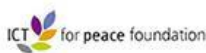# BUILD PEACE

WHITE PAPER
Supporting Deeper Deliberative Dialogue
Through Awareness Tools

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This is a paper for the Working Session on 'Supporting deep dialogue and deliberation in socio-technological systems' at the Build Peace 2014 Conference.

Abstract: In this White Paper we introduce the motivations behind our research in supporting social deliberative skills (such as perspective taking, social metacognition, and meta-dialogue) in online contexts. We describe the software we are using to (1) support deeper dialogue through scaffolding and (2) support facilitators with a Dashboard visualization tool. Results and details of our research, including research into automated text analysis, can be found at www.socialdeliberativeskills.com.

21ST CENTURY CITIZEN AND LEADERSHIP SKILLS

In our increasingly global world safety, productivity, and social justice can be linked to citizens' and leaders' capacity to understand and deal productively with diverse perspectives, goals, and values. King & Baxter (2005, p. 571) note that "in times of increased global interdependence, producing interculturally competent citizens who can engage in informed, ethical decision-making when confronted with problems that involve a diversity of perspectives is becoming an urgent educational priority…however these skills…are what corporations find in shortest supply among entry-level candidates." Engaging with others on topics such as climate change, internet privacy, birth control, and immigrating reform requires not only learning the relevant facts and concepts and making logical inferences, but also engaging reciprocally with the perspectives and opinions of others who may not share one's views or goals; i.e. situations where "reasonable people can reasonably disagree" (King & Kitchener, 1994). Doing so requires certain skills that are often not brought to bear, yet can be systematically supported (Rosenberg, 2004; Herzig & Chasin, 2006; Holman et al., 2007; Murray 2006; Murray & Ross, 2009). Rosenberg (2004) claims that "a good deal of research on small group behavior and communications provides evidence of people's evident inability to understand and fairly consider other people's perspectives, to think critically about their own position or the social conventions to which they adhere, or think about problems creatively and generate novel alternatives" (p. 4). He advocates for public processes that develop the "cognitive capacities, emotional orientation and social context" for democratic deliberation. According to Inglis and Steele (2005) "if attempts to bring citizens together to grapple with complex social issues are not designed to consider their diverse worldviews, capacities and complexities, the best in people will not be brought forward, and participatory projects will flounder, leaving people frustrated and eventually apathetic" (and see Ross 2005).

Social situations involving conflict and difference often result in unsatisfactory outcomes, and though undesired outcomes can be attributed to many factors, one important factor is insufficient skillfulness, or an inability to bring existing skills to bear in difficult or complex social situations. Our research asks how such skills can be supported systematically and systemically within communication and collaboration infrastructures—specifically, software tools.

Deliberation, collaboration and conflict resolution online. As communication, collaboration, and knowledge building expand on the Internet the benefits and limitations of Web 2.0/3.0 technologies become increasingly apparent. Deliberation, decision making, conflict resolution, and knowledge building, whether in organizational, informal, or political contexts, face increasing complexity scenarios due to the "perfect storm" unleashed by the explosion of connectivity, interdependence, and information that has been brought on by globalization and advances in technology. Navigating the ensuing challenges will require new modes and tools for deliberation and collaborative work that are tuned to the emerging characteristics of 21st century situations and dilemmas (Inglis, 2007). Communications and networking technologies are central to both the challenges and potential solutions. The affordances of social networking, information sharing, and expansive search capabilities have lead to a dramatic increases in the *quantity* of information and connectivity without always supporting—and sometimes sacrificing—their *quality*.

Though online communication has limitations compared to face-to-face interaction, it also offers unique affordances, and more can be done to support higher quality interactions. In technology-mediated interactions the communication medium itself can be designed to support valued capacities, skillfulness and skill building. As Scardemalia & Bereiter (2008, p. 7) note, "rather than struggling to achieve closer emulation of face-to-face discourse [we can] capitalize on the advantages that technology offers." Technology can help us organize, visualize, reify, connect, and synthetize ideas from multiple sources, and it can also be used to deepen deliberation, mutual understanding, and idea improvement (see Suthers, 2005). Our approach is not about teaching or coaching, but is about the prompts, constraints, and choices that an interface affords the user as part of performing a task. For example, an "appreciate" button or an "enter alternative views" side-box gently reminds a participant about values and possible communication moves that she may not otherwise consider (even if not used). Such features that reify (make visually real) a group's values and goals can provide a subtle uplifting force to influence a deliberation toward collective intelligence and away from "collective stupidity" in complex or tense situations.

The overarching method is to identify the types of behaviors and concepts that are aligned with a group's values and goals (e.g. perspective taking, participation equality, or transparency), and then build visual, structural, or procedural features into the software interface that non-coercively draw attention to these behaviors, concepts, or values. Numerous studies have shown that this type of "scaffolding" has a positive impact on collaboration, metacognition, reasoning skill, and learning new concepts, provided that participants are "on board" with or open to the values and behaviors being supported. Visualization or "awareness tools" can help individuals and groups reflect on both individual and group level behavior, progress, and interaction quality.

The emerging next generation of socio-technological tool development adds additional support for reflecting on and improving the quality of online information, communication, and action coordination, through new analytics, modeling, and visualization methods. For example, we are investigating text analysis and social network analysis methods to reveal deeper patterns in dialogues. Online tools can directly support participants in having higher quality and more skillful engagements, and can also support facilitators, mediators, mentors, diplomats, and moderators, whose job it is to support participant skillfulness. Buder et al. (2009) frame the issue in terms of "social and cognitive awareness tools" that "facilitate and institutionalize the natural processes of becoming aware about social and cognitive variables, thereby leading to adaptive behavior in collaboration" (p. 606).

Supporting Social Deliberative Skills. Our research investigates the support of what we call social deliberative skills in online contexts. Social deliberative skill (SD-skill) refers to *the capacity to deal productively with heterogeneous goals, values, or perspectives, especially those that differ from ones own, in deliberative situations*. Much current research in computer-support for higher-order skills focuses on purely cognitive skills such as problem solving, critical thinking, argumentation, and knowledge-building, where the skill's focus is on the quality of a solution or outcome (Thorman, 2013; Azevedo et al. 2004; Scheuer et al. 2010; Bereiter & Scardamalia, 2006; Kuhn & Pease, 2008; Winne et al., 2006; White et al., 1999). These skills will be increasingly important in dealing with tomorrow's complex multi-stakeholder problems. But just as important are the social and emotional intelligences involved in building mutual understanding, mutual regard, and trust. Black et al. (2010) make a distinction between the analytic vs. social (socio-relational) features of deliberation. Similarly, Jordan et al. (2013) propose two important skill sets for addressing "complex societal issues, such as gang-related crime, deteriorating residential areas, environmental problems, long-term youth unemployment, [and] racist violence" (p. 34.) Jordan calls these skill sets "complexity awareness" and "perspective awareness."[1] SD-skills are more about

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[1] According to Jordan: "Complexity awareness [is] a person's propensity to notice…that phenomena are compounded and variable, depend on varying conditions, are results of causal processes that

perspectival awareness. Our conceptual framework does not frame SD-skills in terms of *either* cognitive *or* social/emotional skills, we frame these skills as the *application* of cognitively oriented higher order skills to thinking about the perspectives (or beliefs or arguments) of others (and consequently, of self as well).

In multi-stakeholder situations knowledge and opinions have not only their propositional content but also have intersubjective markers: i.e. rather than objective information we deal with *my, your, our, his/her, or their* knowledge and opinions. The dual blessing and curse of situated collaboration is that it introduces a *diversity* of ideas, goals, skills, assumptions, and values, and this diversity has been shown to produce both benefits and challenges (Bromme et al., 2005; Smith et al. 2005; Kreijns et al., 2003; Janssen et al. 2011; Goos & Galbraith, 2002). An important goal of collaborative engagement is to maximize the benefits and minimize the problems (or friction) of collaboration and coordination. Dealing productively with diverse perspectives requires a set of social metacognitive skills such as: weighting opinions, asking clarifying questions, reflecting on the certainty and reasons for one's beliefs, and engaging in meta-dialogue that reflects on the quality of the interaction (Mukherjee et al., 2013; Järvelä & Järvenoja 2011; van de Sande & Greeno, 2012). Thus we can define SD-skills in terms of an extended interpretation of perspective taking to include:

1. Social perspective *taking*, which includes cognitive empathy and reciprocal role taking
2. Social perspective *seeking*, which includes social inquiry and question asking skills
3. Social perspective *monitoring*, which includes self-reflection and meta-dialogue
4. Social perspective *weighing*, which includes so-called reflective reasoning and includes comparing and contrasting views and information, and tolerance for uncertainty

At the center of social deliberative skill is a deep consideration and response to the opinions and needs of others, which involves the skills of reciprocal role taking and cognitive empathy (Kögler, 1999; Habermas 1971, 1999; Goleman 1995). However, this central capacity directly implies many others, as listed above. In matters of skillful behavior there is often a significant *performance-competence gap* (Chomsky, 1965; and see Vygotsky's (1978) concept of ZPD) in which individuals have relevant skills or knowledge but are not able to bring that knowledge to bear in the situation. In cognitive studies of task performance, the capacity to focus attention on the correct aspects of a problem so that one notices when a particular skill is called for is a critical cognitive capability. Thus our approach for improving the quality of online deliberation is to support brining attention to subjective and inter-subjective phenomena and questions, rather than to instruct these skills directly.

SOFTWARE SUPPORTING SOCIAL DELIBERATIVE SKILLS

Our research investigates supporting higher quality deliberations in online contexts by supporting SD-skills. We are investigating a number of deliberative contexts, including online dispute resolution (for e-commerce, divorce settlements, and workplace disputes), online civic engagement, and online discussion forums on topics of importance to participants (including college students). We are interested in supporting higher quality deliberations in both facilitated (with mediators, arbitrators, moderators, etc.) and non-facilitated online dialogues. We are interested in how a variety of scaffolding features in the

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may be…multivariate and systemic, and are embedded in processes [that involve non-simple information feedback loops]…If a person does not notice the complexity in which an issue is embedded, he or she will fail to consider many conditions, causes and consequences that may be significant for managing the issue (Kuhn, 1991)…Perspective awareness [is] the propensity to notice and operate with properties of one's own and others' perspectives" (Jordan, 2013, p. 41, italics added).

dialogue software can support increased use of social deliberative skills. For facilitated dialogues we are designing a Facilitator's Dashboard that will allow a facilitator, mentor, or moderator to get a birds-eye-view of one or more dialogues, and monitor key indicators to help decide when and where to make useful interventions.

Figures 1, 2 show the Mediem deep dialogue software, which was developed by Idealogue Inc. We are using it in our studies because it has a unique combination of features for scaffolding just the types of skills we are interested in. We have been testing the effects of its reflective tools in college classrooms and with positive preliminary results (Murray et. al., 2013a). Mediem includes four reflective tools. First is the Story feature, which gives participants a special place to say how the issue at hand relates to them personally, including relevant background information about themselves and "what is at stake" for them in the issue.
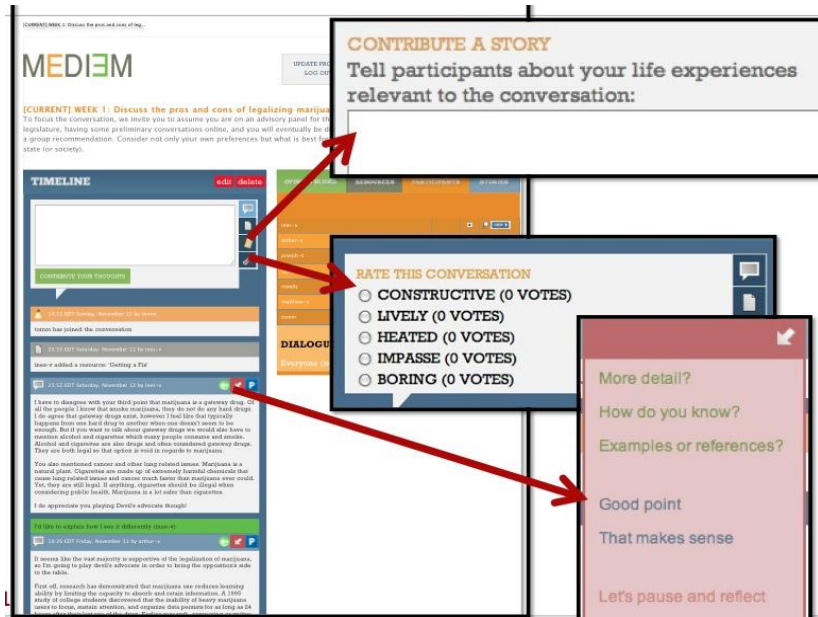

Figure 1: Mediem and Reflective Tools

Second is the Conversation Thermometer, a meta-dialogue tool that allows participants to rate (vote on) the quality of the conversation at any time. Third is the Contribution Tag feature, which allows participants to give brief comments on other's contributions. It provides a fixed vocabulary similar to the sentence starters (or locution openers) used in other dialogue software, but the tags remain attached to the target post rather than starting a new post. Figure 2 shows the Opinion Slider tools, which gives a summary view of where participants stand on an issue. It provides motivational, brainstorming, and group-awareness functions.
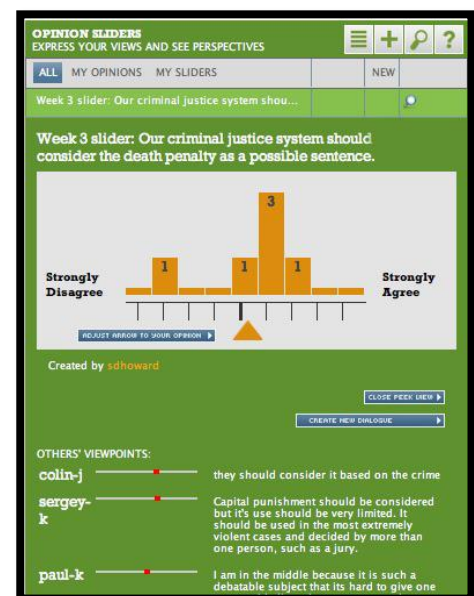
Figure 3 shows the Facilitator's Dashboard, which draws the discussion forum text data from Media through a custom API and provides a "birds-eye view" of the state and flow of online engagements (Murray et al., 2013b). We have piloted it with professional facilitators and also begun to pilot it as a feedback and "awareness tool" for participants. It has visualizations for participation levels, reply networks, and content or theme overviews—in both static and trend (timeline) visualizations. Pie and bar

Figure 2: Mediem Opinion Slider

charts show participation levels (number and size of participants) for individuals and subgroup demographics (by grade, gender, etc.). A social network diagram shows who is replying to whom. Timelines show trends in these same metrics. A Word Cloud graphically shows word frequencies.

The Dashboard contains software agents that watch for patterns or categories in the dialogue, and flag occurrences that reach a certain threshold (see Figure 4). The current version of the system matches a set of about 20 word categories found in the LIWC (Linguistic Inquiry Word Count) dictionaries including, pronoun types (1st, 2nd, 3rd person

singular and plural), assent, swears, positivity/negativity, anger, sadness, certainty, tentativeness, anxiousness, inclusiveness, and 'should words.' The tool can also locate within a discussion thread exactly where a phenomena is occurring, and show a color-marked-up version of the discussion text illustrating points of possible concern—see Figure 3B.

We have been building machine learning models using LIWC and CohMetrix outputs as features, to attempt to build computational models that will recognize deliberative skills and other indicators of dialogue quality (Murray et al., 2013c). LIWC (Linguistic Inquiry Word Count, Pennebaker et al., 2007; 2002) is a well researched but "shallow" dictionary-matching text categorization system yielding about 80 linguistic categories (e.g. positive emotion words, pronouns, and causation words—some of the categories are defined by hundreds of words in the dictionary entry). CohMetrix (Graesser et al. 2010, 2008) performs a series of deep-processing analysis (including semantic cohesion, latent

Figure 3: Facilitator Dashboard

semantic analysis, and reading complexity level) yielding about 100 metrics. Results are forthcoming. We will be incorporating the results of this deeper text analysis, plus social network analytics, into the Dashboard tool.

Research papers and results are available at www.socialdeliberativeskills.com/papers.
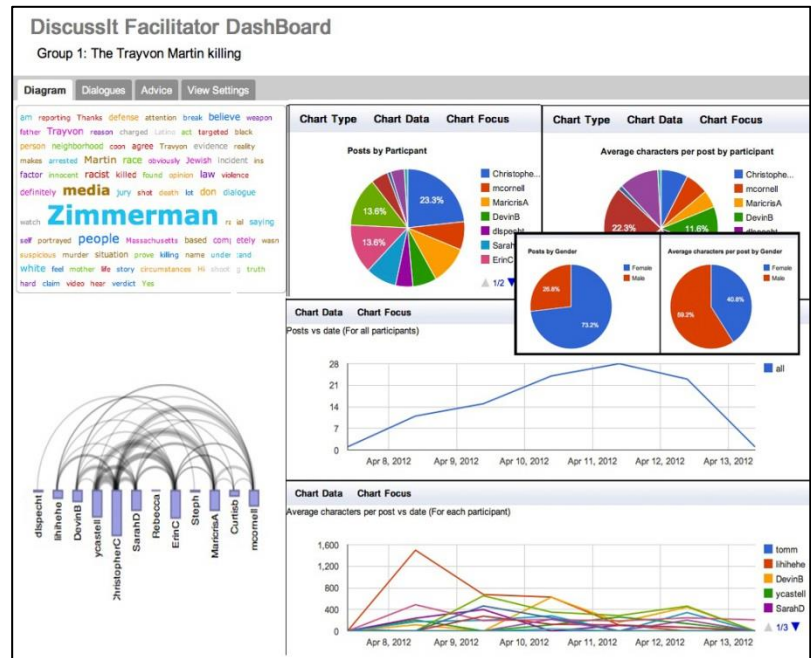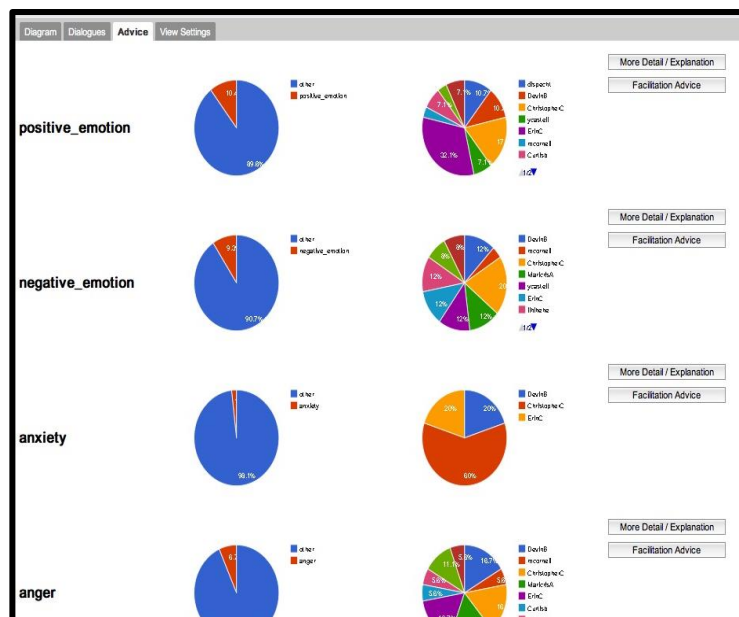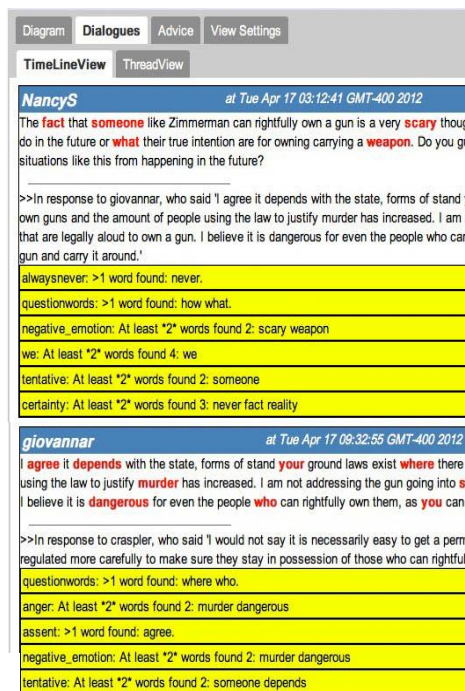

Figure 4 A, B: Dashboard Analysis Visualization, Text Pane

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