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THE EVOLUTION OF ICT4D

Content, Context, and Process

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Shirin Madon has contributed to the field of ICT4D and witnessed its growth since its first formation days at the 1989 IFIP[1] conference in India. As a Professor of Information and Communication Technologies and Socioeconomic Development at the London School of Economics and Political Sciences, Shirin's teaching includes an interdisciplinary Master's option entitled ICT and Socioeconomic Development, which targets students from international development, information systems, and other degrees.

Shirin Madon is currently engaged in two significant research projects. The first project focuses on primary healthcare in India, where she studies the emergence and evolution of community health governance structures established by the government in 2008 at the village level. Her research particularly hones in on their impact for primary healthcare, with a special focus on sanitation, nutrition, and hygiene. Recently, she is co-authoring a paper on community health resilience, examining the impact of the COVID-19 pandemic in 51 villages in South India. The second research area delves into digital innovation in the humanitarian sector based on research conducted with the United Nations High Commissioner for Refugees (UNHCR) and the International Federation of Red Cross and Red Crescent Societies (IFRC). Here, Shirin explores how new forms of digital technologies used for cash transfer assistance enable organisations in the sector to communicate. The project also investigates the challenges that arise when actors have different strategic priorities for how gathered data is used to assist vulnerable communities.

In our interview with Shirin, we delved into the evolution of ICT4D as a scholarly field, its main debates, challenges, and future research directions. Her insights, based on her extensive experience and research, are invaluable in situating ICT4D in its historical and sociopolitical context. We firmly

believe that this generational knowledge transfer and reflection on the career trajectory of a female scholar from the Global South will play a crucial role in shaping the scholarship in an inclusive and critical way.

How would you define ICT4D, and what do you see as the distinctive characteristics of this field of research?

We are involved in ICT4D as a field of research, but it's also a field of policy-making and practice. Obviously, there are specific narratives within international agencies about ICT4D, or as they sometimes call it, digital development. I think ICT4D is in this overlapping area of interaction between scholarship and the deterministic position of development agencies about the role of technology in processes of development. We do our research through a sociotechnical lens when we talk about the infrastructure being embedded within situated practices, institutional norms, and policy frameworks. Similarly, in ICT4D policy and practice, there are frameworks and theoretical assumptions too. But these tend to be more prescriptive. It's more about "how" and "solutions". However, we try to learn from each other. I'm currently doing research with the International Federation of Red Cross (IFRC), which has a full unit for digital transformation where humanitarian actors are evaluating the opportunities and challenges of digital cash programmes. Their evaluation might be slightly different from the way academics understand sociotechnical assemblage or infrastructure based on the evolution of ideas in the information systems field. But still, they have their own distinctive characteristics and use different words.

I think that connects really well to our next question, which goes back to the history of ICT4D as a field of research and, as you said, as a way of policy-making and practice. Where in time and space would you locate the "birth" of ICT4D as a field?

Definitely in the 1980s as an offshoot from the field of information systems. I would also say a group of scholars, such as Professors Frank Land, Geoff Walsham, Subhash Bhatnagar, and very many others who held a more humanistic view of systems, formed that early sociotechnical approach. I still remember the first IFIP 9.4 conference in 1988 in New Delhi. I hadn't even started my PhD then, but I was intrigued with this narrative and discourse, which was coming from policy and practice. So, these policy briefs and documents were always coming out, with little arrows and boxes and carrying that optimistic theoretical notion of technology's role in processes of development.

What were the main distinctive features of ICT4D in its early days? What were the main topics of interest back then?

I still remember sitting there next to Geoff Walsham; I was a student and terrified! You know this professor is sitting next to me, and I felt I had so much to learn! To be honest, I felt a bit intimidated. Anyway, the presentations were very much about the potential of ICTs in different sectors. It was

about output, less about the outcome. But this is understandable because, at the time, a lot of pilot projects had been introduced and launched. There was very little we could say about the long-term effect. So it was all about resources, training, and whether information systems should be designed in a top-down fashion or be decentralised – i.e. all issues that had to be thought through in order to accommodate the fourth-generation tools, which were deemed a big thing then. I remember sitting through many presentations on the empirical details of organisational challenges, not so much about connection to macro-level policy and institutions or about the lived reality of the technology at the level of operation. ICT was a new thing coming to many low- and middle-income countries. The topics of interest were directly related to the major themes in information systems, such as the productivity paradox. The idea was that technology on its own cannot improve productivity in either the commercial or public sector unless you adapt your organisational function, the IT function, and IT alignment concurrently. All these things about aligning with organisational objectives had already entered the limelight in mainstream information systems by that time. Consequently, the ICT4D early conferences spoke a lot about that.

We know that Walsham has a taxonomy of different periods of ICT4D; but based on what you just said about the first IFIP conference, what do you think were the main "phases of evolution" in the ICT4D history?

There are many different ways we can carve out the phases, but I was thinking more about the terms "content", "context", and "process". What I mean by that is if I sat through the initial IFIP 9.4 presentations and the discussions we were having with Frank Lnad and Geoff Walsham during my PhD, a lot of it was about the affordances of technology and different visions, both utopian and dystopian, of providing solutions for (in my case) rural development. So it was about what could be changed because of what technology can or cannot do. It was very much about the content of change but not how that change was occurring within a specific contextual setting. The second phase was Geoff Walsham made the important point that the ICTD field of study needed to focus more on the "D". Maybe this was around the mid-2000s. Technology was changing as web interfaces and online forums were becoming widespread. Technology was also becoming much more personalised, and it was the early stages of social networking. Around this time, there was a greater focus on connecting ICT implementation to development perspectives and some important journals started to publish articles with this aim. While the first phase of ICT4D entailed mostly publications in information systems journals, the second phase had that added momentum of addressing the "D". The Information Technology for Development journal started in 1986. By the mid-2000s, there were more and more ICT4D articles in mainstream development journals and also in management journals. When I moved to the International Development department at the LSE in the 2010s, many of

my colleagues said to me, "Oh, you're from information systems. So why you think technology can promote development". They automatically assumed that I had adopted such a deterministic position. I spent the first few months trying to justify my "critical" position on ICT4D – i.e. that I was more interested in unpacking the underlying assumptions behind technology deployment rather than trying to prove that technology was the solution to complex and deep-rooted structural problems. By this time, ICTD scholars, who grappled with ideas of culture, stages of development, bottom-of-the-pyramid approaches, and the meaning of human development, placed focus on the context within which technology was deployed.

The third phase of evolution in ICT4D has more explicitly devoted attention to process. There was a growing appetite among ICT4D scholars for longitudinal and processual methodologies to understand how technology was shaping development outcomes. We cannot say anything about outcomes unless we follow and observe interventions and learn about how the technology is evolving and continuously shaping the context within which it is embedded.

A lot of the material we read now in ICT4D journals focuses on analysing institutional elements that affect ICT interventions and how technology can trigger actions that, in turn, can influence institutional change. In this way, ICT4D scholars now have a chance to engage in policy formulation, implementation, and evaluation.

We find your categorisation of these phases in content, context, and processes very interesting. Can you elaborate on the third phase? What do you mean by the process?

We know that macro and micro contexts are shaped by structural conditions and issues, but there is a dynamic between them. I have tried to understand the processual aspect of this dynamic. Often, it appears that nothing is happening and that either technology has failed or there is a big design-reality gap. The existence of this gap is because of a myriad of different things, such as technology usage, digital divide, conditions of underdevelopment, and perpetual obstacles, which cannot be resolved because they are contingent on external factors. For example, they may be related to geopolitics or dimensions that have nothing to do with ICT interventions. To take a step back and try to understand these issues one might question if the problem at hand can be even partially addressed through non-ICT interventions. This is something that I have come across a lot through my work on primary healthcare where the underlying issues may require attention: policy, human resources, community learning. We, as ICT4D researchers need to be cognizant of the fact that ICT interventions do not exist in a vacuum – they invariably sit together with other interventions which together lead to developmental outcomes.

Would you say that the field of ICT4D is more politicised now in the sense that it pays more attention to non-ICT factors that play a role in this entire field?

Yes and no. That's an excellent question. I would say yes, because it highlights this deep-rooted impediment as a structural issue; but I also think that the way of addressing them is still, after all these decades, about what technology can achieve. My argument, at least from what I've seen in the primary healthcare sector since 2010 in South India, is that I do not think that is the right approach. I think it takes the attention away from the essential and underlying improvement that is needed.

In this specific case, non-accountability of the primary healthcare sector has always been one of the biggest problems. However, accountability can mean many different things. The government wanted to focus on establishing social spaces at the village level so that a form of accountability – more than just reporting – could take place. The government wanted to introduce a peer-to-peer kind of local accountability environment at the village level for primary healthcare. It initially tried to do this by introducing computers in primary health centres, but this only served to reinforce accountability upwards in terms of routine reporting. Our emphasis was more on studying accountability formation among the civil society people, political representatives, and functionaries on the ground. We wanted to see village committees trigger capacity-building. It is only now, in 2023, after 13 years, that my colleague and I have reached a point where these village committees are being recognised by health agencies as important grassroots entities and understand their value for overall improvements in primary healthcare.

You have already discussed the ways in which ICT4D today is different from its early days. What do you think has changed in terms of the theories and concepts used in the ICT4D field?

The sheer speed of digital innovation makes the scope of what can be achieved immensely different from that even 10–15 years ago. We have digital platforms in critical domains such as health and crisis management with their particular logic for value creation and value capture for all sorts of organisations. As a result, I think we need a much greater focus on how these technologies affect governance issues. Much more can be done than the current literature on technological risks. Particularly when it comes to datafication, for example, who is participating in the creation of data sets, or when it comes to machine learning and artificial intelligence, how these technologies interact with development processes. I think we really need to push ahead with criticality on these issues.

In this book, we are contemplating several aspects of what we term critical ICT4D. What potential do you see in a critical approach to the field? What do you think such an approach can uncover? What limitations do you see in such an approach?

At one level, we have tried to be as critical as we can from the 1980s and 1990s. I think one of the limitations, at least what we think here at the London School of Economics, is sidestepping the issue of not understanding or

having a very naive understanding of the interfaces which connect users in the new platform architectures. We are not data or computer scientists, but we need to know more because design affects how the platform is governed and, ultimately, how vulnerable communities could be protected. So I think if we are serious about asking questions about human rights implications, data protection, and privacy, we need to understand better the technology, its design features, and the functionality it affords.

Could you give us an example from your work on digital platforms in refugee management?

With the work on the refugee identity platforms, we were able to understand a lot about the governance aspects of the platform from our respondents. The UNHCR, as the platform owner, told us about its uncertainties regarding the balance between standardisation and control, which is needed when you are the global player for refugee management. This was the very reason why it had a platform in the first place and why it wanted to open it to market players and also to refugees. People within the organisation had a good understanding of the problem but not how the technology could enable a solution. For example, they were unable to articulate what are the downfalls of choosing one particular design route as opposed to another. As development and humanitarian organisations partner up more and more with tech companies, financial service providers, and mobile network operators, there is an ever more pressing need for the focus to be on how the technology orchestrates the coordination between different actors and represents a new form of governance which so far is poorly understood.

You mentioned how these technologies, new designs, and the platformisation of aid are affecting ICT4D now. I want to go back to the "D" and ask what you think has been the effect of the transformation of development discourses in the field of ICT4D. We started with specific understandings of development in the 1980s that have been evolving since then. How does this evolution of development theory influence the field of ICT4D?

Having lots of interactions with students from development studies and development management, I have a feeling that the grand theories of development, such as modernisation, dependency theory and human development approaches, which are still there in textbooks and taught to students, are still relevant. However, these high-level theories need to be complemented by middle-range theories that take into account the specificities of ICT and its affordances. Today, we have many actors, systems, and technologies coming together. We have IoT working with legacy decision support systems of the past, but we lack the understanding of how these systems, technologies, and actors interoperate. A consultant at the IFRC told me that he does not understand the way actors and technologies interoperate. It is not as if they are waiting for us as academics to teach them what interoperability means. They know that it is an issue, but it is too complex for them to penetrate. They will

work away at trying to introduce technologies as part of the current theory of change in both the development and humanitarian sectors. However, those within the sector seldom have the time to reflect on the sociotechnical nature of ICT – often, the reality is that the cost of escalation is too big to pull out of major ICTD interventions. Nevertheless, they are cognizant of the issues at stake as they work towards providing technology-mediated solutions to improve the efficiency and effectiveness of delivering assistance to vulnerable communities.

When I teach human development, it is always interesting to show that the same people who theorised the idea, when forced to make indices to measure human development, fell back to old quantitative patterns because it was very difficult or, as you said, too abstract to use human development in a practical policy-making context.

Yeah, I think it is difficult, especially if we link it to the notion of process. I think development as a field or discipline is really about evaluation. We are evaluating human progress in some way. If we want to do this in a more human development way, using concepts such as capabilities approach, conversion factors, or human agency, we need to engage with the long term or at least the medium term. This cannot be done in a practical sense unless institutions and organisations devote the same amount of energy and resources to the necessary learning loops. In the humanitarian sector, we all know that disasters do not just cause economic costs but also social, psychological, and other costs. Especially in a poor country, where accountability structures are dysfunctional, in the short term, the political takes precedence.

I think you already mentioned the role of international organisations, especially in the first phase of ICT4D as a field. But maybe more generally, how would you assess the role of these organisations, such as the UN, the World Bank, and others, in picking up the ICT4D discourse?

I would say that more attention needs to be given to the careful evaluation of their own policies, the theories behind those policies, and the instruments for bringing about policy change. There is a huge number of pilot projects where there is no historical assessment and no scope for learning from what happened within the pilot and taking action based on that. If the pilot fails, the project must not be rolled out, but we face a "one laptop per child" mentality in which an under-publicised pilot project served as the catalyst for a global initiative for improving education for low-income children in developing countries. This goes back to what we were saying about processes and not neglecting the history of our field and the "D" in ICT4D.

We are looking at ICT4D as a field made by people, researchers like us, and practitioners. How do you think ICT4D has engaged researchers from the Global South? Do you think ICT4D has – acknowledging the phrase's disputed meanings – "empowered" researchers? Or have researchers from the Global South been forced to fit into Western standards?

That's a great question. My initial feeling is yes. For example, one of the ICT4D journals is dedicated to scholars who do not have much experience in writing or crafting articles; that could be deemed positive, though there's slight cynicism with what I'm saying there. That is one positive thing but whatever we have spoken about, the phases and theories, they are nevertheless all Western, in a way.

The entire history of ICT4D is coming from a particular perspective. On the other hand, there are new developments: articles have been written in the recent past that offer alternative perspectives. But I still think there's something missing. I think we should ask scholars or researchers who have lived all their lives in low- and middle-income countries about what they can teach us. It might be something completely practice-based, for example, about technology usage in different sectors, environments, or geographic locations, but it would help us gain a better perspective.

I'm not sure if the way conferences are run is conducive to engaging researchers from the Global South who may be in local institutions. There is a whole procedure of submission and acceptance. It may not work because of the formalities that we force on people instead of enabling them to have a voice. So, the round table or informal events at these conferences, especially in the ICT4D, are the ones where we can learn. We have to find a mechanism to learn from the narratives of scholars coming to these conferences. For example, how technologies have been introduced and by whom. What have been the debates that have taken place, if any? If we have a problem of farmer suicides happening across the world, we might need to accept that they do not see any use of ICTs right now. I really do feel strongly about this. I feel that we should be humble enough to say that technology right now would, on the contrary, distort the issue at hand. But you cannot get a paper published in the ICT4D field if you are not talking about technology. Not so easily.

OK, but what about other journals?

Other journals? Yes. That is the problem I had, and that is exactly why I had to go to two departments. When I started talking about village committees and primary healthcare, while I was talking about information and communication, I was not talking about technology per se. So, in a conventional information systems/management environment, my research did not seem to fit well.

It is interesting that sometimes scholars in a specific field feel that their field's answer to a problem is not the best one. There is also a lot of tension between local activists and scholars, for example, the representatives of the World Bank or the United Nations, when a specific technology is used, and people oppose it for the reasons of context and process that you mentioned earlier and do not necessarily agree with that kind of technological solution. But that tension has never been resolved, in a sense. So, I think what you said about the "T" in ICT4D is also sometimes controversial.

For me, that is what it means to put the "D" first: to try and understand the range of in-house country policy options, human resources, etc. It is not necessarily about technology – even though there might be some technology deployment involved in a policy agenda. However, the agenda might also include other parallel interventions, for example, those related to human resources or something else. When I was looking at outsourcing business process outsourcing (BPO) tasks to remote rural areas in India to provide income and livelihood to low-income youth, I noticed that Western client companies would not go to the rural areas because of poor infrastructure and lack of electricity after five o'clock. This is all context and many will just put it in one section of their paper, calling it infrastructural challenges and all that. But it's more serious. It doesn't mean that we don't work with ICTs, but it means that on the cards, there are a range of different policy options, and there is a sequence with which they should be addressed within a specific country context.

Our last question focuses on the future. What do you see as burning themes, ideas, and theoretical approaches in the future of ICT4D? In other words, how do you see the future of our field?

I can think of three points here: firstly, on that point of being more specific about what we mean by digital innovation, let me give you the example of my PhD student's work on the role of AI in conflict management. What I'm learning from her is the way she looks at two different models. One of them is the classical model of machine learning that data scientists work with, learning from data and making predictions based on the training data sets. But the other model she is focusing on includes a new way of thinking about machine learning based on agent-based simulation modelling, which provides an opportunity for a variety of different actors, such as technologists, data scientists, humanitarians, and government personnel, to have a say in writing and rewriting the rules of the model of behaviour prediction of individuals caught in conflict. This is what I mean by being more specific about technology, in this case, two types of AI systems.

Secondly, I want to emphasise the point about giving equal weight to non-ICT interventions while addressing specific developmental issues. A few decades ago, we decided to be specific about the "D". Let us sincerely continue with that mandate. We should be much more judicious about if and when to use ICTs. It is not always the case that it is the right thing at a particular point in time.

Finally, it's been said before, but I think we should discuss whether it even makes sense to talk about the Global North and South. I have read Pranab Bardhan's "A World of Insecurity: Democratic Disenchantment in Rich and Poor Countries", in which he demonstrates how global issues of economic and cultural insecurities interface between the Global North and South and transcend these boundaries by adversely affecting institutions of democracy.

So maybe the ICTD field of study should focus more on how digital technology is shaping the development outcome of flows of information and knowledge across different societies.

Note

* Interview with Professor Shirin Madon.
1 International Federation of Information Processing Working Group 9.4 on the Implications of Information and Digital Technologies for Development (https://ifiptc9.net/wg-9-4/).