationists</b></p> <p>Rejects moral rules; advocates individualistic analysis of each act in each situation; relativistic</p>	<p><b>Absolutists</b></p> <p>Assumes that the best possible outcome can always be achieved by following universal moral rules</p>
Low	<p><b>Subjectivists</b></p> <p>Appraisals based on personal values and perspective rather than universal moral principles; relativistic</p>	<p><b>Exceptionists</b></p> <p>Moral absolutes guide judgments but pragmatically open to exceptions to these standards; utilitarian</p>

**Table 1: Taxonomy of Ethical Ideologies (Forsyth, 1980)**

Ethical position theory suggests that people take an intuitive approach to their decision making in morally toned situations, based on their prior experiences with moral issues (Forsyth et al., 2008). While ethical position theory focuses on two main constructs (idealism and relativism), any response to a situation involving ethical issues is likely to involve the interplay of a wider variety of factors. However, it appears that people’s concerns for consequences (idealism) and principles (relativism) usually play a significant part in determining responses to ethical issues.

There have been numerous research studies that lend support to the ethical position theory (e.g. Davis, Andersen, & Curtis, 2001; Forsyth, 1980; Forsyth et al., 2008; Greenfield, Norman, & Wier, 2008). However, one limitation of these research studies is that they have predominantly based their findings on participants’ responses to written scenarios or vignettes. For example, Greenfield et al. (2008) provided participants with written scenarios related to a business decision context. The results showed that participants’ ethical perspectives mediated their stated support for (or opposition to) certain earnings management decisions that would result in personal benefit.

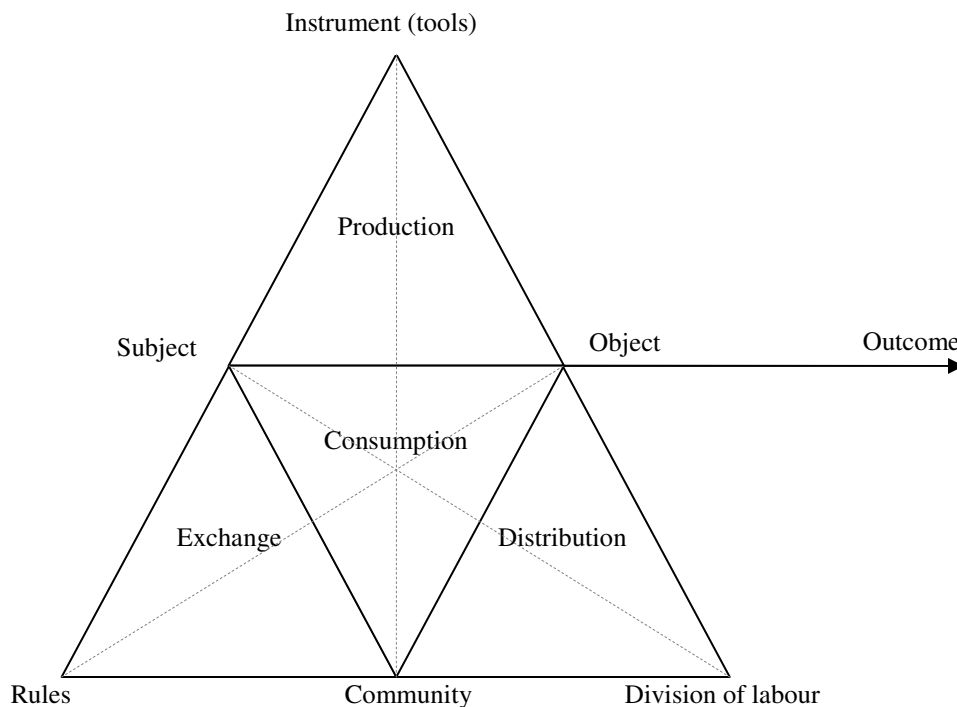
There are also indications that a person’s ethical perspective influences the sensitivity shown towards ethical issues. Shaub, Finn & Munter (1993) report that participants with low levels of relativism and idealism were likely to identify a relatively greater number of ethical issues within an auditing scenario compared with participants with high levels of relativism or idealism. This suggests that people with different ethical perspectives may perceive and attend to different ethical issues within a MUVE scenario.

MUVE simulations may provide a platform for further exploration of the relationships between a person’s ethical perspective and their ethical decision-making. The research study will focus on understanding the extent to which MUVES can be used to assess the alignment between a person’s ethical perspective and their behaviour when responding to an ethical dilemma.

## THEORETICAL FRAMEWORK

A theoretical framework is required to inform the development of a MUVE scenario as well as to guide data collection and analysis. As described above, ethical dilemmas are contextually situated within the environment from which they emerge. Two complementary theories (Bærentsen & Trettvik, 2002) that are concerned with how people relate to their environment are activity theory (e.g. Engeström, 1987) and affordances (Gibson, 1979). Activity theory describes the way individuals influence and are influenced by the social and cultural environment. Affordances are a feature of ecological psychology, which holds that people act in their environment through the affordances that emerge from the relations between the person and the environment. The two theories support each other by focusing on different aspects of individual action.

Activity theory (eg Engeström, 1987) focuses analysis on activity systems rather than individuals (Jonassen, 2002). An activity system describes a group of people working with a common purpose (Engeström, 1987). He developed a framework to describe activity systems (Figure 2). The framework may be applied to arbitrary activities identified from the broader network of cultural-historical activity, with a flexible level of description (e.g. the subject may refer to either a person or a group of people).



**Figure 2: The structure of human activity (Engeström, 1987)**

Central to the framework is the mediated nature of interactions. A subject's interactions with the community are mediated by the rules and customs. The subject's interactions on the object are mediated by the available instruments of productions (including physical and psychological tools) and by the community. Also, the interactions between the community and the object are mediated by the division of labour.

Activity systems contain a hierarchy of social activity, individual actions and individual operations (Engeström, 2000). These relate to a collective motive, individual goals and individual conditions, respectively. Bærentsen & Trettvik (2002) describe this hierarchy as explaining why, what and how the activity takes place.

Each level within an activity system emerges from the combined output of the lower levels, while also providing the meaning and context for the occurrence of the lower levels. Within activity systems, individuals have flexibility to personalise their goals and select which actions will best achieve those goals. Changes in individuals' own goal-directed actions may

transform the nature of the broader activity system, a process called expansive learning (Engeström, 1987). It is through this process that activity systems develop over time.

The concept of affordances (Gibson, 1979; Webb, 2005) may be used to describe how people interact with conceptual or physical objects within an activity system (Bærentsen & Trettvik, 2002). Affordances are “what the environment offers the organism” (Gibson, 1979) for interactions such as perception and manipulation, i.e. an organism can utilise the affordances within the environment. An affordance is neither a characteristic of the organism nor of the object, but rather emerges from the combination of organism and object (Bærentsen & Trettvik, 2002).

Originally developed within ecological psychology to explain how organisms perceptually relate with the environment (Gibson, 1979), the concept of affordance has been broadened for use in the disciplines of human computer interaction (Bærentsen & Trettvik, 2002; Norman, 1999), communications technology (Gaver, 1992), educational technology (e.g. Dickey, 2005; Salzman, Dede, Loftin, & Chen, 1999; Webb, 2005) and educational psychology (Barab & Roth, 2006).

Barab & Roth (2006) coined the term ‘affordance network’ to describe “functionally bound potentials distributed through time which can be enacted upon to realize particular goals”. Affordance networks allow individuals to achieve goals that require a series of actions. Individual nodes in an affordance network may be common with other networks, so the realisation of one node may achieve progress towards multiple goals. There may be multiple networks available to individuals wanting to achieve a specific goal. The actual network utilised will depend on the skills and attitudes of the individual.

Activity systems can be conceived of as being produced through a group of individuals with a common motive each realising an affordance network that individually achieves their goals and collectively fulfils the common motive.

### **Activity systems and affordance networks in MUVE simulations**

Within a MUVE simulation, the affordance networks will be related to the scenario and the possibilities for action provided by the MUVE technology. The scenario will provide the basis for participants’ goals and will influence the selection of affordances. The actions taken by participants must be supported by the technology. One challenge and opportunity of this study is to design a simulation that facilitates a match between the affordance networks and the participant’s goals. This assumes that participants can identify the actions afforded by the technology, so some training may be required.

For participants, virtual environments provide a unique sense of re-embodiment within an avatar (Schultze, Hiltz, Nardi, Rennecker, & Stucky, 2008). This enables a number of affordances related to presence, placement, perspective and place.

- *Presence*: users take on virtual identities, along with a feeling of personal agency. A virtual identity may differ from a user’s ‘real-world’ identity.
- *Placement* (with respect to others and objects): some aspects of meaning may be communicated through the placement of avatars or objects. For example, relationships can be communicated through proximity between avatars.
- *Perspective*: all users may share the same perspective, promoting shared understandings. The ability to see oneself within the social situation can lead to a heightened sense of self-reflection.
- *Place*: users are situated within geographies and social situations.

By exploiting these affordances, a MUVE simulation may be designed to conduct observational research and assessment regarding responses to ethical dilemmas: presence supports participants taking on different identities and responding to the situation; placement, perspective and place support visual and spatial contextualisation and communication.

Strengths and weaknesses of a MUVE scenario for observational research may be identified through analyses of the affordance networks utilised within the scenario activity system. Strengths are related to a match between the affordance networks utilised, the scenario activity system and the research objectives. Weaknesses occur when there is a mismatch between the scenario activity system, the affordance networks utilised and the research objectives. Assuming set research or educational objectives, mismatches may be overcome by adjusting the scenario or by influencing the utilisation of affordance networks by modifying the MUVE set-up or increasing participant training in MUVE technology use. There may be some mismatches that are irresolvable; these represent the limitations of the MUVE technology for simulation of situations involving ethical dilemmas.

When faced with a decision, a person will select a course of action from the various options available. The selection will be influenced by the person’s interpretation of the situation, their goals and individual characteristics, and the possibilities for action that are perceived in the environment. A participant within a MUVE simulation will have their perceptions of the situation mediated by the MUVE technology. Activity systems and affordance networks provide a theoretical framework to

support analysis of people's decision making experiences within MUVE simulation. Ethical position theory provides additional theory to explain people's responses to ethical dilemmas.

This research study poses the following questions:

1. What are the possibilities and constraints in using a MUVE to simulate a scenario involving an ethical dilemma?
2. To what extent can a MUVE be used to assess the alignment between a person's ethical perspective and their behaviour and justifications when responding to an ethical dilemma?

## RESEARCH DESIGN

A MUVE scenario will be designed to present participants with a situation involving an ethical dilemma. The scenario will be designed according to characteristics drawn from the literature review and theoretical framework.

From the literature review it is clear that the scenarios need to cater for the range of ethical perspectives. Specifically, participants within the scenarios must be able to consider the morality of possible actions by:

- Appealing to either absolute moral principles or to situational specifics;
- Emphasising either the actions themselves or their consequences.

The theoretical framework specifies that in order to provide an authentic social context, the scenario should be viewed as an activity system. This means the scenario needs to be considered in terms of the common purpose, tools, community, rules and customs, and the division of labour. Actors will be included in the scenario to play roles within the community.

The MUVE platform will be either Second Life ([www.secondlife.com](http://www.secondlife.com)) or Activeworlds ([www.activeworlds.com](http://www.activeworlds.com)). These platforms support voice communication, multiple camera angles, and interactive (scripted) objects. Once the scenario has been designed, the MUVE will be set-up with the required objects. Initial testing will take place to ensure reliable operation of the scenario.

A training environment will be developed to ensure participants are comfortable in using the MUVE technology before they begin the research scenario. The training environment will introduce participants to the basic functions required to respond to an ethical dilemma, such as avatar movement, communication and interaction with objects in the environment. A sample scenario is given at Appendix A.

A design-based research approach (Reeves, 2005; Squire, 2005) will be used to iteratively evaluate and improve the MUVE scenario. Each iteration will involve running the MUVE scenario with participants, data collection and analysis, and scenario refinement guided by the data. Refinement of the scenario will be aimed at ensuring that:

- An appropriate ethical dilemma emerges;
- Participants can respond accordingly through the identification and utilisation of affordance networks.

Later iterations may involve different scenarios, to support exploration of differences in the way people respond to ethical issues within different contexts.

A pilot study will be undertaken – a small group of academics will form the initial group of research participants. While academics may not be strictly representative of the larger population, it is expected that a majority of participants will be categorised as absolutists and exceptionists. Further iterations will use a sample from a different population such as students or corporate employees. Screen captures of the participant's activities in the MUVE will be obtained providing a rich data set for further analysis.

The aim of the data collection and analysis is to evaluate and inform improvement of the MUVE scenario in assessing the alignment between participants' ethical perspectives, behaviour and justifications. Particular attention will be directed throughout the evaluation and improvement process to the potential and constraints of the MUVE technology to simulate a scenario involving an ethical dilemma. Quantitative and qualitative data will be gathered during the scenario and from retrospective interviews. Participants will also complete the Ethical position questionnaire in order to identify their ethical perspective.

The Ethical Perspectives Questionnaire (EPQ) will be used to ethical stance. The reliability and validity of the EPQ has been reviewed in a number of studies (e.g. Davis et al., 2001; Forsyth, 1980; 2008; Karande, Rao, & Singhapakdi, 2000). Forsyth (2008) conducted a meta-analysis of research using the EPQ (132 independent samples, 30 230 participants in total), concluding that the "mean levels of idealism and relativism vary across regions of the world in predictable ways". The

validity and reliability of the modified EPQ in relation to an Australian sample has been supported by a research study by Karande, Rao, & Singhapakdi (2000). Using one hundred participants who were involved in marketing within a range of industries, they reported acceptable results for convergent and discriminant validity as well as reliability.

The data will be analysed to understand the potential and constraints of MUVE scenarios as well as to assess the alignment between participant's perspectives, justifications and behaviour. The analysis will largely follow a discourse analysis approach. Discourse analysis is aimed at understanding how language and other social practices (e.g. ways of using tools, non-linguistic symbol systems) reflexively interact with the emerging situation (Gee, 2005). Aspects of the MUVE scenario that may be included in the discourse analysis include spoken communication (such as word and phrase usage, pauses or pitch), avatar and camera movement, and time spent within an activity. The discourse analysis will initially focus on a series of themes drawn from the literature (Table 2). Additional relevant themes may emerge from the data.

Theme	Focus of analysis	Components
Affordances	What does a participant use to understand a situation and respond to it?	Presence; placement; perspective; place
Activity systems	What aspects of the activity system does a participant attend to?	Objectives; tools; customs and rules; community; division of labour
Ethical perspectives	What ethical issues are regarded as significant by the participant and what response do they take?	Ethical issues identified as significant; concern for consequences; concern for moral principles

**Table 2: Themes guiding discourse analysis**

The analysis will allow an assessment of the participants' ethical stance against their behaviour in the scenario in the MUVE. For example a participant who appears as an absolutist in the ethical stance assessment might be expected to not ignore the plagiarism, due to observance of universal moral values and decide to bring this up with the contact (Jill) in the belief that the long-term benefits of a morally justified action will outweigh the short-term upheaval. On the other hand a subjectivist will rely on personal values and try and make a comparison of the effect of plagiarism against the implications for the friend – which option is chosen will depend on the relative weights given to each of these in coming to a decision. Against this background an analysis of the justification for the decision can be undertaken, which will allow the researcher to form an opinion on the cohesion between ethical stance and behaviour.

## CONCLUSION

The possibilities of a MUVE scenario will be demonstrated by the forms of activity that are produced by the participants. Participants will reflexively engage with situations on the basis of the affordances they use to understand the situation and the goals they undertake as part of an activity system. Constraints will be indicated with mismatches between participant's perceptions, goals and actions, for example where the participant feels that their actions were constrained by the MUVE compared with those offered in a real-world situation. Subsequent iterations of the MUVE scenario will be designed to be able to evaluate potential conclusions relating to the possibilities and constraints.

Assessment of the alignment between ethical perspective and behaviour will involve comparing and contrasting the discourse relating to participants' descriptions of the ethical decisions, their reasoning, and their actions. To assist with the credibility of the analysis, the results of the discourse analysis relating to descriptions of the ethical decision and the reasoning will be triangulated with the results of the EPQ. The structure of the EPQ allows triangulation of results against the idealism and relativism scales independently, or a combination of the two scales to indicate ethical perspective.

It is expected that this study will yield results useful to both educationalists and practitioners. It is anticipated that the advantages and disadvantages of using a MUVE will be evident in the results, providing useful guidelines and boundaries for further use of such systems in education and in the workplace, particularly in relation to raising awareness of, and dealing with, ethical dilemmas.



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**Appendix A**

**Background**

You own and run a marketing business (company A). You outsourced some work to another company (X), recommended by an employee (James) who has a friend working there. After receiving the work and using it in a marketing campaign, you lock in a 2-year contract with company (X). Your contact in company (X) is the Director, Jill.

**Scenario**

Your employee (James) comes to you and tells you that company (X) has been plagiarising other company’s campaigns within their work for you. He says his friend told you this, but that if the company (X) finds out that’s where the information comes from (and they know about the friendship) then his friend will be sacked. James also mentions that any ideas you have told Jill may end up being used in campaigns for other companies. What do you do?

**Roles**

Research participants will play the role of protagonist and Director of company A. Actors will play the roles of James (employee), Jill (Director of the outsourcing company), Lawyer

**Discussion**

Within this scenario, participants have two clear options to choose between: whether to ignore the plagiarism or to engage with the other company and risk breaking contract and the termination of employment of your employee’s friend. Participants are also free to come up with alternative options. Once the morality of possible actions and their potential consequences have been considered, the participant selects and executes a course of action by interacting with the relevant actors.

