

Sustained, Open Dialogue with Citizen Photojournalism

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ABSTRACT

We describe an approach for supporting open and sustained public dialogue called Citizen Journalism. In this model, non-journalists, technology designers and professional journalists collaborate to design new technologies, learning relationships and broadcast channels for individual and community expression. We present the results of 2 week-long workshops in which young adults, learning technologists and professional photojournalists designed, shot and presented public photojournalism exhibits in both physical and web form. We present the workshop results as a series of “learning stories” that describe different expressive styles and emergent communities and the implications for the on-going design of handheld and web-based software.

Keywords

Citizen photojournalism, journalism, collaborative web software, dialogue, community debate, participatory design, professional practices, learning relationships, learning environments.

INTRODUCTION

We believe that sustainable development requires sustained and open debate. For people to create and manage new economies, they need to imagine, articulate and debate different visions of the future. New models of development are, in the end, implemented by individuals and communities and, without their representation, debates about individual and community growth become stagnant. As we continue to investigate the intersection between sustainable development strategies and new information technologies, we believe the most innovative and practical ideas will come from people we usually never hear from and emerge from communities we never thought possible. The question we consider here is: how can individuals and groups define the new debates critical for successful sustainable development?

CITIZEN JOURNALISM

We present an approach for public dialogue called Citizen Journalism. Our aim is to support individual expression

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through the use of journalism-like techniques that can reveal common concerns or “ad-hoc communities of interest” that would not normally be seen or which otherwise would not emerge.

We situate our investigation in relation to journalism because of the profession’s long and sometimes controversial tradition of simultaneously representing and challenging the opinions of the general public and decision-makers – of seeking to elicit and make public varying perspectives on issues of civic concern. Our goal as researchers and designers of computational tools and environments is to make explicit the developing and dilemmatic nature of this practice by bringing together non-journalists and professionals to create new tools and stories of common interest. In doing so, our hypothesis is that citizens will adopt and adapt a variety of journalistic skills for telling stories to broad audiences. We hope that this will be an opportunity for professional journalists to reflect upon their practice, their relationship with the public and how new technologies can support and further develop their profession.



Figure 1: Two examples of one form of public media display: the 2000 Paris Concord crash [<http://www.flightlinemalta.com/ConcordeCrash.htm>]

and the 1991 Rodney King beating [<http://www.cnn.com/US/9805/02/police.misconduct>] where amateur video was bought and used by mainstream media. Our goal in Citizen Journalism is to create mechanisms for more continuous, personally crafted and arguably less sensational, more lasting participation in different broadcast media.

Our goal is to create a situation in which citizens and photojournalists can engage in professionally situated, apprentice/mentor-like learning relationships that result in “communities of practice” [10, 15]. This multiply technology-mediated situation is not a formal pedagogical space but an informal learning environment where individuals of different ages, socio-cultural backgrounds and technical expertises collaborate to create and critique personally meaningful images. We work in the tradition of “constructionism” [12, 13] in which participants learn

about themselves, others and abstract concepts by creating, manipulating and sharing concrete “objects to think with.”

While we invoke notions of apprenticeship learning and communities of practice, our overarching goal is not to “teach photojournalism to novices” but to better understand how abstract notions of citizenship, audience, collective priorities and journalistic practice can be made concrete – that is, how they can become real and personal ideas in different ways for different people. We attempt to support non-journalists’ manipulation and development of such notions by providing means for capturing, annotating, presenting and discussing compelling images. Citizen Journalism is, in effect, an experiment to determine the materials, relationships and communications channels that best support on-going critical debate in and among individuals.

CITIZEN JOURNALISM AND SUSTAINABLE DEVELOPMENT

There are many challenges associated with investigating the claim that sustainable development needs sustained and open debate. Citizen Journalism focuses on three:

Supporting individual communications skills.

People need to develop rich sets of communication skills to articulate their opinions effectively. Without explicitly developing tools and relationships that can support a wide diversity of individual communications styles, the rich diversity of opinions needed for practical development will never be seen.

Helping to create everyday, emergent aggregates.

Development in diverse contexts usually happens most effectively when different voices are heard and accounted for. A critical challenge is learning how to navigate among these perspectives – recognizing patterns of opinion and experimenting with conceptual relationships that can both preserve diversity and ensure equality. A central idea in our project is that innovative development occurs as people creatively construct and experiment with relationships among opinions and that the richest patterns are those that emerge in everyday settings and are instantiated in everyday media. Our hypothesis is that these aggregates are different in both form and content for nearly every issue an individual or community may be considering and that the most interesting debates emerge from aggregates never seen before.

Representing diversity of perspective in contexts and forms. No one really understands exactly how, when and why individuals develop opinions about complex, ambiguous and perhaps dilemmatic issues [1]. There are likely as many different ways of developing opinions as there are people. The issues most relevant to people will be best articulated through a variety of thinking and expression styles.

To investigate these challenges and the assertions they carry, Citizen Journalism considers the different *technologies, relationships and broadcast channels* required to support equitable collaborations among technology designers, non-journalists and professional journalists as they work and learn together.

PHOTOJOURNALISM AS A DILEMMATIC PROFESSION

We choose to focus our first Citizen Journalism experiment on photojournalism for two reasons. First, photojournalism is an inherently dilemmatic practice: the “whole story” can never be told with a single image or even an entire photo essay. It is during conversations about whether a particular image or edit accurately communicates a perspective that people begin to articulate their assumptions and stances.

Second, we believe that photojournalism offers a different kind of accessibility (compared to text-based journalism) for letting communities of people of different ages, backgrounds and literacy skills create and critique dilemmas. People are familiar with taking snap-shots and viewing images in a variety of media but they rarely practice complex skills associated with visual composition and critique. Photojournalism is a “low-threshold, high-ceiling” domain in which to experiment with how best to support open public dialogue.

Indeed, photojournalism practice sits at the cusp of expression and communication. As a citizen photojournalist adopts the camera’s visual perspective and literally frames an image she is also creating a conceptual frame for communicating a perspective to an audience who may or may not be explicitly considered. We claim that the technical skills associated with composing an image cannot be cleanly separated from the rhetorical skills associated with constructing an opinion, and that individuals develop both competencies as members of hybrid technical - rhetorical communities that are ad-hoc and informal.

The notion of learning community has precedent in the consideration of professional development. Schön [16] considers most professional practice to be a personal but socially developed ability to recognize and manage different kinds of complexity. Professionals rarely meet the classic problems described in formal education related to their discipline and quickly adopt techniques for dealing with the inevitable lack of standard practice [e.g. 5]. For this reason, we choose to support apprenticeship learning between non-specialists first learning about a profession and professionals refining their personal styles. While a notion of “apprentice/mentor” may seem to imply an imbalance, both members of the relationship are in fact learning from each other.

Our first investigation focuses on the design and use of new tools for photojournalism fieldwork and on-line, collaborative and critical construction of images and photo-essays. We are currently developing software for a Handspring Visor™ handheld personal digital assistant

(PDA) with an eyeModule-2 Springboard digital camera and software for a collaborative website using the open-source web development package OpenACS [11].

To guide the development of both pieces of software we designed a workshop to better understand how young adults and professional photojournalists could think about photojournalism together and how collaborative visual storytelling might be supported in new ways. We present here the results of the workshop as they help us define the interaction and interface designs for both the PDA and website software.

RELATED WORK

There are many related projects concerned with citizen representation, on-line government and relationships among new technologies, journalism and communities. An extensive analysis of these efforts is unfortunately beyond the scope of this paper but we review here a collection of timely projects and thinking that have helped shape our own approach.

IndyMedia [7] is a collection of ad-hoc media organizations and stringers who gather and publish news (mainly in the form of pictures) from around the world. While IndyMedia provides an excellent alternative source of news on many topics of world-wide interest, their publications tend to have activist, anti-corporate and anti-globalization focuses and there is little acknowledgement of the role of the journalism profession or of apprenticeship learning in developing citizen journalists and perspectives.

Weblogs [e.g. 2] are an increasingly popular form of individual expression in the form of massively hyperlinked, diary-like web pages. While there are some examples of field reporting for broad audiences through weblogs [8], they tend to be personal and reflective text-based publications. See Lasica [9] for a forum discussion of weblogs in relation to journalism.

Public Publishing is a long-running project at the University of Tampere, Finland, headed by Professor Ari Heinonen and focused on new ways to support online communities traditionally defined by geographic boundaries. Heinonen [6] describes online journalism's potential for "horizontal communication" in which audiences have greater access to sources previously exclusive to professional journalists. He also highlights the impact of the Internet on journalists' professional development and warns that the "journalistic institution and the professional journalist are here withdrawing very much into the background ... the journalist's traditional professional skills are quite simply not adequate for such tasks as getting an online conversation going." The Citizen Journalism approach uses this warning as a starting point for our apprenticeship learning approach in which professional and citizen journalists may further develop notions of "horizontal communication" and technology-supported professional development.

Silver Stringers and the Junior Journal [17] are two long-running projects from the MIT Media Laboratory in which communities of traditionally unheard citizens (the elderly and young adults) create on-line publications with the help of new technology and professional journalists. Citizen Journalism uses these projects as inspiration and starting points for considering how to support journalistic fieldwork and the creation of non-traditional "communities of interest" that may be composed of, for example, multigenerational or multicultural participants who may previously lack common languages or technological expertise.

Radio call-in shows, letters-to-the-editor, on-the-street interviews are examples of traditional means for involving citizens in the news. While this is a kind of participation, the issues are largely defined by producers and reporters and there is an implicit power relationship between the journalist/host and the citizen/participant. By explicitly situating Citizen Journalism in the context of professional development, we assert that in good participatory journalism, journalists learn, too.

Google News [4] is a web service that automatically polls and coheres large collections of on-line international news sources. Google News successfully creates a space for the presentation of diverse journalistic voices. However its diversity and quality depends both on the availability and reliability of its professional sources, and on the nature of the publicly inaccessible algorithms that determine the coherence and salience of the news items included.

ComNET [3] is a New York City-based project in which community representatives use handheld computers to gather and annotate information about urban routes and street conditions. The project is a creative answer to the problems of decontextualized community surveys and confusion about which government bureaucracy to approach with an issue. Although it is possible for representatives to take pictures with the handheld computers, the data are largely quantitative, gathered by specific community representatives and designed to address pre-existing categories of issues.

Rhetoric Theory can offer useful insights into how to individuals communicate with audiences that cannot be seen, heard or consulted in real time. While arguably an imperfect model of the general public, we draw on the notion of a "universal audience" [14] to help develop Citizen Journalism's approach to authorship for a varied and often unknown audience. Tindale [19] articulates four rhetorical aspects of audience we find particularly helpful:

1. Audiences are a complex mix of individuals for whom a specific argument has been designed, individuals who happen upon an argument and individuals with diverse communicative competencies. When considering Citizen Journalism's authors and

audiences and authors-as-audiences we need to be aware of different communication styles and abilities.

2. Audiences change during the course of an argument as they construct their own interpretations of propositions, supporting evidence and the author's perspectives. When considering Citizen Journalism tools, we need to remember that audiences may better understand arguments they have seen develop than those that have merely been presented in a final form.
3. Audiences are not passive but play an active role in argumentation, contributing assumptions to the reasoning and presentation of a particular message (for example, as with the rhetorical enthymeme). When considering Citizen Journalism's collaborative activities, interpretations and developments of visual arguments may be distributed across multiple authors, audiences, times and places. The formal structure of a traditional argument may be distributed across these media and contexts.
4. Audiences tend to evaluate arguments not directly in terms of their internal logical structure but in terms of their impact. When considering Citizen Journalism, recall that the *ethos* of rhetoric, for example an image's emotional appeal, is an important aspect for audiences and that different authors will have different aesthetic and ethical stances that contribute to their interpretations of an argument's "impact."

On September 11th, 2001, a new kind of Citizen Journalism briefly appeared. While most people were watching one of three or four mainstream newscasts, an anonymous individual captured a unique perspective while exiting one of the World Trade Center towers.



Figure 2: Images taken and uploaded with a laptop, webcam and wireless Ethernet by an anonymous individual exiting one of the World Trade Center towers on September 11, 2001.

[<http://photography.about.com/library/weekly/aa091401a.htm>]

Using a laptop with access to a still-functioning wireless network and a webcam, this individual uploaded to a free Geocities account images of his descent. The images are raw and unedited, and offer a perspective on an unfolding story of global importance not provided by the mainstream networks.

While this example is unique in both the extent and importance of the story, it does highlight the role new technologies can play in supporting the creation and broadcast of perspectives not normally seen.

PHOTOJOURNALISM WORKSHOP

We began this paper with an assertion that sustainable development requires sustained and open debate. Investigating this general claim is our long-term goal. Our nearer-term goal is to better understand the features of Citizen Journalism – the *tools, relationships* and *channels* – that might help these debates develop. As an early step, we brought together 21 children aged 11-14 years and 4 professional photojournalists for 2 one-week workshops. Below we describe the workshops and their results with respect to the on-going development of Citizen Journalism technologies. See Ananny & Strohecker [1] for a more complete description of the workshop design and its research goals.

The design and implementation of the workshops was a collaboration among Media Lab Europe, The Ark (a children's arts and cultural center in Dublin, Ireland) and Loyalist College Canada's School of Media Studies' Photojournalism programme. While each workshop was different in tone, both weeks followed the same general structure. We recruited the 13 youths for the first week through the Ark's general summer programme and the 8 youths for the second week from a community in Dublin labeled "disadvantaged" by the Irish government.

We intended the workshop structure to be as fluid and dynamic as possible as children worked to prepare final exhibits for a gallery space and the Internet.

The overarching goal was to provide a diverse set of materials and activities with which the young adults could engage with tools and techniques of photojournalism. Our goal was to provide many "ways in" to photojournalism, emphasizing the diverse set of tools (both traditional and digital) and skills used by professionals. We placed particular emphasis on the importance of creating finished products for public review by different audiences and on creating compelling photo essays through open working environments that stressed group critique, apprenticeship learning and iterative design. The general structure of both weeks was as follows:

Monday: participants made pinhole cameras and used them to shoot images, experimenting with, for example, exposure times, aperture openings, paper size and placement and the effect of subject movement on the exposure. Participants then developed their black-and-

white images using traditional darkroom chemicals and equipment.



Figure 3: Building and shooting with the pinhole cameras. (Photo credit: Frank O'Connor)

Tuesday: group critique of pinhole images; review of photojournalism portfolios and introduction to the 'photojournalism assignment'; introduction to 35mm point-and-shoot cameras; fieldwork with 35mm cameras to interpret and shoot photojournalism assignments defined by professional photojournalists.



Figure 4: A young photojournalist and workshop participant talking to a subject. (Photo credit: Frank O'Connor)

Wednesday: group critique of Tuesday's assignment images; continued review of professional photojournalism portfolios; scoped and planned their own photojournalism assignments; fieldwork with 35mm cameras to interpret and shoot self-designed photojournalism assignments.

Thursday: group critique of Wednesday's self-designed assignment images; began preparation of week-end gallery exhibit and web exhibits (included selecting images, assembling photo essays, writing image captions, cropping and resizing images from Monday through Wednesday with PhotoShop™ and traditional cutting-pasting techniques, preparing websites of images)

Friday: continued preparation of gallery and web exhibits; presented images at public gallery exhibit.



Figure 5: Opening of public gallery exhibition at the end of the first week of workshops. (Photo credit: Frank O'Connor)

WORKSHOP RESULTS

The workshop results are presented here as a series of vignettes or "learning stories." Our goal is to trace the software design guidelines from their origins in the observations and analysis of the participants' photojournalism experiments during the two weeks of workshops. In several of the vignettes, some tensions the participants expressed are highlighted to demonstrate the value of articulating and expressing dilemmas through photojournalism.

Personal and Shared Ownership of Images

Observations:

In both weeks, participants expressed deep senses of personal ownership and responsibility for their images and were concerned with ensuring that the image and its story were represented accurately. But participants were also interested in experimenting with how their images combined and complement with their peers' images. And as participants shared images they discussed how different people had interpreted assignments differently, frequently saying things like "I was doing the theme Colours but a lot of mine are actually better for her People theme." In short, participants seemed both proud of their individual photographs and eager to experiment with how they might contribute to collective photo essays.

During group critiques, individual conversations and while preparing and presenting exhibits, participants tended to describe not only the content of images but other information not directly represented in the photos (e.g. what had happened before or after the image was taken;

whether the image addressed the assigned or self-designed theme; something one of the people in the picture had said; how a particular picture was not exactly what they had *really* wanted from a particular scene). In thinking about how to present her images, one participant remarked that “really, to tell the whole story, I need to be with the picture or make sure it was with other pictures that were my theme, too.” Participants seemed to be expressing both pride and frustration in the different methods of exhibiting images.



Figure 6: A young photojournalist and workshop participant presenting her work at the end of the first week of workshops. (Photo credit: Frank O'Connor)

(In her book *How I Learned Not to be a Photojournalist* [5] long-time photojournalist Diane Hagaman’s articulates a similar feeling: “I eventually began making photographs that contained many references to ideas contained in other photographs – qualifications, expansions, and elaborations of those ideas – and single photographs could no longer communicate my full meaning. This way of working with photographs uses the novel, rather than the oil painting, as its model. The individual image is not the conceptual unit. The conceptual unit is the combination of many images.”)

Interface and Interaction Design Implications

Such observations suggest different design strategies for representing both personal and cooperative methods of critiquing and displaying work.

1. To support both senses of personal ownership and serendipitous connections among images from different photojournalists, there should be no private, closed or exclusive areas in the collaborative web software. Participants will have individual workspaces in which their images can be stored, edited, captioned and displayed but all areas of the website community will be open to all participants. This open nature of the website (as compared with most systems that value strict permissions and groups) is intended to encourage an atelier style of work in which participants see photojournalistic images at different stages of development.
2. How and when individual exhibits were constructed, credited and combined with others’ was a major

concern. The web software should support at least three different kinds of public exhibitions:

Personal Exhibits: photo essays created from a single individual’s images. The purpose of this exhibit is to support the creation of personal photo essays in which participants have complete control over the design of their exhibits.

Collaborative Exhibits: photo essays created as participants browse all images. These are interpersonal collections intended to support the creation of aggregates across individual photo essays and to reveal themes and perspectives not adequately represented with a single participants’ images.

Programmed Exhibits: photo essays created by computer programs that periodically query photos and meta-data across all personal and collaborative exhibits. The rules on which these programs operate will be transparent, accessible to all participants and will operate on each photo’s metadata (e.g. photojournalist; time, date and location of shoot; relations with other photos; caption text) and all participants will be able to program and create different aggregates.

3. Each photo should have a history that traces the different exhibits in which it appears. This history would provide participants a way to retain a sense of authorship over their images while also providing a way to see how their image contributes to and affects others’ photo essays.

By offering three kinds of open-ended and configurable exhibits, it is hoped that the Citizen Journalism system will provide different ways for people to create individual exhibits and photojournalism communities. People interested in deeply personal expression may focus on creating personal exhibits; those interested in surveys across individual collections may concentrate on authoring photo essays using other people’s images but perhaps captioning or framing images for their own purposes; still others may be more interested in “programming exhibits” by writing rule-based programs that survey the meta-data of others’ images.

Ideally, as people use, talk about and “debug” the different kinds exhibits new issues and perspectives will emerge and discussion will ensue about issues such as (but not limited to) image integrity, professional practice, visual storytelling and the role of technology- and people-generated aggregates of issues.

An Image Needs to Develop Trust

Observations:

Throughout the workshop, the issue of trust arose in different ways. The photojournalism professionals emphasized that their reputations as respected and

professional communicators relies on sensitive and ever-developing relationships with editors, publishers and the general public.

Their images are their principal means of both communicating stories and preserving this trust. If they were to routinely manipulate photos or adopt obviously biased stances, their credibility with their employers and audiences would be damaged. The photojournalists wanted to emphasize this with the participants and were originally uncomfortable with the extent to which the youth were manipulating images, especially with digital tools. After much discussion about censorship, the photojournalist's profession, image integrity, the purpose of a caption and the ability of photos to capture what was "really" seen, several approaches to addressing the issue of trust emerged. These discussions first began in response to the capabilities of tools like Photoshop™ but continued in relation to physical cropping and even (importantly) where the photographer had pointed the camera in the first place.

All participants agreed that it was acceptable to alter images in certain ways but there was little consistency among the individual cases. Everyone who altered a picture felt there were justifiable reasons for manipulating the image. The group agreed that photos that had been manipulated should include explanations about how and why the image had been manipulated. In essence, trust of the image and the photojournalist was established through a process of open dialogue, not the creation of strict rules.

Interaction and Interface Design Implications:

A critical outcome of these discussions was an insight into how senses of integrity can develop despite differences in expertise and capabilities of tools. Images and photographers earn trust by letting peers and audiences see the process by which an image arrives at any particular state. The participants seemed to be expressing a desire to know the "history" of an image including the collection of alterations made to it. That history will be instantiated in the software design in two different ways:

1. **"Image layers"** that can be peeled back at any time to see how an image and its caption arrived at any given state and what participants contributed to particular image manipulations. Such transparency in the interface provides the ability to develop trust for the image and the individuals who contributed to its development.
2. **"Playable Images"** that are, in a sense, macros of an image's evolution. Participants could play an image to see how it developed across time and among individuals. Such transparency may let people reflect upon and learn about how visual arguments develop, what manipulations they find acceptable and how different people can contribute to the development of a visual argument.



Figure 7: Group critique of participants' images.
(Photo credit: Frank O'Connor)

In providing these mechanisms for representing and experimenting with an image's history, our goal is to support ways for people to think about the integrity or "truthfulness" of an image as well as a way for people to develop their thinking about the diachronic processes that lead to the creation of expressive artifacts. These processes involve reflection on one's own thinking and on others' thinking.

Think-Think-Shoot and Shoot-Shoot-Think¹

Observations

Participants had many different approaches to both fieldwork and post-production exhibit preparation. Some participants carefully planned their shooting goals ("assignments") in relation to the suggested or self-designed theme. These participants talked in great detail about what they would try to find and what they would shoot, where the best shooting location would be, how each shot related to their theme. They also recorded relevant information about an image including location, photo subjects and time of day. Other participants seemed to prefer a more reactive and free-form approach. They interpreted an assignment broadly and seemingly inconsistently.

¹ We thank Frank O'Connor of Loyalist College Canada for articulating this distinction.



Figure 8: Different shooting styles of different participants emerged throughout the week. (Photo credit: Frank O'Connor)

They seemed to value reacting to people and situations and skipped among different interpretations of themes. Some participants would also put down their cameras, preferring to talk with their peers and subjects and explore their surroundings, often without taking a single picture for quite some time. These style differences extended to the preparations of exhibits. Some participants carefully crafted each edit, caption and image arrangements. Others edited their images little instead seeming to prefer to explain verbally why individual pictures did or did not suit a particular theme.

In essence, there were at least as many different ways of designing, interpreting, shooting, editing and presenting the photojournalism assignments as there were participants. While all participants exhibited elements of almost all styles, we observed a crude but helpful distinction in styles: *think-think-shoot* (careful planning and preparation of assignments and shots prior to taking pictures) and *shoot-shoot-think* (quick reactions to people, places and events in the field followed by later editing and interpretation). Our goal in designing the Citizen Journalism system is, as such distinctions arise, to use them as starting points for how to support different styles of learning about, creating and presenting visual stories.

Interaction and Interface Design Implications:

Our goal is to support multiple styles of photojournalism, as partially characterized by the think-think-shoot and shoot-shoot-think styles. We use this distinction as the

starting point for distributing aspects of planning, shooting, captioning and editing a photojournalism assignment between the handheld PDA software and the web-based collaboration software. Our goal is, in our designs, to recognize that fieldwork and postproduction are two different and complementary aspects of preparing a photojournalism exhibit and that individuals approach these two phases in different ways.

1. **Fieldwork with the Handheld PDA:** along with the core image-capture capability, provide simple and unobtrusive mechanisms for creating “first drafts” of captions in the field and simple image cropping. These capabilities should not be mandatory for each image, nor should they interfere with the core act of shooting images and reacting to surroundings. In essence, these capabilities should be sufficiently powerful to support field reflections of the kind characterized by the think-think-shoot style but sufficiently unobtrusive to let those with shoot-shoot-think styles react quickly to the people, places and events around them.
2. **Postproduction with web-based software:** along with basic file-upload and handheld synchronization capabilities, provide a set of collaboration tools that let all participants: write and edit captions of their own and others’ images; crop and resize images; assemble and reassemble photo essays with their own and others’ images, experiment with placement of images in relation to each other and to captions; track image histories and layers; and write rules for programs to generate photo essays based on image meta-data. These web-based capabilities are intended to support synthesis and reflection activities best accomplished through collaboration and experimentation. Perhaps participants who seem reluctant or cautious during fieldwork would become more free-form and experimental with creative postproduction activities and perhaps participants who seem to shoot reactively in the field would become more reflective and contemplative during on-line collaborations.

By identifying different approaches to photojournalism, our goal is to distribute system features among tools and activities that best support different individual thinking and working styles.

CONCLUSION

In a recent Oxford Amnesty International lecture, Senior Vice President and Chief Economist of the World Bank Joseph Stiglitz argued that, even in democratic societies, there is a pervasive secrecy that prevents the public and a free press from being informed about public policy debates and, in turn, this secrecy stunts economic and social development [18]. We use Stiglitz’s observation as an inspiring starting point but broaden his notion of an informed public: our central concern is how to inform both the general public *and* government and industry decision-

makers of the priorities of individuals and communities who, in the end, will implement and sustain different approaches to development.

In considering the challenge of supporting the open and sustained debate necessary for successful sustainable development, we presented an approach called Citizen Journalism. Our model focuses on the technologies, learning relationships and broadcast channels needed to support citizens, technology designers and professional journalists as they work together to uncover issues and perspectives not normally seen. We reviewed a workshop in which professional photojournalists and young adults used a variety of tools and activities to create public exhibits and debating mechanisms for ensuring both personal expression and journalistic integrity. We discussed a number of workshop findings and how they impact the design of new handheld and web-based collaboration tools intended to support open and sustained dialogue through Citizen Photojournalism. Although this work is in early development, our goal is to continue this participatory research and design approach, leading to new ways for citizens and journalists to guide and think about the development of their own and their communities' opinions.

As one 13-year old workshop participant said, "with photojournalism, you see the world differently – you notice things you didn't see before."

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