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**Social Dynamics 2.0:
Researching Change in Times
of Media Convergence**

Case studies from the Middle East and Asia

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Challenging the Notion of Neutrality – Postcolonial Perspectives on Information- and Communication Technologies

A childhood friend of mine asked me years ago why he always had trouble finding scissors, corkscrews or can openers that he could use and whether this was just to show him each and every day that he was 'different'. He was left-handed and back then in the 1970s, although children were no longer 're-educated' to become right-handed, kindergartens and schools were often still not adequately equipped with tools for the left-handed. I could see his problem, but I thought that it is impossible to make it right² for everyone and in this case the majority is right-handed. Still, we asked ourselves who was to blame, if anyone or anything: The inventor of the corkscrew? The people who made right-handed scissors popular? Or the shops that didn't sell can openers for the left-handed? However, we couldn't really find a good reason for any involved party to discriminate against left-handed people intentionally. After all, these tools, the screwdriver, the corkscrew or the can opener were just that: tools. Tools are there to make your life easier, and as long as you do not abuse them, they are not meant to bring harm. At least that is what I thought back then.

Fast forward to the present: Today, we may not even realize the existence of all the technological tools and frameworks that influence our daily practices. Despite having been an IT consultant and internet programmer in my pre-academic life, I am no longer able to keep up with most developments in this field (and maybe a mechanic who has to repair one of these modern cars that you 'fix' by connecting a laptop to the engine can sympathize with me): I do not know the design of the IPv6 TCP/IP protocol that takes care of the e-mails

1 I am grateful for comments by Christoph Haug, Sumit Mandal, Antje Mißbach, Saskia Schäfer and Nadja-Christina Schneider. Although not all of them may agree with my analysis in this article completely, their feedback has helped me significantly to approach this topic.

2 Pun not intended back then.

I exchanged in preparation for this chapter. I wouldn't even know nowadays through which processes and protocols the keys that I press on the keyboard are transformed into electronic information, transported through processors and finally end up as characters on the screen only a fraction of a millisecond later. But even though I do not understand these complex technologies, they still 'do their job' for me, no matter if I am a white-western-heterosexual male or a black-subaltern-queer person. Technologies and tools are 'neutral' in a sense that they neither influence nor make decisions nor take sides nor discriminate. Or do they?

In this chapter, I want to take a closer look at the impact of Information and Communication Technologies (ICT) and argue that these technologies are as much carriers of meaning and ideologies as the content they relay, especially in regard of an often underestimated impact on postcolonial societies. Just as my left-handed friend experienced on a much smaller scale, ICT can symbolize and reinforce positions of power, status and situatedness. To address these issues in marginalized societies and communities, a postcolonial perspective shall be taken into account in order to emphasize the specific characteristics of the impact of ICT in these environments. While there do exist models like the path dependence theory that is applied in a number of disciplines such as social sciences, history or economy (see for example Arthur, 1994; Mahoney, 2000) which explain the prevalence of some (technological) developments over others, there is still only limited consideration for the specific impact on postcolonial societies. Postcolonial approaches cover a wide range of contexts and applications, but a common theme often overlooked in other disciplinary approaches is questioning power structures, especially in relation to the center and the periphery, as well as which forms of emancipation can emerge from this (Franzki and Aikins, 2010: 14). An approach limited for example to the combination of media and communication studies as well as area studies may risk underestimating or even ignoring the said power structures. However, it is imperative to keep in mind that the 'online' world eventually reflects 'offline' structures of power, wealth and knowledge. Thus, a postcolonial perspective embedded in a trans-disciplinary framework will help to locate "contemporary phenomena in need of new modes of analysis and requiring new critiques" (Anderson, 2002: 643). This combination shall therefore be applied in this chapter to highlight intersections of and impacts on knowledge flows, technological developments and cultural perception of the self and others in regions

and areas that have experienced marginalization. In practical terms, the question of adjusting technology – and not just content – to local demands and settings is of importance and shall be looked at in this chapter with a focus on the impact on language and script. While postcolonial literature has advanced the breaking of binary dichotomies and has shown that both the colonized and the colonizers are affected in the process, the focus of this chapter shall lie on the impact of ICT on marginalized societies in the Global South. For one, this has been a neglected field of research, especially in regard to the technology transfers and the underlying technological blueprints. In addition to that, while there are notable influences in the development of ICT that originate among others from former colonies, such as India for example, the balance of power in this respect is far from equal as shall be shown in this chapter.

ICT, the Disciplines and Postcolonial Perspectives

Coming back to the question of neutrality, the initial assumption that technologies of whatever kind have a neutral influence on their environment may be a no-brainer at first for scholars who generally treat hardly anything as neutral. Philosophers who have made an impact across the disciplines, such as Foucault or Heidegger, have highlighted this aspect long before ICT became prevalent to this extent: One of Foucault's (1977) arguments discusses the decisive impact on social relations that architecture and concrete buildings can have, despite being inanimate structures; and Heidegger states quite clearly that we approach technology "in the worst possible way when we regard it as something neutral" (Heidegger, 1977: 4).

However, when it comes to the analysis of ICT, a problem arises: It is actually two aspects in one. Semantically, it only refers to the technology that is used to transmit information and communication. Yet as ICT has enabled new flows of communication in the last twenty years, it is no longer just the impact of the technology, i.e. the means and modes of transmission, that is analyzed, but it is also the impact of the content, i.e. the actual information and communication being transmitted, that becomes a focus of attention. Therefore, it generally does not lead to raising eyebrows if research on the impact of ICT (or, equally ambiguous, "the internet") solely deals with the impact of the *contents* transmitted *via* ICT.

Whether technology or content is at the center of attention often seems to depend on the disciplinary background of each individual scholar, and it can be assumed that disciplines leaning towards the sciences, for example some segments of media and communication studies, are more likely to focus on the technology whereas in the humanities such as cultural studies, area studies or postcolonial studies where culture, literature and language are points of reference, the impact of the content seems to play a more important role. The underlying risk is that the aspect of ICT which is not part of the analysis remains underestimated, thus becomes 'neutral' through negligence. This underlines the necessity of an interdisciplinary approach to encounter ICT beyond mere lip service.

While there have been significant intersections between media and communication studies on one side and gender studies, psychology or history on the other, the same can not be said for postcolonial studies, as Fernández argues. She states that it is "striking that postcolonial studies and electronic media have developed in parallel to one another but with few points of intersection" (Fernández, 1999: 11).

However, this lack of intersection does not stem from a divisive rift that would prevent a common perspective. On the contrary, interconnecting these approaches is important to bridge the apparent disciplinary gap. This is a necessary precursor to fully grasp the complex realities that the entanglement of ICT and diverse societies produce. The so-called digital divide is a case in point: Addressing merely the lack of access to ICT by means of the underlying technology falls as short of grasping the subject as an isolated focus on the lack of knowledge and information would.

More than ten years have passed since Fernández' critical analysis of the state of research, but it seems that a number of points she has raised are still relevant and require further investigation. This is not to say that there have not been significant interdisciplinary approaches in this field. Given the fact that it took quite some time for electronic dimensions to become recognized as fields of 'serious' academic research, Fernández (1999: 13-15) mentions aspects where media theory has already influenced other disciplines, for example gender studies, psychology and history – and vice versa. The late 1990s and the globalization of IT industries has even led to an interest in applying cultural

studies in the field of software engineering (Gunzenhäuser et al., 2001). However, a dedicated postcolonial perspective on ICT is still rather uncommon. Those scholarly contributions that do apply postcolonial question frameworks to media theory, such as Poster (2007), somehow do not focus on analyzing the impact of the "T" of ICT. This is remarkable as the hype around the exponential growth and the previously unimaginable possibilities in terms of exchange of information and communication in the mid- and late 1990s have provided for a rather uncritical academic and popular discourse in which the underlying technologies were seen as "either value-free or inherently liberatory" (Fernández, 1999: 11).³

Yet ICT can hardly be value-free as their impact on everybody's life does not occur in a detached environment but takes place against the backdrop of distributions of resources in the real world. Coming back to the above example, limiting the digital divide to access to technological infrastructure and information would be masking the impact that the transfer of technology and the therefore required knowledge effectuates. These flows of technology and knowledge have mirrored similar patterns that have been a central pillar to sustain notions of colonial superiority in the past – and often they still do. Back then, advanced technologies were not only sustaining military dominance, but new modes of transport and communication can also reinforce perceptions of the colonized people's backwardness and vulnerability. As these technologies also have become yardsticks for development, the function of technology constitutes an important question when applying postcolonial perspectives of structural inequalities.

With these preliminary thoughts in mind, the utopianism that is expounded in writings such as Friedman's "The World is Flat" (2005), in which it is assumed that the world has or will become "flat" (i.e. 'fair') through ICT, is therefore not merely projecting an idea of a desirable since equitable future which may be

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3 It would be hypocritical to exempt myself from this perception at that time. Having experienced the emergence of ICT in the mid- and late 1990s as an internet programmer and a student of primarily communication studies, the idea that presumably free access to information and the resulting exchange of ideas would increase human empathy and understanding, was beguiling. Contrasting this perception was a formative seminar in critical psychology on identity and virtual realities at the Psychological Institute (PI) of the Freie Universität Berlin in 1996/97, conducted by Ernst Schraube and Heinrich Schwarz, which was an early eye-opener to understand the multi-faceted implications of ICT in a more meaningful way.

facing various yet surmountable obstacles in the process of realization. This perception is rather glossing over if not reinforcing or intensifying "imperialist initiatives in the guise of utopianism" (Fernández, 1999: 12). While there are nowadays a number of important centers of IT development in the Global South, for example in India, China, Taiwan or Singapore, which have achieved a standing of their own, the question remains in which ways technology and its associated objectives, including design and knowledge of application, evoke and reflect on experiences that reinforce associations of inferiority, especially in marginalized or postcolonial societies. The following examples centered on the localization (i.e. the adaptation of technology to local environments) shall illustrate that the mere fact of having localized access to ICT does not necessarily mean equal standing or prerequisites.

A Short History of Localization of ICT

Today, we take it for granted that a person who speaks and writes Arabic can use an operating system in his or her mother tongue due to the internationalized Unicode character set; that there are keyboards available that reflect non-Latin alphabets and that writing from right to left or top to bottom is no insurmountable barrier anymore either. With the exponential development in the IT world, the times in which users were forced to use, read and write in the languages of the large global markets – and most of the time this was and still is English – may seem long gone. However, most of the said features were only widely available from the mid-1990s onwards, and often only through the use of complex workarounds or additional software.⁴ Prior to that, computer and internet access have been pretty much an English language affair where even other Latin-based scripts were implemented rather provisionally than professionally.⁵ Even today, many non-European languages are only implemented up

4 For example, the Microsoft Windows operating systems only supported right-to-left languages at system level from Windows 2000 onwards. The Microsoft Office suite incorporated a rudimentary support in its 97 edition. When it comes to official language support, Office 2000 still catered mainly to the European/English speaking market: From the over 30 available language versions and proofing tools, only Chinese, Hebrew, Japanese, Korean were non-European languages. Standardized Unicode integration which provided for a relatively easy access to non-Latin script also only took place in Windows 2000.

5 The long-time standard 7-Bit ASCII (American Standard Code for Information Interchange) contains no diacritic characters, such as "ä", "ö" or "ü". In the 1980s and

to a certain level while other parts are based on one of the few full-language versions that are often synonymous with the language of the former colonial powers.⁶

If we take this Arabic-speaking person ten years further back, to the end of the 1980s or even the beginning of the 1990s, he or she would, in order to use a computer, not only have to adapt to the Latin alphabet and script, but as a matter of course also speak English to make use of the technology. For one, because soft- and hardware manuals that went beyond the level of setting up a computer were written mainly in English (or maybe German, French or Spanish), but also because at that time, using a computer in Arabic for anything else but rudimentary word-processing was virtually impossible. So while for a consumer using a computer without substantial knowledge of English was a possibility, anything else in the direction of creating software or adjusting it to local needs, was not.

Thus, if we take three individuals at that time, merely 20 to 25 years ago, who speak three different languages such as English, French and Arabic, the initial conditions in approaching ICT for the three would have been quite different. Even with a similar socio-economic background, the hurdles to access and make use of ICT (despite the varying degrees of operability for each language context) are significantly higher for the Arabic-speaking person compared to

1990s, so-called codepages were used in text-based operating systems such as MS-DOS. Codepages were basically translation tables for each (mainly Latin-based) language so that non-ASCII characters could be displayed on the screen. Reading and writing text in different languages became thus possible but the character switch affected the system as a whole, which had the effect that reading a text in Cyrillic led to other characters on the system being displayed in Cyrillic as well (not translating the terms into Russian though!).

6 For Microsoft Windows, an English or French base language edition is still required for most non-European languages. See here for a full list: <http://windows.microsoft.com/en-US/windows/downloads/languages-xp>. While some European languages such as German are implemented to cover 100 percent of the operating system's dialogues, languages like Arabic are implemented only up to 80 percent where the remaining 20 percent are taken from the French base language edition. For smaller language groups, it becomes even more mixed up: The Bosnian language edition is implemented up to 20 percent on the basis of Serbian language edition which itself is still based to 20 percent on the English base language edition. See <http://technet.microsoft.com/en-us/library/dd744336%28WS.10%29.aspx>. Open Source operating systems like the various Linux derivatives do provide a substantial amount of localization, but as these systems comprise of a multitude of programs coded by different authors or groups of authors, localization can only go as far as the community is willing and able to.

the English- or even the French-speaker, as not only a new language, but also a new script needs to be learned (Mohd et al., 2005). This is not to be underestimated as the additional barriers also make it harder to build expertise in ICT beyond just using a computer. In Europe and the U.S in the mid-1990s, the large number of IT-savvy youngsters who filled the positions in the IT departments of the emerging 'New Economy' were often self-taught programmers (like the author) who appropriated programming skills in their teenage years by exploring the possibilities of the computer in an experimental way. This was possible because language and cognitive barriers were relatively low, as programming languages are generally based on English and written in Latin characters.⁷ I wonder if I or any of my former colleagues would have done the same if prior to writing even the simplest 'hello, world' program, we would have had to learn first how to read and write, for example, Arabic or Thai.

The 'Neutrality' of Technology and the Cost of Localization

Of course, the underlying technology at the level of hardware does 'understand' neither English, nor French nor Arabic. All it can deal with are binary states of memory cells that can be either one or zero. In the stone age of information technology, these were represented through punch cards which obviously made programming a very abstract and error-prone task. With growing complexity and processing power, programming languages were implemented that made writing programs more and more like writing sentences, albeit in very rudimentary forms. So while on the level of hardware there are still the ones and zeros that transport our e-mails, the high-level abstraction layers in the form of programming languages are almost naturally in English.⁸ Alphabetic characters, irrespective of their origin, are thus also merely represen-

7 There have been localized versions of a few programming languages, such as LOGO, but these could often not be used for more demanding tasks.

8 The fact that most programming languages are based on English shows a dilemma: On the surface, sincere efforts are being undertaken to provide more or less acceptable localizations of software for end-users all over the world. However, under the hood, the closer one gets to the core of the system, localization is simply not possible. Not only are there already too many 'dialects' within a given programming language. Localizing a programming language and to substitute the English command *print* with the German term *drucken*, the Malay *tulis* or the Thai พิมพ์ would, just as in real life, create a new language. Source code would only be exchangeable and collaboratively worked on within the users of each language which, even if it was done, would be highly unfeasible.

tations of bits and bytes that need to be stored and accessed in an efficient way.⁹ The smaller the character set is, the less storage space and memory it requires. For that reason, seven and eight bit character encodings, such as ASCII and ISO 8859 were for a long time the most widely used ones. Other encodings, especially those that had to represent more than 128 or 256 characters respectively (such as Unicode) require more capacity and were thus economically not viable for quite some time. Three examples for non-Latin based scripts shall demonstrate the practical consequences of this legacy:

For one, this helps to explain why English and Latin characters are still often used on mobile phones when sending text messages via Short Message Service (SMS) in non-Latin-based scripts, for example in Thai or Arabic, despite the fact that suitable keyboards have been available for quite a while. When the SMS standard was formulated in 1991 by the European Telecommunications Standards Institute (ETSI), there were no phones that could display non-Latin characters in the first place, so the need to include these characters (or make more room for them) did not arise.¹⁰ When mobile phone communications in these markets emerged and especially SMS became an important aspect, a solution was required that would have to be based upon the existing standard, as compatibility needed to be maintained. The result was to take a Unicode-based character set that included non-Latin-based scripts, but at the cost of a reduced message size, as the encoding of scripts containing more characters inevitably uses more space.¹¹ Thus, whereas SMS messages written in the ASCII-based Latin alphabet can contain up to 160 characters, this size is restricted to 70 characters otherwise. This means that a text message with 150 non-ASCII characters will be split in three messages (70 + 70 + 10) and therefore cost three times as much as one written with plain ASCII-Latin characters. Hence, users sending messages in non-Latin script are bound to switch to

9 One byte is the basic addressable element in computer architecture. It usually consists of eight bits whereas one bit represents one binary digit, zero or one. Eight bit can therefore contain $2^8 = 256$ different values, seven bits $2^7 = 128$ values respectively.

10 See ETSI documents GTS 03.40 and 03.41.

11 The UCS2 encoding used for non-Latin scripts is based on a 16-bit character size, thus using more than two times of transmission capacity, whereas otherwise an ASCII-based 7-bit encoding is used. As each SMS can contain up to 1120 bits (140 bytes), the resulting length of each message is therefore $1120 / 7 = 160$ characters for Latin-based scripts in contrast to $1120 / 16 = 70$ characters for non-Latin scripts.

English or a respective Romanized version of the script in order to save money on longer text messages.

The introduction of Internationalized Domain Names (IDN) showed a similar problem: In order to provide users the possibility to enter an internet address (Uniform Resource Locator, URL) in the browser directly using their familiar script, several network information centers (NIC) have begun allowing non-ASCII characters when registering domain names. However, changing all internet servers in the world to understand a variety of non-Latin-based scripts was not an option, again due to financial and compatibility reasons. What was done instead was to change the client software (the internet browser for example) to convert an IDN into a Latin-based name which will be the name that the internet servers will be working with.¹² Unfortunately, this encoded domain name not only has hardly any resemblance with the original representation and is thus hard to remember for users who have to use non-IDN-capable software.¹³ It also reduces the amount of characters that can be used for a domain name as a result of this encoding process. The maximum number of 63 (Latin) characters – which are usually far sufficient – decreases the more non-Latin characters are used for the domain name, similar to the SMS issue described above. Yet this approach also contains a drawback that may run counter to its original conception: While IDN may be beneficial for users of the respective local script, it creates new boundaries for users who want to access these localized contents, but do not possess a keyboard with the required characters to enter the URL in the first place. This may not only affect foreigners but also the local population which may not have access to a localized keyboard as these are often more expensive. Thus localization of hardware may create a double bind in some aspects regarding the idea of greater integration of ICT use and the exchange of information.

Last but not least, the earlier mentioned relatively late inclusion of non-Latin-based scripts in operating systems can also be attributed to a combination of

12 See RFC3490 "Internationalizing Domain Names in Applications (IDNA)", <http://datatracker.ietf.org/doc/rfc3490/>.

13 The URL of the Egyptian Ministry of Information can be entered in its Arabic form as <http://مصر.الاتصالات.وزارة.موقع>, but then gets internally translated to <http://xn--4gbrim.xn---ymcbaaajlc6dj7bxne2c.xn--wgbh1c/>. A single diacritic character in the URL <http://www.domain.de> translates the whole URL to a significantly different <http://www.xn--dmain-jua.de>.

outdated standards kept for compatibility reasons and simple lack of memory and storage space. In present times where RAM and hard disk capacities are beyond human comprehension, it no longer matters whether a text file is several kilobytes or megabytes large. But about fifteen years ago, when storage capacities were about one thousandth of current capacities, it surely did matter. The lesser amounts of bits and bytes that were used, the better and more efficient a system was. Likewise, the lesser characters that needed to be encoded the more text could be stored in the same amount of storage capacity. Making Unicode a standard became only feasible once users would no longer complain any more that their files would take up double the amount of space on the hard disk.¹⁴

Implications for Postcolonial Societies

These examples show that there are concrete impacts on the people who have to use these technologies – and that the design of a technology and the conventions on how to use it – the technological blueprint – has different consequences for people with a different linguistic background. I argue that these technological blueprints, often originating from countries that were former colonial powers, and their respective implementations not only carry economic, but also socio-cultural inclinations. These have significant impacts on perceptions and developments on postcolonial societies, and the technological restrictions explained before are not the only implications in this respect. Turning a blind eye on these implications leads to a false notion of neutrality of technology – or as Suchman (2002: 140) refers to it “the fallacy of the empty vessel”: “mistaking one’s own ignorance of what exists elsewhere – knowledge, information systems, practices – for their absence”. More important than the question whether it may have been ill-intent, negligence or simply unawareness is the fact that the adaptation of these blueprints in the former colonies has and probably could have never been questioned. Back then as well as nowadays the socio-economic pressure to embrace these technologies is still overwhelming, albeit not always beneficial: A Laotian using Latin-based

14 Unicode encodings exist in variations using – generally speaking – 16 to 32 bits (two to four bytes) per character which results in document sizes at least doubling, if not quadrupling compared to ISO 8859 encodings.

characters instead of Lao when writing an SMS text message may realize that this is economically more viable, but at the cost increasing ambiguities due to the lack of tonality, a central feature in Lao and other Asian languages. The same goes for the English-language keyboard layout for typewriters and computers which is still used in many former colonies despite layout inconveniences in relation to local languages. Although in Malaysia for example, there have been proposals for localized keyboard layouts which are more ergonomic to use, the idea nevertheless did not gain a strong foothold so far and is unlikely to become economically viable in the future (Khan et al., 2006).¹⁵

These developments can lead to a deprecation of one's own language or script as I could witness during a field trip in Vietnam in 2002: I had encountered a student on a bus ride who told me he was grateful to the French that they introduced a Romanized script and did away with the Chinese-based characters. Asked why he was happy about it and whether it was because of the complexity of Chinese characters, he replied that it was not so much the complexity of the characters (which he had learned anyway), but because this helped the Vietnamese to learn languages such as French and English more easily and thus become more competitive in the global market compared to other nations in the region. These priorities that put competitiveness over cultural and linguistic aspects underline not only the threatened position of marginalized languages, but also show how the perspective on colonial rule and self perception may be affected.

The implementation of languages in ICT contexts leads to another aspect where hierarchies come into play, namely how decision-making processes are structured when dealing with the languages of postcolonial societies. Taking the above-mentioned example of the development of Unicode which was

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15 The prevalence of keyboard layouts is actually one of the most prominent examples of path dependency theory in the field of economics. According to David (1985), initially, technical hardware requirements were partly responsible for the QWERTY layout. When these requirements no longer needed to be met, for example in computer keyboards, the QWERTY layout was kept nevertheless despite more ergonomic systems such as Dvorak. According to David, the quasi-irreversibility of this development is based among other reasons upon the very high costs of switching to a different system, both in terms of financial and human resources. While it is no doubt difficult and costly to change an established system, the issue remains that a localized system could never be established in the first place, as was the case in several European countries, such as France or Turkey.

widely seen as a means to enable a large number of people to use local scripts, the decisions by the Unicode consortium regarding what characters make it into the set and in which order are at times questionable. The largest bone of contention is the so-called "Han unification" where Chinese, Japanese and Korean characters which have a common linguistic basis and history were unified in the process of including them in the Unicode character set. To put it simple, the 'problem' with these scripts is that two characters may have the same meaning but are written in a different way, and some of the lesser used variants did not make it to the Unicode set. While this does not affect most aspects of everyday use, older texts may suffer from this, and, as Zhao and Baldauf state, "to ancient canon researchers and digital library/museum developers, this kind of unification is parallel to some letters on the keyboard missing for alphabetic language speakers" (Zhao and Baldauf, 2008: 316). The reasons for this may be due to technical requirements and the application of an underlying encoding logic that will have to make compromises when merging letter- and character-based scripts in one set. However, the fact that especially historical characters become more difficult if not impossible to be reproduced is seen by some in the region as an attempt to streamline the languages and has resulted in resisting Unicode in China and Japan where alternative character sets have emerged that now stand in competition with Unicode. In addition to that, rivalries between China and Japan are also fought out against this backdrop (Zhao and Baldauf, 2008: 319). Last not least, it needs to be acknowledged that the fact that an outside entity (the Unicode consortium is based in the United States) is 'organizing' the written language of a country like China again bears some resemblances to the latter's colonial past that should not be underestimated.

While the previous examples have shown that a sense of inferiority can easily be instilled as long as Latin-based scripts seem to be the 'natural' script to be used in conjunction with technologies in general, the process of developing the underlying technological standards adds another level of hierarchy: These are often drafted in and imported from former colonial powers, thus hierarchies extend to notions of cultural superiority and inferiority, because even the inventions made in other parts of the world nevertheless will have to comply with the standards defined in Europe and North America. Neither the Seagate hard disk and the AMD processor manufactured in Malaysia, nor the creation of the Blue-ray disc by a group of companies based largely in East Asia can

conceal the fact that generally these products and inventions are expected to seamlessly integrate with the said standards one way or the other.¹⁶ Intellectual property rights further hinder the adaptation of ICT and crucial technologies as well as standards are kept under the auspices of their inventors: The control over the Global Positioning System (GPS), for example, remains firmly in the hands of the United States government, and the Department of Commerce has only given up its influential position within the Internet Corporation for Assigned Names and Numbers (ICANN) in October 2009.¹⁷

However, once technologies have become out-dated, the low-cost markets become dumping grounds for these technologies, often ignoring the actual requirements of local clients. This is a serious issue in the context of ICT where obsolete technologies can also pose a security risk, not only for the individual user, but also for the larger community. A survey of 1110 encrypted wireless networks in Penang, Malaysia, a country which has had a fair share of technological development shall substantiate this claim: Despite Malaysia's technologically relative advanced status, only 505 (45.5%) of the routers surveyed were using an up-to-date WPA-encrypted network. The remaining 605 (54.5%) were using a WEP-encrypted network which is no longer deemed secure as it can easily be compromised and is therefore hardly in use anymore in countries such as Germany for a couple of years now.¹⁸ Taking into account those WPA-networks which still offer a WEP-compatibility mode, the number increases to 876 (79%). A network that only features weak encryption may rather lull the user in a false sense of security leaving him or her less aware of the possibly serious consequences when outsiders can get access to personal data easily. The reason for the continuous use may be the cheaper cost of these out-dated routers as well as compatibility issues with older hardware used in

16 This is not to say that there are no groundbreaking technological developments from outside the European / Northern American region. East Asian companies and consortiums, for example, have on a number of occasions invented technologies or contributed to their development which resulted in standards such as the VHS tape or the DVD. However, the fact remains that in most cases the underlying standards still need to be adhered to, in this case the PAL/NTSC signal transmission standards.

17 ICANN controls the internet root servers and allocates top-level domains (such as .com or .de). In short, it controls the namespace in the internet. See <http://www.icann.org/en/announcements/announcement-30sep09-en.htm>.

18 In a similar survey in Germany, only one out of 24 wireless networks was unprotected and one out of six was using the weak WEP encryption, see "WLAN-Netze bisher nicht flächendeckend sicher", <http://www.telstar.de/wlan-sicherheit-bundesgerichtshof-urteil-folgen/news/40964.html>.

these networks.¹⁹ These developments add to the uneven playing-field, and although different in their extent, these aspects also resemble the relationship between the colonizers and the colonized societies where the latter were either cheap producers of goods or profitable selling markets.

Conclusion

With the points mentioned in this chapter, I have raised questions regarding the underlying structures of technology, especially ICT. I have argued that ICT do not exist in a neutral environment, but reflect norms, practices and hierarchies of the societies that surround them. This is especially significant for postcolonial societies as it is in this respect that more general perspectives on the impact on ICT show their limitations when structures of power are underestimated, be they in terms of center and periphery or technological considerations that ignore demands and requirements of marginalized societies due to economic power.

However, perceptions that ICT are a means for growth, development and a harbinger of liberal values are often times still central focal points regarding the role and function of ICT, whereas the issues raised in this chapter are rather seldom taken into consideration or even downplayed. Instead of euphemistic idealizations or pessimistic critiques of ICT as a whole, a multifaceted perspective is needed, also when it comes to search for ways to enable and increase participation through the use of ICT in postcolonial societies. It is neither appropriate to demand that everyone should learn English and regard this euphemistically as an additional qualification that enables to participate in the global sphere, nor are approaches of localization always outright beneficial because new boundaries may emerge, as the example of the use and implementation of IDN has shown.

Thus, while the positive effects of ICT should not be ignored, they need to be juxtaposed with the impact they have on people's lives, in order to prevent a

19 Routers were surveyed in the Georgetown-Jelutong-Gelugor area of Penang island using automated wireless network monitoring software Barbeloo with subsequent XML evaluation.

creeping reinforcement of unjust hierarchies and one-way flows of knowledge and technologies, glossed over by positive developments for an IT-savvy elite.

While these issues have been addressed in this chapter to a limited degree, a number of questions still need to be addressed and this chapter could only highlight a few. The different levels of influence of technological blueprints have been touched upon in this article, but more fundamental questions are still waiting to be encountered which I would like to group into four pillars: Firstly, there is the methodological framework which is needed to approach the question of measuring the impact of ICT and related developments. Where this has not been done, the hypotheses raised in this article will need to be backed up or falsified by qualitative or quantitative findings. Doing so will be difficult not only due to the necessary development of suitable measuring categories, but also to identify a long-term 'before/after' environment. Due to the far reaching deployment of ICT that has reached almost every corner of this planet and is incorporated into daily life in many areas, this will be a challenging task as a clear distinction of cause and effect may become difficult beyond a level of personal, in-depth interviews. Alternatively, a qualitative inquiry would have to extend the trans-disciplinary approach to socio-psychological disciplines in order to find out in which way a change of perception and behavior has taken place.

Secondly, and connected to this would be questions dealing with the ways and levels in which these developments and impacts reflect a colonizer/colonized dichotomy. As this chapter has shown, it can not be assumed that malevolence towards different languages and cultures was a driving force behind non-inclusive technological designs and blueprints. Nevertheless, the resulting effect may evoke shared images and experiences of a perceived disadvantaged culture, language or development that need to be examined in order to identify clearly the various levels of impact of ICT.

Yet I would not propose to use a term like 'cybercolonialism' to describe these relations. While I would argue that marginalized societies in the Global South bear a heavier burden than otherwise marginalized societies and therefore require the abovementioned multi-layered perspective of analysis, a strict colonizer/colonized dichotomy would underestimate the different impacts within marginalized societies in the Global South. The respective centers in

colonized and colonizing countries may have more in common in terms of technological development, use and appropriation than the centers and peripheries in one given country and the same may apply for the peripheries. In addition to that, this would also conceal the significance of the adaptation and transformation of ICT that is also relayed back to other parts of the world as I have shown elsewhere (Holst, 2007). These do take place despite the critical questions raised in this chapter: On the one hand, the use of higher capacity SIM-cards in mobile phones in Southeast Asia is a case in point where a specific approach was taken to increase the usability of these often ill-equipped phones to store larger amounts of SMS messages at a fraction of the cost of a more advanced device. On the other hand, ICT can also provide important means for example to challenge authoritarian rule: The Multimedia Super Corridor (MSC) in Malaysia is an example where a means to tap on foreign ICT expertise led to a digital public sphere largely free from censorship that became a backbone of the rise of the political opposition. The third pillar of research would therefore deal with developments in which adaptation and transformation of ICT have gone unexpected ways and have shown an impact on marginalized societies beyond the colonizer/colonized dichotomy.

Deriving from that is the fourth pillar of research questions, centered on the issue of how postcolonial societies react to this development. While the clear economic imbalance and the long established advantage based on habitual experience and knowledge of ICT may lead to a further reinforcement of these relationships, this is by no means certain. Especially nations that had to bear outright sanctions by ICT-leading countries and industries, such as China or countries in the Middle East may opt to go or have already gone their own ways in establishing suitable ICT infrastructure, as Khater (2010) suggests.

A more refined approach is therefore necessary to take into account the specific histories and experiences in marginalized societies. While this may be obvious on a more general perspective, dedicated postcolonial approaches that take up findings from media and communication studies are still far and few in between, although such trans-disciplinary approaches are important to holistically grasp the issues at stake. A joint disciplinary perspective of media-, area- and postcolonial studies that comes with a reciprocal questioning of each others' postulations and findings will thus provide for a foundational critical framework needed to address the issues at stake comprehensively.

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Expanding the Toolbox: Discourse Analysis and Area Studies¹

When I arrived in Malaysia in December 2005 to spend an exchange semester as an undergraduate of Southeast Asian Studies and Political Science, I was delighted about the number of English language magazines and newspapers that I was sure would enable me to understand what was going on – and eventually to provide me with sufficient background knowledge to be able to understand the Malay language papers better. In our Area Studies department, we had a focus on history, but I was eager to incorporate my minor subject of Political Science and follow current political issues. I hurried to purchase the newspapers in the morning, as kiosks usually had only two copies of each paper. Reading, however, left me utterly frustrated. There were sentences and pictures, but I did not learn anything from reading them. They seemed hollow and empty and did not make much sense to me. I tried to read them as 'serious' newspapers, but they did not seem serious enough for that. I tried to read them as tabloids – but they were neither glossy nor dingy enough for that. I quickly learned that my idea of newspapers would not fit and gave up reading them. In Malaysia, I learned, you get your information mainly from online newspapers, magazines and blogs, due to the complex censorship of the print media. Over the period of my stay, I learned about current political issues by listening to lecturers' complaints and discussions and by watching and spending time with people. After some months, I returned to buying the print newspapers and was surprised how much more I was able to understand. I had learned how to read between the lines. Still, there was much that I did not quite grasp; it was as if I were lacking the tools to dismantle some of the barriers. Upon my return to my home university in Berlin, I took a class in media analysis, read up on Discourse Analysis and complemented this with

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