Achieving Consensus within SSM

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Abstract

SSM is a socio-technical system methodology offering tools for analysing complex situations. This modelling approach identifies differing worldviews of the system by encouraging discussion and debate. Academic ethical studies of moral philosophy have been extensively studied but rarely attributed to system modelling. We investigate the possibility of an ethical dimension to SSM comparing it to the ethical theories of duty, conduct and justice. This paper identifies the key problem areas when requirement gathering in group situations. We investigate the negative groupthink syndromes that occur within groups and discuss the concept of 'fairness with particular emphasis on the management of facilitator power. It is concluded that participatory system methodologies that feature holism and worldviews have clear links with moral philosophy.. The desirable system outcome requires man and machine to work in harmony. This can be better implemented when there is a deepened understanding of the moral complexities of group requirement gathering.

Key words: SSM, groupthink, ethics, facilitator power

1. Introduction

It could be argued that since science purports itself as 'ethically neutral' there should be no reason to discuss morality and ethics. Others might suggest the discipline of computing science is not actually a science because it studies manmade objects. Demming disputes this, "computer science studies information processes both artificial and natural" (Demming, 2005). When science investigates areas of perception, beliefs, norms and subjective opinion we surely teeter on the edge of moral philosophy. "An ethical issue is said to arise whenever one party in pursuit of its goals engages in behaviour that materially affects the ability of another party to pursue its goals" (Manson, 1995). When the effect is harmful, wrong or unjust it is seen as unethical. To this end, we investigate whether SSM ,as a tool for requirements analysis, requires consideration to ethical and moral theory.

The specific area of computing that is being addressed in this paper is within the analysis phase of software engineering looking at the way in which requirements are gathered for complex information systems. Typically, requirement gathering through interviewing, observations and prototyping works well when the client knows what they want or has some idea of the functional requirements. If the "what to do" is clearly defined it is relatively easy to move forward to the design phase. Soft Methodologies such as SSM, ETHICS and Multiview seek to understand problem situations within complex systems where clients do not know specifically what the problem is or what they want done about it. Gathering information about whole systems, wherein humans interact with technology, is best achieved through group discussion and negotiation rather than traditional methods used in requirement analysis. The soft system methodology attempts to gain an understanding of the whole domain by getting the workers to discuss the world views of their working system and what they perceive to be the problem areas.

Ethics within computing science and IT has had increasing academic interest within such areas as codes of ethics, data privacy, professional accountability and employee monitoring (Davison, 2000). It is surprising how little research there has been in information systems and ethics especially with the rising popularity of soft methodologies supporting participation and holistic thinking. Information systems dominate our entire society. System designers have a responsibility and obligation to conduct themselves in a professionally ethical way to ensure the professionalism of their discipline. As Adam and Bell (2004) concluded, "ethically neutral is not an option". Amongst the many methods, tools and frameworks available for system analysis there are only a few that consider ethical analysis. Bell, Adam, Mason, Walsham and Woodharper offer key research in this field. Bell and Adam note the lack of connection between the two fields suggesting that Ethics needs to be taught in IS education (Bell & Adam, 2004). Walsham accepts that there have been some attempts to include ethical dimensions within IS methodologies but, on the whole, criticises the lack of work in this area (Ibid). Mason suggests decision makers need to, "draw on ethical traditions for guidance".

He separates out moral agents, acts, results and stakeholders as the starting point or basic facts for ethical analysis (Manson, 1995). Bell and Adam suggest there is limited support and guidance within methodologies that encourage facilitators or moral agents to raise ethical issues (Bell & Adam, 2004).Both Woodharper et al and Walsham claim that the analyst or facilitator is the moral agent and further state, "the authors ethical values underlie the choice of problem and the terminology used to describe the problem and decision alternatives" (Wood-Harper, Corder, Wood, & Watson, 1996). In SSM there is no tool or framework offered by Checkland on how to evaluate the ethical issues raised in the requirements analysis and this lack of guidance can allow the facilitator to dispense with this phase of appraisal. As discussed later in this paper Woodharper et al produced an ethical framework to be used in conjunction with SSM taking the view that within a group there is a dominant ethical belief.

2. Brief synopsis of the Soft system Methodology (SSM)

SSM is a 7 stage iterative requirement analysis methodology for complex socio-technical systems (Table 1). This methodology is usually applied within a group of stakeholders from differing areas of an organisation although there is a wide scope for facilitator adaptation on group dynamics. SSM is an approach that looks into large real world problems and takes into account human interaction viewpoints to enable a solution to be undertaken. SSM involves taking an unstructured problem situation, describing it from the viewpoints of different stakeholders and using this as a basis for developing conceptual models of the system. These models are then used to identify changing requirements (Ralstom, 2000).

The root definition (RD) at stage 3 is a central component of SSM as it becomes the basis for modelling the conceptual system. The RD seeks to represent an, "accommodation between different interests" (Checkland & Scholes, 1991, p. 29). Hicks stated that a RD is, "a concise verbal description of the system" (Hicks, 1991). The RD seeks to express the core purpose of an activity system as a transformation process of inputs to outputs. The CATWOE mnemonic is used as a checklist for ensuring all the components of the RD are covered. CATWOE defines the Customers, Actors, Transformation, Weltanschauung (world view), Owners and Environment and is the design tool for working out the RD (Jarvis, 1997).Through rich discussion this modelling approach allows for similar and conflicting world views to be articulated, rejected or accepted depending on their implications and benefit to the whole system. This holistic methodology seeks to empathetically develop sensitivity to differing viewpoints whilst encouraging pedagogic thinking and learning. The 7 phases, in later work, became 5 models of purposeful activity wherein there seemed to be a shift away from humanism and more towards the learning organisation.

Table 1

The Seven Stages of SSM
1.   Understanding the problem situation
2.   Represent the problem situation using the rich picture tool
3.   State purposes of systems in systemic language through a root definition
4.   Create conceptual models from root definitions
5.   Compare conceptual models to the perceived "real world"
6.   Discussion and Debate on actions to be taken
7.   Implement actions

3. Brief synopsis on Ethical Theory

The two ethical theories in moral philosophy are Deontology and Consequentialism. Deontology is concerned with 'always doing ones duty' whatever the consequences and is related to the works of Kant. This moral absolutist approach equates to a belief that some actions are wrong no matter the cost i.e. it is wrong to kill. Kant's renowned categorical imperatives are typically seen as 'too perfect' since certain situations require the actions consequences to be considered. These non-absolutist deontologists accept that circumstances of particular actions can sometimes make actions acceptable i.e. killing is acceptable when your own life is threatened. The contrast to human duty is human rights and as Davison neatly puts it, "humans are sometimes more interested in their rights than their duties" (Davison, 2000). Consequentialist theory focuses on the consequences of conduct and not 'duty' being the moral justification to a good outcome i.e. the end will justify the means. Consequentialist utilitarianism judges that a decision is morally right if it produces more benefits than disadvantages for the greatest number of people. Using the example, to kill or not to kill this Consequentialist theory would weigh up the problem judging the moral solution to be the one that brings the greatest amount of happiness to the greatest amount of people.

Therefore Killing is morally justifiable if the majority of the involved stakeholders gain from the death. Utilitarianism is mainly linked to the works of British philosophers Bentham (1748-1832) and John Stuart Mill (1806-1873). The other main Consequentialist theory is Adam Smith's 'Egoism' which focuses on decision making to maximise individual desires rather than group desires. Rawl's (1921-2002) Theory of Justice developed a conception of **'justice as fairness'** which looks at defining a framework to govern modern social order. He suggests liberty and equality ensure a fair society and offers a method for moral evaluation of social and political institutions. His prime objective is to preserve social justice as well as individual liberty. Rawls offers a comprehensive doctrine that includes moral philosophy's such as utilitarianism, Kantianism duty and even religious doctrines. Locke's (1632–1704) theory of consent also claims equality suggesting there can be a 'government with the consent of the governed' accepting people's natural rights of life and liberty.This paper will explore the three theories of justice, duty and utilitarianism and investigate their relevance and significance to group problem solving for requirement gathering.

4. Discussion

Developing self and organisational awareness within the SSM process will encourage certain entrenched viewpoints to accommodate juxtaposed world views. The discussion and debate phase of the methodology (stage 6, table 1) can however, be open to criticism. Is the final RD essentially a compromise by some stakeholders to accept the decisions made by the majority? Checkland argues against this, "it is wrong to see SSM simply as consensus seeking" (Checkland & Scholes, 1991, p. 30). This theme was address by Patching wherein he suggests that there are more relevant viewpoints than others. He is quoted stating, "giving due consideration to what the client is most likely to accept; it could also affect the chances of the analyst surviving in the long term" (Patching, 1990, p. 79). Interestingly, Patching suggests that SSM facilitators must be mostly aware of the 'clients needs' and goes on to discuss how manual workers in an organisation could have viewpoints that would be in contrast and confliction with their senior management.

Arguably, the contrast and differing world views is surely what Checkland was trying to engender in SSM offering a holistic picture or "holons" of the organisation. The second phase to the above Patching quote, "affect the chance of the analyst surviving" has serious consequences if this is, in fact, still the way SSM is conducted in business. This would directly correlate with Ethical egoism. It is widely accepted that an SSM facilitator has to acknowledge their own Weltanschauungen and not let it prejudice other perceived views. Hirschheim and Klein (1995) note that the specific ISD method chosen by the facilitator will affect their treatment on ethical issues whilst Bell and Adam (2004) acknowledge the small body of literature within the role system analysis ethics. Walsham concludes that the support offered in SSM to the moral agent depends on their actions and adaptation adopted (Ibid). To this end, our work investigates whether 'Utilitarianism' or Kantian 'duty' dominates group decision making and problem identification in SSM or if, as Checkland suggests, "accommodation" is achieved with justice and fairness. Utilitarianism is an ethical theory claiming that an action is morally right if it results in the greatest amount of good for the greatest amount of people affected by that action (Crane & Matton, 2007, p. 95).

This theory investigates how differing stakeholder groups involved in *any* situation will be affected by certain actions. There is a single aim; to provide the greatest overall positive outcome to the majority stakeholder.
Rawls addresses issues of liberty, social equality, democracy, and the conflict of interests between the individual and society. His 2 fold theory firstly seeks to achieve basic human rights of liberty and equality. The second principle is based on an assumption that there will probably be inequalities in decisions. In essence he claims that as long as the one who profits least from the action is still better off than they would be if nothing was done then it can be considered fair (Crane & Matton, 2007). It can be easily seen however, that this second principle is open to interpretation and can justify areas of discrimination and self fulfilment whilst offering small rewards to those worse off. We compare Rawls theory to SSM as there does seem to be a grey area within the 'accommodation' of the many weltanshauung and the potential fairness it can actually achieve.

Does SSM, in practice, unconsciously apply the 'greatest happiness principle' to maximise pleasure and minimise pain for the majority of stakeholders or does the methodology imply an expectation of organisational duty of 'greater good'? Utilitarianism analysis is a highly quantitative mathematical methodology that has definite links with cost benefit analysis (Ibid).As with SSM it is used when applied to extreme situations involving many conflicting world views. It could be argued that there should be no comparison of SSM and Utilitarianism and organisations are legally and morally expected to have values with certain associated behaviours such as trust, honesty and courage. The majority of literature on organisational culture concurs on the need for good knowledge management practices. The major problem within the field of Knowledge Management centres on encouraging people to share their knowledge for the greater good of the organisation.

Organisational knowledge is a valuable asset that needs to be nurtured and encouraged. The holistic and democratic nature of SSM attempts to offer harmonic interchanges and fair consensus within a learning organisation.

Acknowledgement is given to ethics in SSM in the evaluation of overall performance phase wherein the facilitator looks at "how the system might fail". This primarily uses the 3E's;
• Efficacy: Does the system actually produce the outputs that it is supposed?
• Efficiency: Does it produce them in a manner that is not extravagant in using resources
• Effectiveness: Are the outputs appropriate for the wider system

<center>(Checkland, Forbes, & Martin, 1990)</center>

The 4th, lesser known, E of 'ethicality' suggests that transformation is evaluated on ethics and sustainability. SSM offers no advice on how to apply ethicality within the evaluation phase.

SSM does not regard the majority as important but it is of interest to investigate how the low status individuals achieve a fair hearing. It could be suggested that the SSM approach inadvertently ignores painful ethical issues through organisational dominance in the pursuit of creating the accurate RD. What becomes of the inadvertently victimised or unintentionally sacrificed minority viewpoint? Are they addressed at a later stage of the SSM process depending on their relevance and if so what catastrophic system failures emerge from their immediate disregard. Checkland would strongly disagree with this standpoint and argue that the cyclic nature of SSM offers 'problem situation re-occurrence'. This ensures previous minority issues have another chance to be acknowledged as relevant at a later stage therefore recognising the importance of the learning organisation. The moral issue here is one of 'fairness'. Crane and Matton (2007 p 104) state, "justice can be defined as the simultaneous fair treatment of individuals in a given situation with the result that everybody gets what they deserve". Beauchamp and Bowie as quoted in Crane and Matton see fairness as:

- Fair procedures (procedural justice): has everyone been free to acquire rewards for their efforts.
- Fair outcomes (distributive justice): fairness is achieved when the consequences, that can be negative or positive, are distributed in a just manner.

Problems arise with these descriptions when they are presented in complex situations that are prevalent in many SSM case studies. Distribution of wealth is often seen as a 'Robin Hood' notion that in reality causes more societal harm than good. The Marxist egalitarian approach offers little to distinguish between skilled and non skilled workers and can encourage a lack of incentive and laziness within a workforce that considers everyone to be equal. The theory 'justice as fairness' is an egalitarian theory of moral conduct which needs to be applied to facilitator obligations.

So how can fairness be achieved in requirement gathering when the facilitator tries to achieve both fair procedures and outcomes simultaneously. Bell and Adam (2004) would suggest ethical teaching integrated into IS education would ensure new budding facilitators have basic grounding's in ethical theory and this would better equip them for their future roles as moral agents. Others would suggest emphasis should be placed on identifying the correct competencies of a facilitator along with skills training in this area (Nelson & E, 1998). Checkland suggests that the more a practitioner applies SSM the better they get at it but he does not acknowledge the practitioner as a moral agent coping with wider moral reasoning's than just that of describing the problem situation. Davison (2000) highlights the need for professionalism discussing codes of ethics and the formalisation of rules and expected behaviour. He states that there is an "obligation of responsibility towards various clients, students, consumers, customers and society". Bell and Adam (2004) note the usefulness of codes of ethics but acknowledge the difficulty in application.

5. Ethical frameworks to be used in conjunction with SSM

Seedhouse's research looked at how to achieve competence in ethical thinking. He produced the ethical grid (figure1) as a way of enhancing morale reasoning and providing some structure on moral judgements. He purports that the more the grid is used the better the facilitator becomes at developing their appreciation of moral theory. In essence ethical learning will take place when using the grid. The grid is to be viewed as if looking down upon a square pyramid.

The grid is a framework to ensure ethical issues have been considered. It is not to be used as a prescriptive path to solve problems but rather a framework for thinking about them. Seedhouse claims that "it can throw light into unseen corners and can suggest new avenues of thought – but it is not a substitute for personal judgement" (Seedhouse, 1998, p. 208).
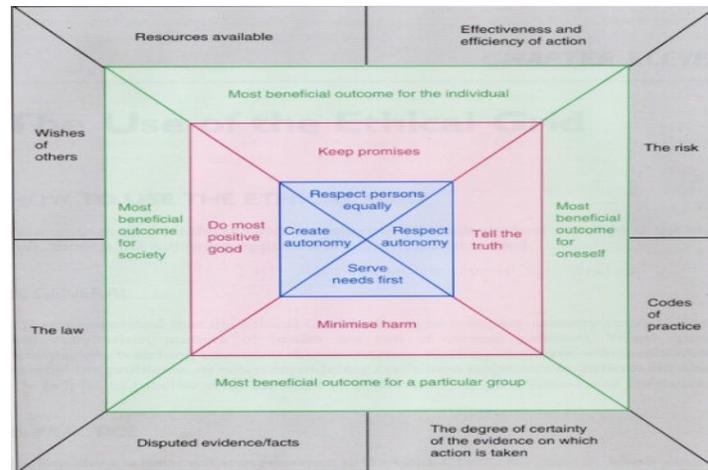
Figure 1 Ethical Grid (Seedhouse, 1998)

Woodharper et al question, "To whom is the analyst is ultimately responsible to" and concur that within group behaviour there is a usually a dominant ethical belief. They produced a 5 step ethical analysis approach which can be seen to neatly embed itself within the 7 stages of SSM (Table 2).This useful approach allows for differing stakeholder ethical concerns to be discussed and throughout the 5 steps the dominant concern to be modelled. The worrying implication to this 'SSM add-on' is the emphasis on the dominant concerns. As discussed later in this paper, group work can be difficult to manage and often fails if 'groupthink' (Janis, 1974) mentality is applied.

Table 2 Ethical Analysis Approach (Wood-Harper, Corder, Wood, & Watson, 1996)

Ethical Analysis Approach	Activity	Stage of SSM
Step 1	Identify the stakeholders in the situation who possess ethical perspectives.	Stage 1
Step 2	Identify their dominant perspective. If no dominant perspective exists, identify the top dominant perspectives as different stakeholders(or different nodes on the web).	Stage 1
Step 3	Construct an ethical conflict web, mapping different perspectives.	Stage2
Step 4	Identify those strands of the web where no significant conflict may be assumed to exist. These may be removed from the model.	Stage3
Step 5	Concentrate on those strands where conflict does exist. Use a technique of conflict resolution to achieve the "good" for the system.	Stages 4-7

6. Group phenomena

SSM encourages discussion and debate whereas the utilitarianism approach involves more individual decision making. Justice theory claims moral conduct to be 'fairness, equality and distribution of wealth. We argue that SSM is an inclusive methodology perhaps with leanings towards Kant's Categorical Imperatives of human dignity and universality when rationalising system problems.SSM acknowledges and seeks to alleviate facilitator power and influence whereas utilitarianism makes decisions wholly based on facilitator interpretation even if a perception of 'fairness' is being applied. Senge purports a more Kantian approach suggesting people in organisations, sharing a genuine vision, are bound together by a, "common identity and sense of destiny......people excel and learn, not because they are told to, but because they want to" (Senge, 1990, p. 9). Utilitarianism is a harsh, but effective, strategy used in business to rationalise complex social, business and economic problems. It is the very opposite to Kant's non-consequentialist theories of 'human duty' and is often seen as an excuse for making poor business decisions that can harm certain stakeholders. Enid Mumford, a significant author in socio-technical design, acknowledges Bentham's utilitarian beliefs stating, " for Bentham ,wealth was good because so much wealth produced an equivalent amount of happiness.......legislation was his instrument for turning society into a predictable , well ordered economic system" (Mumford, 1996, p. 2).

Munford focused the mainstay of her work on the 'ETHICS' methodology looking at the quality and freedom of working life accepting the human user of a system as a core component to an effective solution. ETHICS purports participation as being different and more active than communication. Ackoff states, "to resolve a conflict is to accept the situation and find a distribution of gains and or losses among opponents for which they are willing to settle" (Ackoff, 1978, p. 49). He furthers this participatory 'dissolving of conflict' belief by supporting negotiation. He notes, " the environment may be changed to separate the opponents, eliminate their interaction, remove a scarcity that is the source of their conflict, or change the objective that are being imposed on them from above"(Ibid). Jackson criticised subjectivist methodologies stating, "the kind of open, participative debate which is essential for the success of the soft systems approach and is the justification for the results obtained, is impossible to obtain in problem situations where there is fundamental conflict between interest groups which have access to unequal power resources" (Jackson, 1991) The very core of system thinking accommodates a holistic and inclusive approach seeking understanding of an adaptive whole which has an ability to survive in a changing environment. Group analysis and decision making is essential to this approach in soft system design.

Consensus decision making within organisations, that usually practice 'top down' decision making, is a difficult to achieve. Empowering group members and maximising chances of accommodating the views of minority groups is complex when members are within a hierarchical structure. Problems surrounding the decision making can produce "action anxiety" and "negative fantasies" (Harvey, 1996). Procrastination and anxiety over proceeding with a certain action can lead to preservation of the status quo. Certain state of affairs can continue for years within an organisation even though the majority of members would prefer change. Harvey recommends a direct confrontational approach to limit 'action anxiety' requiring individuals to take risks in purporting their own viewpoints. We suggest that the rich picture tool used predominantly within SSM can alleviate anxiety and individual risk.

The popular phrase "tyranny of the majority" is used to emphasise the power of one faction repressing the minority faction. It is the collective welfare of the stakeholders in SSM that overtakes individual concerns. Checkland does acknowledge the limitations of the RD, "no root definition can ever provide a unique description of any actual manifestation of a human activity system......there will be other feasible Weltanschauungen" (Checkland, 1981, p. 214). For Checkland, "accommodation" should involve collaboration rather than compromise. The due process of group work and ethics can is subject to the concept of 'fairness'. One of the major criticisms with SSM is that it offers no standards for human conduct thus having a relativistic stance on interpretation (Brown, 1992) (Mingers, 1992a).Ongoing research into 'procedural fairness' stems from Thibaut and Walker (1975) who maintain that even if an outcome was unfavourable people would evaluate the outcome more positively if they believed it was achieved with fairness. Although research into procedural fairness belongs mainly within the legal domain it is of interest to acknowledge that 'verbal input to the decision making process increases perceptual fairness' (Schminke, Ambrose, & Noel, 1997).

The wisdom of crowds by James Surowiecki investigates a simple concept that has profound implications: large groups of people are smarter than an elite few. He proposes that the very best decisions come from groups that are capable of maintaining their independency and individuality within a group. He furthers this argument stating that individual experts have only limited information at their disposal and it is foolish to rely on one of two expert opinions when altogether all of us know more than anyone of us (Surowiecki, 2004). Mackay, author of 'Extraordinary Popular Delusions and the Madness of Crowds' would disagree with Surowieki stating that crowds make foolish decisions unlike intelligent individual decision making. The discipline of social psychology has long been analysing group work and their interaction behaviour. A successful group is one that has commitment, shared boundaries and equality. It has been found that the harder it is to enter and become a member of a group the more likely the membership is valued (Fortune & Peters, 1995, p. 45).

Surowiecki suggests there are 4 main qualities that must exist in order for a group to be smart;
1. A diversity of people: gender, age, culture, religion
2. Decentralisation: a spread of power
3. A process of summarising opinions to a collective verdict
4. Independency: not to be worried to voice opinion

Group psychology can also have negative connotations that reduce effectiveness and potentially produce poor decision making. Consensus decision making is susceptible to the Albilene paradox. This claims, a group can agree on a course of action that no one individual member actually wants.

"Organizations frequently take actions in contradiction to what they really want to do and therefore defeat the very purposes they are trying to achieve (Harvey, 1996). What is being acknowledged here is that the ability to manage agreement is just as important as the ability to manage conflict. Janis, renowned author of 'Groupthink' suggests a small group phenomenon can often spell disaster as the drive for consensus, at any cost, can suppress appraisal of alternatives. He states, "the more amiability and esprit de corps among the members, the greater is the danger that independent critical thinking will be replaced by groupthink, which is likely to result in irrational and de-humanising actions directed against out-groups" (Janis, 1974, p. 13).

Janis identifies the 'Groupthink' syndrome suggesting that in-group pressure can lead to 3 types of problems.

- **Type 1 Overestimates of the group: its power and mortality**
  The group can have an illusion of invulnerability which creates excessive optimism encouraging extreme risk taking. The group believes in their inherent mortality making them discount the morality and ethical implications of their decisions.

- **Type 2 Closed Mindedness**
  They start to discount certain information as unimportant to create stereotyped viewpoints to validate their decision making.

- **Type 3 Pressure towards Uniformity**
  The creation of self censorship of deviation from apparent group consensus thereby minimising self doubt. They have a shared illusion of unanimity resulting in a false assumption that silence means consent and there is pressure on members to comply with the majority rather than expressing new arguments. Janis suggests the emergence of 'mindgaurds' who take it upon themselves to protect the group from adverse information.

                                                                   (Fortune & Peters, 1995)

The 3 problem types are more likely to occur in situations where
- Groups are highly cohesive.
- Isolation of the group from outside influences.
- Examining few alternatives.
- Not being critical of each other's ideas.
- Not examining early alternatives.
- Not seeking expert opinion.
- Being highly selective in gathering information.
- Under considerable pressure to make a quality decision.
- No systematic procedures for considering both the pros and cons of different courses of action.
- With a directive leader who explicitly favours a particular course of action (Ibid)

Gaining full participant involvement and ensuring no passive spectators is a key role for the facilitator. This participation has to be fair and impartially initiated. In practice, decisions that are taken are rationalised by the facilitators, whose own personal beliefs and norms formulate their opinions. As Harvey (1996) states, "the inability to manage agreement is a major source of organisation dysfunction". The facilitators own interpretation of the problem situation provides answers to which aspects of the system are considered relevant and those that will be rejected. Human conduct is governed by societal rules alongside more individual morality norms. SSM does not resolve problems for individuals but instead assembles stakeholders into groups; managers, suppliers, customers, investors. Woodharper et al (1996) considered an opinion that "an analyst may consider a good IS to be one that results in a pay raise or bonus" thus emphasising self interest and ethical egoism rather than any intrinsic quality of the IS produced.

Using the utilitarian philosophy, with acceptance of justice theory, the facilitator has to weigh up the different business options or solutions by looking at the pleasure versus pain on the collective groups of stakeholders. SSM relativism accepts that any viewpoint, no matter how detrimental to others, will be included as there are no standards or proposed rules that suggest certain weltanschauung could be undesirable. This is a core criticism within SSM. SSM in conjunction with ethical theory consider the, "distribution of the utility" (Crane & Matton, 2007, p. 95). The utility represents the economic value of actions. Utilitarianism philosophy accepts that in every situation the choice between actions is always the one that creates the greatest utility. In utilitarianism the 'greatest good for the greatest number of people' theory results in the interests of the minority being overlooked. The same can be said for SSM as the resultant problem solution will undoubtedly incur casualties. Examples of this could be dissatisfaction with new system or even physical job losses for certain individuals.

As Checkland neatly stated, "yesterdays solutions may now be seen as today's problems" (Checkland & Scholes, 1991, p. 1) or as one of Senge's basic principles suggest, 'well intended actions can lead to unintended consequences' (Senge, 1990). Rawls justice theory when applied to utilitarianism would suggest that injustice, as fairness, can be sometimes seen as necessary to prevent an even greater injustice but equal rights must have priority over 'greatest happiness'. Raws argues that using a utilitarianism approach to problem solving may result in individuals suffering greater disadvantages or gaining greater advantages thus resulting in an unjust outcome. Checkland acknowledges the conflict surrounding the RD, "the RD most usefully express several conflicting Weltanschauung and the debate, far from embodying a static bias, is intrinsically concerned with conflict and change" (Checkland, 1981, p. 251). Checkland offers no guidance on justice, fairness and human conduct and therefore we purport that human nature will naturally occur and groupthink mentality will possibly prevail.

We further suggest that SSM, as a problem solving methodology, purports a weak solution on how to perform the actual solving process. However, a "purest soft system thinker" (Bronte-Stewart, 1999) would say that the word "solution" is too generalist for a methodology that adopts a cyclic learning process of enquiry encouraging discussion and debate as central to the *unendin*g process. Arguably is can be said that SSM purports a learning process but offers no instruction on how this learning should take place. The methodology offers ways of illustrating different perspectives but gives no advice on how to judge validity, ethicality and relevancy of the different models. SSM purports a holistic wholeness but without guidance the actual learning could end up becoming reductionist. To date, the methodology is an excellent modelling device but is lacking in theoretical foundation, discipline and ethical consideration.

7. Conclusion

Utilitarianism is rule or action based and it would be wrong to use the processes in SSM mechanistically as a substitute for intelligent investigation and good judgement. In SSM a decision will be made, *at some point*, within the transparent process that will not recognise all stakeholder viewpoints. Arguably, individual's perceptions can be wrong, or perhaps misguided, and it would be pointless and time wasting to gild an erroneous world view. Checkland states that a separate RD should be made for every world view that is "considered relevant" (Checkland, 1981, p. 225). The word *relevant* would be defined as what would engender 'feasible and desirable' change. We argue that this desirable change might only ameliorate the majority if accommodation is achieved without ethical consideration. Freedom of thought, speech and action, will however, eventually be compromised by a subtle methodological degree of manipulation within soft systems. Is this possibly an accepted recognition within a learning system to be able to facilitate adaptation? Checkland argues against dominance or group compromise but rather integration of group solutions, "in no study in the whole of the action research programme has it ever been possible to take as *given* a single RD of a relevant human activity system.....the methodology emerges not as a praxiology but a learning system" (Checkland, 1981, p. 219). Ackoff would argue that no one has ever proved that conflicts cannot be resolved or dissolved without the use of force (Ackoff, 1978, p. 49).

It is undeniable that creating models that encapsulate differing viewpoints encourages self awareness, participation, knowledge sharing and opposing perception awareness. However, there will always be a power struggle for stakeholders to accept 'perceived realities' that might invalidate their own perceptions. Argyris and many others take an anti-positivist approach arguing, against Checkland's advice, that the facilitator must be an actor in this process rather than just an observer (Argyris & Schon, 1978). Whether observing or participating the facilitator has to accommodate the dominant and more confident communicators whilst still providing a platform for all viewpoints to be heard. Consensus seeking implies a pedagogic cycle of learning and a harmonic compromise through cooperation and participation. The development of user involvement and participation, therefore, must become a learning process that is just as important as the decision making process.

The aim of this research was not to downgrade the Soft System Methodology and its outstanding contribution to real world problems but rather to deliver a degree of enlightenment to the ethical considerations of problem identification and decision making in groups. We recommend the use of the Wood-Harper's Ethical Analysis Approach when working in groups using SSM whilst acknowledgement has been made to Seedhouse's comprehensive ethical grid. We further suggest, that in order to be effective whilst adopting SSM, there must be a constant change of individuals within groups every time the process re-initiates. This movement of stakeholders will go some way to reducing the negative groupthink syndromes as defined by Janis. Finally, Facilitators of participatory methodologies are moral agents that have a duty to consider ethical theory when working in groups. Appreciating moral philosophy will help to alleviate the dangers of group think enabling a truer reflection of the problem situation.

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