

IAC-06-E6.5.06

## **SATELLITE TELECOMMUNICATIONS AS A TOOL FOR BRIDGING THE DIGITAL DIVIDE – PUBLIC INTERNATIONAL LAW IMPLICATIONS**

**Julia Neumann**  
Institute of Air and Space Law  
University of Cologne, Germany  
julia.neumann@uni-koeln.de

### **ABSTRACT**

The paper focuses on the international dimension of the digital divide, i.e. the discrepancy between developed and developing countries in their access to information technologies. It examines in how far public international law supports the reduction of the digital divide with regard to the use of satellite telecommunications. Against the background of a factual digital divide between nations, and considering that information technologies, including satellite, are major tools for participation in the global information society, the investigation leads to one major question: is there a right of states to (benefit from) satellite telecommunications? Focus in the examination of this question is on international telecommunications law, on space law, and on international economic law. Rules of customary international law are also being analysed.

### **I. INTRODUCTION**

Telecommunications infrastructure and services are widely acknowledged as indispensable tools for the socio-economic and cultural development of a country, offering unprecedented opportunities for the betterment of quality of life for all.<sup>1</sup> However, many regions of the world still have only very limited telecommunications penetration.<sup>2</sup> This discrepancy is widely known as a facet of the 'digital divide', i.e. the gap between those who have access to the latest information technologies and those who do not.<sup>3</sup> Whereas a digital divide can not only be perceived between different countries (industrial nations/developing countries), but also between regions of a single country (ur-

(urban/rural areas), focus of this paper will be on the international dimension of the divide. This international divide has caused serious concerns in developing countries and international institutions like the United Nations;<sup>4</sup> initiatives such as the recent World Summit on the Information Society (WSIS) give evidence of these concerns. Against the background that satellite telecommunications can help bridging the digital divide by supplying remote areas with telecommunications, I examine whether developing countries have any specific rights in public international law regarding the access to satellite telecommunications. The legal problems will be investigated in the context of the applicable multilateral rules of international telecommunications law, space law and international economic law. Recent develop-

© 2006 by Julia Neumann. Published by the American Institute of Aeronautics and Astronautics, Inc., with permission. Released to AIAA in all forms.

IAC-06-E6.5.06

ments such as WSIS 2003/2005 in Geneva and Tunis respectively will also be taken into account. Regional public international law (e.g. EC law) will not be considered.

## II. THE INTERNATIONAL DIVIDE

The term “digital divide” was coined in the United States towards the end of the 1990s.<sup>5</sup> Already before the process of “digitization” had taken place, however, the problem of an international “divide” with respect to telecommunications access was perceived by the “McBride-Commission”<sup>6</sup> in 1980 and by the “Maitland-Commission”<sup>7</sup> in 1984. The latter observed that two-thirds of the world population had no access to telephone services, and Tokyo had more telephones than the whole of the African continent.<sup>8</sup> While this statement has been cited on several occasions also recently, it is clear that in times of mobile telecommunications this does not hold entirely true for our times. In Mid-2005, only eight national economies (with a population of less than 160 m. inhabitants or approx. 2.5% of the world’s population) had a combined “teledensity”<sup>9</sup> (landlines and mobile) of less than one. The global teledensity figures around 50.<sup>10</sup> Even though the situation may thus have improved, there remains a significant disparity as between industrialised and developing countries with regard to telecommunications technologies. This conclusion can clearly be drawn from the UNDP Human Development Report of 2003, according to which developing countries possess 113 land lines per 1000 inhabitants, compared to 562 in high-income states. Even with regard to mobile phones there still are disparities: 134 users per 1000 inhabitants in developing countries compare to 710 users in high-income countries. Coming to speak of the internet use, the report

counts 53 internet users per 1000 inhabitants in developing countries as opposed to 477 per 1000 inhabitants in high-income countries.<sup>11</sup> The findings of the ITU World Telecommunication/ICT Development Report 2006 underscore these results.<sup>12</sup>

## III. SATELLITES AS A TOOL FOR BRIDGING THE DIGITAL DIVIDE

Obviously, the digital divide can be bridged by various technological means.<sup>13</sup> However, satellites offer some specific advantages making them extremely apt for bridging the digital divide. Major advantages of satellites are their broad geographical coverage as well as the avoidance of expensive terrestrial infrastructures, such as cable, and the practically unlimited number of transmission recipients, but also the possibility to build up global networks.<sup>14</sup> Regardless of some disadvantages to satellite communications,<sup>15</sup> satellite systems are the only means to connect all those states that are not linked to optical fibre networks to the international communications network (“lifeline connectivity”). To date, still almost two thirds of all states can only obtain international connections via the INTELSAT system.<sup>16</sup> As an integral part of the global “information highways”, satellite communications complement the linking of distant regions through submarine cables,<sup>17</sup> and alongside optical fibre constitute the backbone of the information society.<sup>18</sup> Satellites are thus perfectly well suited for bridging the digital divide.

## IV. WHY BRIDGE THE DIVIDE?

The lack of sufficient development in telecommunication facilities and the availability of efficient and cheap services in developing countries are due to various reasons, *inter*

IAC-06-E6.5.06

*alia* a lack of priority, since telecommunications were and often still are considered a luxury.<sup>19</sup> This may raise the question of why the international community should be concerned with the problem.

However, information and communications in modern society are neither a luxury nor a comfort, but a necessity.<sup>20</sup> Information and Communication Technology (ICT) can be used to promote economic growth<sup>21</sup> (in 2003, the global telecom market revenue was US\$ 1.426 billion)<sup>22</sup>. Moreover, ICTs' role in promoting peace, security and stability, in enhancing democracy, social cohesion, good governance and the rule of law, at national, regional and international levels, has just recently been underscored by the ITU.<sup>23</sup> Accordingly, the need to address the international digital divide globally has also been recognised by international organisations and fora.<sup>24</sup> The final WSIS outcome documents emphasise the growing importance of ICTs as a development enabler, and as a tool for achieving the internationally agreed development goals and objectives, including the Millennium Development Goals (MDGs).<sup>25</sup> These considerations are expressions of the more general concept of "global public interest", which thus stands behind the idea of bridging the divide internationally.

It is clear that in the end, bridging the digital must serve the objective of providing high quality services to all people at an affordable price.<sup>26</sup> Insofar, the concept of digital divide is closely connected to the notions of "universal service" and "universal access". These are of a purely national nature, however, requiring regulatory initiatives of the respective nation states. Bridging the digital divide in a global perspective applies to another level though, in that it is concerned with the prerequisites for states that aim at

universal service/access nationally: enabling states to acquire the necessary means to build up national telecommunications to cover their entire territory.

## V. STATES' RIGHTS IN PUBLIC INTERNATIONAL LAW

It shall thus be asked whether public international law confers specific rights to states, i.e. developing countries, concerning satellite telecommunications.

Legal claims of developing countries in this respect might result from all sources of public international law. These are listed in Art. 38 para. 1 of the Statute of the International Court of Justice.<sup>27</sup> Focus of this paper will be especially on international agreements and rules of customary international law. Of particular interest are norms of international telecommunications law, of international economic law (esp. within the WTO), and of space law. It seems feasible to examine the legal rights according to the object of potential claims. Yet, it would go beyond the scope of this paper to examine all relevant provisions in detail. I will thus focus on the main aspects.

### 1. Access to the orbit/spectrum resource

The operation of telecommunication satellites necessitates availability of orbital positions and radio frequencies to communicate with Earth stations. Developing countries intending to build up their own satellite telecommunications system are thus dependent on access to the orbit/spectrum resource. In terms of orbital positions for telecommunications, the GEO is usually preferred since it offers many advantages.<sup>28</sup> Located at approx. 36.000 km above the equator<sup>29</sup> satellites revolve at the same rate as the Earth, so

that they appear stationary viewed from the Earth.<sup>30</sup> For an almost complete global coverage three satellites are sufficient.<sup>31</sup> The GEO accordingly enables global coverage with only a few satellites, which with an average lifetime of 15 years have a considerably long life span. Due to the physical characteristics of radio waves, also only certain frequencies are suitable for communication via satellite.<sup>32</sup> In the following, I examine whether international agreements or rules of customary international law provide for rights to access certain positions in the GEO as the subject of the most heated discussion (and to use certain associated frequencies).

#### 1.1 Art. 44 (2) ITU-Constitution

Developing countries that are members of the International Telecommunications Union (ITU)<sup>33</sup> might be able to claim access to the orbit/spectrum resource according to Art. 44 (2) of the ITU-Constitution<sup>34</sup>. Pursuant to this Article, "Member States shall bear in mind that radio frequencies and any associated orbits, including the geostationary orbit, are limited natural resources", which "must be used rationally, efficiently and economically [...] so that countries or groups of countries may have equitable access to those orbits and frequencies, taking into account the special needs of the developing countries and the geographical situation of particular countries."

First of all, it is important to note that the provision explicitly addresses member states that "shall bear in mind" the limited nature of the resources. That wording emphasises the fact that under general international law, particularly the principles of sovereignty and territorial jurisdiction, the regulation and control of national telecommunications belongs to the *domaine réservé* of states.<sup>35</sup> Therefore, in principle, each nation state is

responsible for the assignment<sup>36</sup> of frequencies to certain users; the ITU itself is not in a position to assign the frequencies<sup>37</sup>. Accordingly, as a first result, it can be clearly stated that developing countries members to the ITU cannot claim to be assigned certain specific frequencies (and associated orbital positions) by the ITU.

However, Art. 44 (2) CS emphasises that the frequency/orbit spectrum is physically limited.<sup>38</sup> Consequently, states are necessarily restricted in their use of frequencies and associated orbital positions. Therefore, international coordination is necessary in order to avoid conflicts and enable the most efficient use of the resources in question.<sup>39</sup> The need of such cooperation is reinforced by the fact that frequencies inevitably extend beyond state boundaries.<sup>40</sup> International recognition of a nationally assigned frequency is thus vital for the use of such frequency free from harmful interference by other users. To this end, the ITU has the task, by virtue of Art. 1 (2) (a) CS, to "effect allocation of bands [...], the allotment of radiofrequencies and the registration of radiofrequency assignments and, for space services, of any associated orbital position in the geostationary orbit [...]". The ITU radio frequencies distribution process therefore encompasses the allocation<sup>41</sup> of radio frequencies to certain services,<sup>42</sup> and the allotment<sup>43</sup> of radio frequencies to different countries (*a priori* planning).<sup>44</sup>

For services that are allocated certain frequencies,<sup>45</sup> the basis for international recognition of a nationally assigned frequency is that of "first come, first served", meaning that the user that first notified ITU of the use of a specific frequency will be legally protected from interference. This may favour the technologically advanced countries and has thus been challenged by the developing

countries.<sup>46</sup> Therefore, the system of *a priori* planning, with WARC 1977's allotment plan for regions 1 and 3 (Europe, Asia, Australia), and with the WARC 1983's allotment plan for region 2 (America), indicated a certain trend towards an international administration of frequencies and orbital positions.<sup>47</sup> Nevertheless, to date "first come, first served" is still the dominant principle.<sup>48</sup> The problem that becomes evident from the discussions on the two systems is that of a fair balance between "efficient and economic use" and "equitable access". Whereas Art. 44 (2) CS imposes an obligation on ITU member states to use the orbit/spectrum resource efficiently and economically in order to ensure equitable access by all countries,<sup>49</sup> the ITU regulatory regime does not give a definition of any of these terms.

The interpretation of efficient and economic use of the orbit/spectrum resource is left to the discretion of each ITU member. However, member states have impliedly agreed to the objective of "equitable access".<sup>50</sup> Generally, the concept of equity relates to principles of justice and fairness,<sup>51</sup> in the context of Art. 44 (2) CS, the meaning of the term "equitable access" is further clarified when considering two other provisos, i.e. that countries may have equitable access only in conformity with the Radio Regulations, and that the special needs of the developing countries and the geographical situation of particular countries must be taken into account while making use of the orbit/spectrum resource.<sup>52</sup>

Against this background, developing countries have a right to access those orbital positions and use the associated frequencies that have been assigned to them in the allotment plans. Their notifications to the Table of Frequency Allocations of the ITU Radio Regulations are also internationally pro-

tected. Any "equitable access", however, depends on the design of the Radio Regulations. Developing countries are thus dependant on further international cooperation in this field.

### 1.2 Art. I OST

Developing countries might be able to claim access to the GEO and the associated frequencies pursuant to the 1967 Outer Space Treaty (OST). The principles of the OST are generally viewed as part of customary international law, thus binding also states that are not members to the Treaty.<sup>53</sup>

Art. I (2) OST provides for freedom to explore and use outer space, the Moon and other celestial bodies. This includes the use of the GEO, also for commercial purposes.<sup>54</sup> Even though this is not expressly stated in Art. I (2) OST, the US in response to the Bogotá Declaration of eight equatorial states in 1976 emphasised that "commercial satellite communications activities utilizing the geostationary orbit were well in hand and were widely known at the time, and no objection or exception to those activities was made either in the text of the treaty or during its negotiation"<sup>55</sup>. States, including developing countries, are thus entitled to use the GEO and related frequencies in outer space. Such use is not unlimited, however. Rather, Art. I (1) OST provides that "the exploration and use [...] shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." Although this provision also limits the space activities of developing countries, it could be understood to grant to them rights in case they are prevented from space activities (i.e. satellite telecommunications) due to the use of specific orbital positions and frequencies by de-

IAC-06-E6.5.06

veloped countries. Yet, already at the time of ratification of the OST, the US Senate expressly stated that nothing in Article I, para. 1 “[...] diminishes or alters the right of the United States to determine how it shares the benefits and results of its space activities.”<sup>56</sup> This understanding was later confirmed by the 1996 Space Benefits Declaration<sup>57</sup> which, while acknowledging the need for international cooperation, leaves it to the states to determine all aspects of their participation in such international cooperation (para. 2).<sup>58</sup> In the field of satellite telecommunications, international cooperation was concretised by the ITU legal framework.<sup>59</sup> Thus, Art. I (1) OST in any case may not go further in its conferral of rights than does the ITU regulatory framework examined previously.

### 1.3 Para. 6 WTO Reference Paper

Para. 6 of the WTO Reference Paper<sup>60</sup> acknowledges the right of a WTO Member to exercise spectrum/frequency management, provided it is carried out in an objective, timely, transparent and non-discriminatory manner.<sup>61</sup> States that have accepted the Reference Paper are thus obliged to an objective, timely, transparent and non-discriminatory spectrum/frequency management. However, the Reference Paper reflects a global consensus on key regulatory issues for opening telecommunication markets to competition.<sup>62</sup> It thus aims at liberalising national markets, and does not confer any rights to developing countries regarding access to the frequency/spectrum resource.

### 1.4 Common Heritage of Mankind

Certain areas that are not subject to state sovereignty have been declared the common heritage of mankind (CHOM). Regarding

the Moon and other celestial bodies, this has been stated in Art. 11 (1) of the Moon Agreement of 1979. The Outer Space Treaty only speaks of outer space activities as the province of all mankind, however. If the concept of common heritage of mankind was also applicable to outer space *per se*, it might confer participatory rights regarding satellite telecommunications for developing countries. It is questionable, however, whether a concept exceeding the contents of Art. I (1) OST could exist with the CHOM principle applying to the whole of outer space. In any case, state practice after the Moon Agreement suggests that one-sided, rigid obligations for the attainment of distributive justice is not provided by the CHOM principle.<sup>63</sup>

## 2. Transfer of (Space) Technologies

With regard to satellite telecommunications, developing countries may have a desire to take an active part in the development and operation of satellite systems, and to participate in the industrial development aspects of such systems.<sup>64</sup> It could thus be asked whether developing countries can claim a right to be transferred technologies by developed countries. However, it should be kept in mind that intellectual property rights (IPRs)<sup>65</sup> in technologies are usually vested with subjects of private law. Against the background of privatisation in the telecommunications sector, and commercialisation of space activities, this will also be true with regard to space technologies. Public international law might have implications in so far as it may influence the specific national laws, or it may even oblige states to a specific administrative conduct. In the latter case, an industrial state might come under a duty to assert the rights to dispose of the respective IPRs so as to be able to directly

transfer these rights to developing countries.<sup>66</sup>

Forms of transfer of intellectual property comprise a transfer of literature, education of local workers, delegation of technicians, engineers and managers, supply of industrial goods and/or industrial plants, patent licences, know-how-licences, technical assistance, and direct investments (industrial cooperation, joint ventures, subsidiaries).<sup>67</sup> Of central importance is the transfer of know-how, which has been defined as “the sum tota of specialist knowledge, operational experience, and the technical production of a manufacturer.”<sup>68</sup> Irrespective of the failure of negotiations on an international Code of Conduct on the Transfer of Technology in 1985, technology transfer of developing countries has been a recurrent theme in the multilateral discussions of recent years.<sup>69</sup>

### 2.1 Art. IX OST

Since the specific interest in the context of this paper is on satellite telecommunications, it may be asked whether space law holds rights of developing countries to be transferred space technologies. According to Art. IX, sentence 1 of the OST, states shall be guided by the principle of cooperation and mutual assistance in the exploration and use of outer space. This wording again is very vague, however, and does not provide detailed obligations for international cooperation.<sup>70</sup> Also the details for mutual assistance are not provided in Art. IX OST. Taking into account para. 2 of the Space Benefits Declaration of 1996,<sup>71</sup> it is doubtful that Art. IX OST confers specific rights to developing countries regarding the transfer of space technology.

### 2.2 Art. 66 (2) TRIPS

A right of developing countries to be transferred technologies in general, and thus also space technologies, might be founded in Art. 66 (2) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Art. 66 (2) TRIPS contains a general obligation of developed country Members to promote technology transfer to least-developed countries (LDCs).<sup>72</sup> To this end, they are under a duty to provide incentives to enterprises and institutions in their territory to increasingly engage in transfer of technology to developing countries.<sup>73</sup> Whereas the precise scope of this duty suggests a considerable discretion on the part of the industrial countries, it is clear that the obligation exists and must be discharged.<sup>74</sup> This is emphasised by the general objectives of TRIPS as contained in Articles 7 and 8, which provide that the protection of IPRs have to contribute to the promotion of technical innovation and the transfer and dissemination of technology, in a manner conducive to social and economic welfare, and to the balance of rights and obligations.<sup>75</sup> Moreover, the Doha WTO Ministerial Conference in 2001 agreed that the industrialised countries would give an annual notification of their measures undertaken with respect to their obligation under Art. 66 (2) TRIPS.<sup>76</sup> These notifications<sup>77</sup> show that the obligation contained in Art. 66 (2) TRIPS is taken seriously.<sup>78</sup> The developed countries' discretion is further reduced by the Decision of the WTO Council for TRIPS in 2003 concerning the implementation of Art. 66 (2) TRIPS<sup>79</sup>, which lays down an obligation of developed country members to submit reports on actions taken or envisaged to provide incentives for the promotion of technology transfer.<sup>80</sup>

As a result, according to Art. 66 (2) TRIPS, developed countries are thus obliged to promote the transfer of technology to developing countries.<sup>81</sup> However, a specified right of developing countries to be transferred certain technology does not result thereof.

### 2.3 Art. IV GATS

A treatment parallel to that of Art. 66 (2) TRIPS can be found in Art. IV of the General Agreement on Trade in Services (GATS).<sup>82</sup> According to Art. IV (1) GATS an increasing participation in world trade of developing country members shall be facilitated through negotiated specific commitments. This shall for instance be achieved by the strengthening of their domestic services capacity and its efficiency and competitiveness, *inter alia* through access to technology on a commercial basis. Member states are thus required to negotiate specific commitments in this respect under Part III and IV of the GATS. However, Art. IV (1) GATS has been referred to as “a statement of good intentions”<sup>83</sup> concerning the consideration of the interests of developing countries. Industrialised countries are thus not obliged to make specific concessions for developing countries.<sup>84</sup>

Art. IV (2) GATS obliges developed country Members to establish contact points within two years from the date of entry into force of the WTO Agreement so as to facilitate the access of developing country Members’ service suppliers to information, related to their respective markets. Of specific interest to developing countries in this respect is information concerning the improvement of professional qualifications and the availability of service technology.<sup>85</sup> Yet the wording of Art. IV (2) GATS indicates that a right to obtain certain information concerning specific technologies is not included. All in all,

Art. IV does not contain any substantial provision favouring the economically weak states.<sup>86</sup> Developing countries can not claim transfer of satellite telecommunications technology from developed countries according to Art. IV GATS.

### 2.4 Para. 6 of the GATS Annex on Telecommunications

The GATS Annex on Telecommunications<sup>87</sup> expressly acknowledges the telecommunications sector’s dual role as a distinct sector of economic activity and as the underlying transport means for other economic activities.<sup>88</sup> Its rationale is to ensure that countries agreeing to trade in various services also offer adequate telecommunications facilities to deliver these services across the border or within their own territory. While the Annex is therefore primarily concerned with the access to markets and the use of infrastructures, it does at the same time recognise the special needs of developing countries. In this respect, it encourages technical cooperation in order to establish an efficient, advanced telecommunications infrastructure to expand their trade in services.<sup>89</sup> To this end, para. 6 (c) of the Annex provides that “[...] Members shall make available, where practicable, to developing countries information with respect to telecommunications services and developments in telecommunications and information technology to assist in strengthening their domestic telecommunications services sector.” However, the wording “where practicable” indicates that members retain a wide discretion regarding the provision of such information. Any specific rights of developing countries to obtain such information can thus not be derived from para. 6 (c) of the Annex.

With regard to LDCs, para. 6 (d) of the Annex stipulates that “Members shall give spe-



cial consideration to opportunities for the least-developed countries to encourage foreign suppliers of telecommunications services to assist in the transfer of technology [...]”. Also here, it becomes obvious that, while Members are called upon to promote the transfer of technology to LDCs, no specific rights of developing countries to transfer of technology are contained in the provision. Para. 6 of the Annex thus does not confer rights to developing countries with regard to the transfer of technology.

### 2.5 Fourth Protocol and Reference Paper

The Fourth Protocol to the GATS<sup>90</sup> in its Annex contains schedules of specific commitments and a list of exemptions from Art. II GATS (national treatment) concerning basic telecommunications services. Whereas the precise meaning of the term “basic telecommunications services” was not clarified, it is clear that it principally includes all sorts of national and international telecommunications services such as e.g. voice telephony, data transmission, fax, facsimile, and also fixed and mobile satellite systems and services;<sup>91</sup> broadcasting of radio and television programmes is not included.<sup>92</sup> The specific commitments undertaken mainly encompass regulations for market access of foreign companies, for foreign investments and for ensuring competition through certain regulatory principles.<sup>93</sup> The schedules annexed to the Fourth Protocol do not provide for transfer of technology, however.

For the same reason, the Reference Paper<sup>94</sup> cannot confer rights to developing countries regarding the transfer of technology. Whereas it may help market access of developing countries to those of developed na-

tions, it does not contain any rights regarding transfer of technology.

### 3. Provision of continued telecommunications services

Developing countries might be entitled to be provided with continued telecommunications services. This aspect was of great concern to developing countries in the course of INTELSAT’s privatisation. Countries qualified as “lifeline countries” were granted to enter into Lifeline Connectivity Obligation (LCO) commitments.<sup>95</sup> Lifeline Connectivity Obligation (LCO) is the obligation assumed by Intelsat Ltd. as set out in the LCO contract to provide continued telecommunications services to the LCO customer.<sup>96</sup> LCO are obligations from an agreement in private law between the private company Intelsat Ltd. and the respective states. ITSO, the remaining international satellite organisation, is not party to these agreements (and does not even have the facilities to provide such services), but instead is responsible for ensuring that the private company fulfils its obligations contained in these contracts.<sup>97</sup> As a result, claims in public international law can only be raised against ITSO to exercise its obligation to ensure Intelsat Ltd.’s conformity with the LCO commitment. Consequently, there is no valid claim against ITSO to provide such services, however.

### 4. Universal service obligations

Pursuant to para. 3 of the Reference Paper, any member has the right to define the kind of universal service obligation it wishes to maintain in spite of market liberalisation. Such obligations will not be regarded as anti-competitive *per se*, provided they are administered in a transparent, non-discriminatory and competitively neutral

manner and are not more burdensome than necessary for the kind of universal service defined by the Member. Universal service obligations are thus in principle accepted, although they may hinder competition.

### 5. International cooperation

The remaining question, then, is whether there are any participatory rights of developing countries resulting from other sources of public international law. Basically all of the provisions examined above are expressions of some kind of strive towards international cooperation, also in the field of satellite telecommunications. In this respect, they may certainly be seen in the spirit of the purposes of the United Nations as laid down in Art. I of the UN Charter, and the UN Friendly Relations Declaration of 1970<sup>98</sup>, which reaffirms that the maintenance of international peace and security and the development of friendly relations and cooperation between nations are among the fundamental purposes of the United Nations. According to Principle (d) of the Declaration, states should *inter alia* co-operate in the economic, social, and science and technology fields, so as to promote economic growth especially of developing countries.

Whereas GA Resolutions are not legally binding, they may reflect a certain degree of *opinio iuris*, which in connection with state practice is a constituent element for the creation of customary international law.<sup>99</sup> It could thus be asked whether customary international law exists that provides for participatory rights of developing countries resulting from an international duty of states to co-operate in the field of science and technology. An *opinio iuris* to this end could be emphasised by the Charter of Economic Rights and Duties of States<sup>100</sup>, which in Art. 17 provides that international coopera-

tion for development is the shared goal and common duty of all states.<sup>101</sup> What becomes clear from these documents, however, is that states seem reluctant to commit to specific obligations of cooperation, let alone without consideration. Such understanding is underlined when taking a look at the principle of solidarity in public international law, which may well be regarded as the more general concept underlying these resolutions. In the light of transformation of public international law from a right of co-existence to one of cooperation,<sup>102</sup> it is to be doubted that international solidarity may lead to one-sided obligations. This is especially true when taking into account the principle of reciprocity. Any one-sided rights of developing countries therefore contradict the current understanding of the solidarity principle.

More recent documents regarding ICTs and the digital divide confirm this perception. The Okinawa Charter on Global Information Society, produced by the G8 at its summit in Okinawa in 2000, commits the G8 members to exercise their leadership to, *inter alia*, bridge the digital divide (para. 4). Yet, while providing for concrete actions (that have been implemented, such as the "Digital Opportunity Taskforce" whose report has been endorsed by the G8 Summit Meeting in Genoa in 2001), its language is again very vague ("promote", "encourage"). It is thus doubtful that the G8 states meant to express their commitment in terms of corresponding rights for developing countries. Rather, it again remains at the discretion of states to take concrete steps.

Finally, the outcome of the two phases of the World Summit on the Information Society (WSIS) must certainly be taken into account when examining any *opinio iuris* regarding international cooperation to bridge the digital divide. WSIS was set up by the

IAC-06-E6.5.06

UN following an ITU initiative,<sup>103</sup> and aimed at building a people-centred, inclusive and development oriented information society by bridging the digital divide.<sup>104</sup> The WSIS Geneva Declaration's 11 Principles set out key issues in this respect and concludes with the commitment of strengthening cooperation in order to tackle these challenges.<sup>105</sup> The Geneva Plan of Action<sup>106</sup> consequently sets out action lines regarding the issues defined in the Declaration. Of particular interest is action line C2.(d)(i), calling for support studies by the ITU so as to broaden access to orbital resources, global frequency harmonization and global systems standardization. Action line C2.(i) encourages the use of unused wireless capacity, including satellite, especially in developing countries. Furthermore, action line D. deals with a "Digital Solidarity Agenda", which aims at putting in place the conditions for mobilizing human, financial and technological resources for inclusion of all in the emerging information society.<sup>107</sup> The Tunis phase of WSIS, then, focussed mainly on financial mechanisms for bridging the digital divide, on internet governance, and on implementation of the Geneva and Tunis decisions.<sup>108</sup> According to para. 31 of the Tunis Commitment, the "representatives of the peoples of the world" commit themselves to work towards the implementation of the Digital Solidarity Agenda (para. 27 of the Geneva Action Plan). The Tunis Agenda for the Information Society consequently deals with implementation and follow-up of the outcomes of Geneva and Tunis. Also here, effective cooperation on all levels is considered essential.<sup>109</sup> While these documents do contain palpable approaches to bridging the digital divide, based on international cooperation, specific corresponding rights can not be derived.

At least with regard to any *opinio iuris* in this respect, there is not a single tangible line that can be drawn from all the resolutions examined previously to the WSIS documents. While the documents may indicate a general consensus that international cooperation is necessary, states seem reluctant to commit to specific obligations, not least of all without consideration. Accordingly, general public international law, i.e. customary international law, does not provide for substantial rights of developing countries regarding certain forms of cooperation with respect to satellite telecommunications.

## VI. CONCLUSION

Access to the orbit/spectrum resource is to a certain degree ensured by the ITU regulatory framework within the limits of allotment plans and allocation. There is no specified right to transfer of technology, albeit Art. 66 (2) TRIPS obliges developed countries to promote the transfer of technology to LDCs. Moreover, there is no claim towards ITSO for continued provision of telecommunications services. Developing countries may, however, provide for universal service obligations.

What becomes clear from the above is that it is hard to speak of substantial legal rights with respect to interests regarding satellite telecommunications; commitments to international cooperation do exist, but at the same time contain considerable discretion on the part of the developed nations. In terms of public international law, the outer space legal regime and its concretisation in the ITU regulatory framework suggest that there is some duty to cooperate, the details of which remain unclear and require further cooperation.

<sup>1</sup> *R. S. Jakhu*, Safeguarding the Concept of Public Service in View of Increasing Commercialization and Privatization of Space Activities, with Particular Attention to the Global Public Interest & the Needs of Developing Countries, 5 *Sing. J. Int'l & Comp. L.* 71, 72.

<sup>2</sup> *P. Malanczuk*, Telecommunications, International Regulation, in: R. Bernhardt (ed.), *EPIL IV*, 2000, p. 791, 796.

<sup>3</sup> *B. M. Compaine*, The Digital Divide: Facing a Crisis or Creating a Myth?, 2001, p. xi.

<sup>4</sup> *R. S. Jakhu*, Safeguarding the Concept of Public Service, 5 *Sing. J. Int'l & Comp. L.* 71, 72.

<sup>5</sup> US NTIA Report "Falling through the Net: Defining the Digital Divide", 1999.

<sup>6</sup> *UNESCO*, Many Voices, One World, 1980.

<sup>7</sup> Cf. Res. No. 20 of the Plenipotentiary Conference of the ITU (Nairobi, 1982).

<sup>8</sup> *ITU*, The Missing Link, 1984, p. 13 *et seq.*

<sup>9</sup> Meaning the penetration in terms of one telephone line per 100 inhabitants.

<sup>10</sup> *T. Kelly*, Twenty years of measuring the missing link, in: G. Milward-Oliver (ed.), *Maitland+20*, 2005, p. 23, 29.

<sup>11</sup> *UNDP*, Human Development Report 2005, 2006, p. 265.

<sup>12</sup> *ITU*, World Telecommunication/ICT Development Report 2006, 2006, Executive Summary, p. 5.

<sup>13</sup> Cf. also *S. Ospina*, Satellite Service Providers, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 140, 157.

<sup>14</sup> *W. v. Kries/B. Schmidt-Tedd/K.-U. Schrogl*, Grundzüge des Raumfahrtrechts, 2002, p. 155; *H. E. Hudson*, From missing links to digital divides, in: G. Milward-Oliver (ed.), *Maitland+20*, 2005, p. 37, 41.

<sup>15</sup> E.g. still quite high costs both for the telecommunications segment and the terminal equipment/end device compared to terrestrial networks, and the lower transfer rate in comparison to optical fibres, *W. v. Kries/B. Schmidt-Tedd/K.-U. Schrogl*, Grundzüge des Raumfahrtrechts, 2002, p. 155.

<sup>16</sup> *I. Baumann*, Das internationale Recht der Satellitenkommunikation, 2005, p. 548.

<sup>17</sup> *P. Malanczuk*, Telecommunications, in: R. Bernhardt (ed.), *EPIL IV*, 2000, p. 791, 795.

<sup>18</sup> *I. Baumann*, Das internationale Recht der Satellitenkommunikation, 2005, p. 547.

<sup>19</sup> *R. S. Jakhu*, Safeguarding the Concept of Public Service, 5 *Sing. J. Int'l & Comp. L.* 71, 84.

<sup>20</sup> *R. S. Jakhu*, Safeguarding the Concept of Public Service, 5 *Sing. J. Int'l & Comp. L.* 71, 102.

<sup>21</sup> Revised Draft of the ITU Strategic Plan for 2008-2011, Doc. PP-06/28 of 27 June 2006, at para. 2.1.7.

<sup>22</sup> [http://www.itu.int/ITU-D/ict/statistics/at\\_glance/KeyTelecom99.html](http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom99.html) (date of access: 31.08.2006).

<sup>23</sup> Revised Draft of the ITU Strategic Plan for 2008-2011, PP-06/28 of 27 June 2006, para. 2.1.7.

<sup>24</sup> E.g. Okinawa Charter on Global Information Society of 22 July 2000, para. 15.

<sup>25</sup> *WSIS*, Tunis Commitment, WSIS-05/TUNIS/DOC/7-E of 18 November 2005, and Tunis Agenda for the Information Society, WSIS-05/TUNIS/DOC/6(Rev.1)-E of 18 November 2005.

<sup>26</sup> To the same effect, *D. Gomes De Sousa*, Digital Divide, Proc. 47<sup>th</sup> IISL Coll., 2005, p. 439.

<sup>27</sup> Art. 38 (1) ICJ-Statute is commonly acknowledged to apply to public international

law in general, *H. Mosler*, General Principles of International Law, in: EPIL II, 1995, p. 511, 515.

<sup>28</sup> *S. Hobe*, Die rechtlichen Rahmenbedingungen der wirtschaftlichen Nutzung des Weltraums, 1992, pp. 36 et seq., 168; *M. L. Smith*, International Regulation of Satellite Communication, 1990, p. 6.

<sup>29</sup> *R. Wolfrum*, Geostationäre Umlaufbahn, in: K. H. Böckstiegel (ed.), Handbuch des Weltraumrechts, 1991, p. 351.

<sup>30</sup> *M. Paterna*, Globalisierung der Telekommunikationsmärkte, 1996, p. 59.

<sup>31</sup> *R. Wolfrum*, Geostationäre Umlaufbahn, in: K. H. Böckstiegel (ed.), Handbuch des Weltraumrechts, 1991, p. 351.

<sup>32</sup> *M. L. Smith*, International Regulation of Satellite Communication, 1990, p. 7.

<sup>33</sup> Currently, the ITU has 190 member states, [http://www.itu.int/cgi-bin/htsh/mm/scripts/mm.list?\\_search=ITUstates&\\_languageid=1](http://www.itu.int/cgi-bin/htsh/mm/scripts/mm.list?_search=ITUstates&_languageid=1) (date of access: 30.08.2006).

<sup>34</sup> Constitution of the International Telecommunication Union, Done in Geneva on December 1992 as amended in Kyoto, 1994, Minneapolis 1998 and Marrakesh 2002. Hereinafter referred to as CS.

<sup>35</sup> *P. Malanczuk*, Telecommunications, in: R. Bernhardt (ed.), EPIL IV, 2000, p. 791, 792; *R. S. Jakhu/V. R. Serrano*, International Regulation of Radio Frequencies for Space Services, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 41, 71.

<sup>36</sup> "assignment of a radio frequency (channel) is the "authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions", Art. S.18 of the ITU Radio Regulations.

<sup>37</sup> *I. Baumann*, Das internationale Recht der Satellitenkommunikation, 2005, p. 284 et seq.

<sup>38</sup> It has also been described as a universal shared resource. Cf. *D. J. Fleming/E. D. DuCharme/R. S. Jakhu/W. G. Longman*, State Sovereignty and the Effective Management of a Shared Universal Resource: Observations Drawn From Examining Developments in the International Regulation of Radiocommunication, AASL, Vol. X (1985), p. 327, 332.

<sup>39</sup> Cf. *I. Baumann*, Das internationale Recht der Satellitenkommunikation, 2005, p. 276.

<sup>40</sup> *D. J. Fleming/E. D. DuCharme/R. S. Jakhu/W. G. Longman*, State Sovereignty and the Effective Management of a Shared Universal Resource: Observations Drawn From Examining Developments in the International Regulation of Radiocommunication, AASL, Vol. X (1985), p. 327, 332.

<sup>41</sup> "allocation" of a frequency band is the "entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radiocommunications services [...] under specified conditions", Art. S1.16 of the ITU Radio Regulations.

<sup>42</sup> *R. S. Jakhu/V. R. Serrano*, International Regulation of Radio Frequencies for Space Services, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 41, 71.

<sup>43</sup> "allotment" is the "entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or a space radiocommunication service in one or more identified countries or geographical areas and under specified condi-

tions", Art. S1.17 of the ITU Radio Regulations.

<sup>44</sup> *R. S. Jakhu/V. R. Serrano*, International Regulation, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 73 *et seq.*

<sup>45</sup> Fixed satellite services (FSS) and mobile satellite services (MSS), Art. S9 and S11 of the Radio Regulations and the respective declarations and recommendations; *I. Baumann*, Das internationale Recht der Satellitenkommunikation, 2005, p. 285. Art. S8.1.

<sup>46</sup> *P. Malanczuk*, Telecommunications, in: R. Bernhardt (ed.), EPIL IV, 2000, p. 791, 793.

<sup>47</sup> *S. Hobe*, Die rechtlichen Rahmenbedingungen der wirtschaftlichen Nutzung des Weltraums, 1992, p. 177.

<sup>48</sup> *I. Baumann*, Das internationale Recht der Satellitenkommunikation, 2005, p. 274.

<sup>49</sup> *R. S. Jakhu*, Legal Issues Relating to the Global Public Interest in Outer Space, October 2005, Paper prepared for Advanced Methods of Cooperative Security Program at the Center for International and Security Studies at Maryland, <http://www.cissm.umd.edu/papers/files/jakhu.pdf> (date of access: 31.08.2006), p. 38.

<sup>50</sup> *R. S. Jakhu/V. R. Serrano*, International Regulation, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 72.

<sup>51</sup> *R. S. Jakhu/V. R. Serrano*, International Regulation, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 72.

<sup>52</sup> *R. S. Jakhu/V. R. Serrano*, International Regulation, in: Project 2001, Legal Framework for Commercial Satellite Telecommunications, 2000, p. 72.

<sup>53</sup> *R. S. Jakhu*, Safeguarding the Concept of Public Service, 5 *Sing. J. Int'l & Comp. L.* 71, 91.

<sup>54</sup> This view is shared by a majority of authors, see e.g. *S. Hobe*, Die rechtlichen Rahmenbedingungen der wirtschaftlichen Nutzung des Weltraums, 1992, p. 66; *K.-H. Böckstiegel*, Legal Implications of Commercial Space Activities, 24<sup>th</sup> Coll. IISL 1981, p. 1; *O.F. Brital*, Survey from Space of Earth Resources, 13<sup>th</sup> Coll. IISL 1970, p. 197, 198; *N.M. Matte* (ed.), Space Activities and Emerging International Law, 1984, p. 273.

<sup>55</sup> Press Release USUN-18 (77), April 7, 1977, in: Digest of U.S. Practice in Int'l L., 1977, p. 661.

<sup>56</sup> Senate Comm. On Foreign Relations, Treaty on Outer Space, S. Exec. Rep. No. 8, 90<sup>th</sup> Cong. 1<sup>st</sup> Sess. 4 (1967).

<sup>57</sup> Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of all States, Taking into Particular Account the Needs of Developing Countries, UNGA Res. 51/122 of 13 December 1996.

<sup>58</sup> Also see *S. Hobe*, Was bleibt vom gemeinsamen Erbe der Menschheit?, in: *K. Dicke et al.*, Weltinnenrecht, 2005, p. 429, 339.

<sup>59</sup> *S. Hobe*, Die rechtlichen Rahmenbedingungen der wirtschaftlichen Nutzung des Weltraums, 1992, p. 181.

<sup>60</sup> WTO Reference Paper on Basic Telecommunications of 24 April 1996, para. 6: "Any procedures for the allocation and use of scarce resources, including frequencies, numbers and rights of way, will be carried out in an objective, timely, transparent and non-discriminatory manner. The current state of allocated frequency bands will be

made publicly available, but detailed identification of frequencies allocated for specific government uses is not required.”

<sup>61</sup> *M. Gonzalez Durantez*, WTO/GATS Negotiations on Basic Telecommunications, Int.T.L.R. 1997, 3(4), 136.

<sup>62</sup> *D. Satola*, Legal and Regulatory Implications of Implementing WTO Telecommunications Commitments in Developing Countries, delivered at London, 28 October 1997, <http://siteresources.worldbank.org/INTLAWJUSTICE/Resources/WTO>

TelecomDevelopmentMarkets.pdf (date of access: 31.08.2006).

<sup>63</sup> See *S. Hobe*, Was bleibt vom gemeinsamen Erbe der Menschheit?, p. 329 *et seq.*

<sup>64</sup> Cf. *N. M. Matte*, Aerospace Law: Telecommunications Satellites, RdC 1980, p. 123, 215.

<sup>65</sup> Legally protected rights resulting from intellectual activity; for a definition of “intellectual property”, see Art. 2 (viii) of the Convention Establishing the World Intellectual Property Organization of 14 July 1967, as amended on 28 September 1979.

<sup>66</sup> *R. Schmidt-Diemitz*, Geistiges Eigentum und entwicklungspolitischer Wissenstransfer, GRURInt 1988, p. 287, 291.

<sup>67</sup> *R. Schmidt-Diemitz*, Geistiges Eigentum, GRURInt 1988, p. 287, 290.

<sup>68</sup> *H. Stumpf*, The know-how contract in Germany, Japan and the United States, 1984, p. 10.

<sup>69</sup> *P. Roffe/T. Tesfachew*, Revisiting the Technology Transfer Debate: Lessons for the New WTO Working Group, in: Bridges, Vol. V, Issue 2/2002, p. 5.

<sup>70</sup> *K. Focke*, Internationale Zusammenarbeit im Weltraum, in: K.-H. Böckstiegel (ed.), Handbuch des Weltraumrechts, 1991, p. 637, 642.

<sup>71</sup> Cf. *supra*, at 2.1.2.

<sup>72</sup> Art. 66 (2) TRIPS: „Developed country Members shall provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technology base.”

<sup>73</sup> Art. 66 (2) TRIPS.

<sup>74</sup> *UNCTAD-ICTSD*, Resource Book on TRIPS and Development, 2005, p. 725, 730.

<sup>75</sup> *UNCTAD-ICTSD*, Resource Book on TRIPS, 2005, p. 725, 730.

<sup>76</sup> Para. 11.2 of the Decision on implementation-related issues and concerns of 14 November 2001, WT/MIN/(01)/17.

<sup>77</sup> See, for instance, IP/C/W/431/Add.3 of 7 January 2001, IP/C/W/431/Add.3/Suppl.1 of 14 April 2001, and IP/C/555/Add.6 of 14 December 2005.

<sup>78</sup> To the same effect: *W. Werner*, Grundlagen zum Technologietransfer in der WTO, RIW 2006, p. 187, 188.

<sup>79</sup> Decision of the Council for TRIPS of 19 February 2003, Implementation of Article 66.2 of the TRIPS Agreement, IP/C/28 of 20 February 2003.

<sup>80</sup> *UNCTAD-ICTSD*, Resource Book on TRIPS, 2005, p. 725, 734.

<sup>81</sup> The other provisions of TRIPS are concerned with technical cooperation in order to improve the protection of intellectual property, not with project-oriented transfer of technology, cf. *W. Werner*, Grundlagen zum Technologietransfer in der WTO, RIW 2006, p. 187, 188.

<sup>82</sup> *P. Roffe/T. Tesfachew*, Revisiting the Technology Transfer Debate: Lessons for the New WTO Working Group, in: Bridges, Vol. V, Issue 2/2002, p. 5.

<sup>83</sup> UNCTAD, *The Outcome of the Uruguay Round: An Assessment*, 1994, p. 156.

<sup>84</sup> M. Koehler, *Das Allgemeine Übereinkommen über den Handel mit Dienstleistungen (GATS)*, 1999, p. 140.

<sup>85</sup> M. Koehler, *Das Allgemeine Übereinkommen über den Handel mit Dienstleistungen (GATS)*, 1999, p. 141.

<sup>86</sup> R. Senti, WTO, 2000, marginal note 642.

<sup>87</sup> Hereinafter referred to as the Annex.

<sup>88</sup> Para. 1 of the Annex: "Recognizing the specificities of the telecommunications services sector and, in particular, its dual role as a distinct sector of economic activity and as the underlying transport means for other economic activities [...]".

<sup>89</sup> P. Malanczuk, *Telecommunications*, in: R. Bernhardt (ed.), *EPIL IV*, 2000, p. 791, 799.

<sup>90</sup> Fourth Protocol to the General Agreement on Trade in Services, entered into force on 1 January 1998.

<sup>91</sup> I. Baumann, *Das internationale Recht der Satellitenkommunikation*, 2005, p. 338.

<sup>92</sup> M. Gonzalez Durantez, *WTO/GATS Negotiations on Basic Telecommunications*, *Int.T.L.R.* 1997, 3(4), 135, 136.

<sup>93</sup> I. Baumann, *Das internationale Recht der Satellitenkommunikation*, 2005, p. 338.

<sup>94</sup> Reference Paper to the Fourth Protocol to the General Agreement on Trade in Services of 24 April 1996.

<sup>95</sup> K. Katkin, *Communication Breakdown?*, 38 *Vand. J. Transnat'l L.* 1323, 1361.

<sup>96</sup> See Art. I (h) ITSO-Agreement.

<sup>97</sup> See Art. III ITSO-Agreement.

<sup>98</sup> Declaration on Principles of International Law Concerning Friendly Relations and Co-Operation among States in Accordance with the Charter of the United Nations, of 24 October 1970, UNGA Res. 2625 (XXV).

<sup>99</sup> See K. Ipsen, *Völkerrecht*, 2004, para. 32 marginal note. 47.

<sup>100</sup> UNGA Res. 3281 (XXIX) of 12 December 1974.

<sup>101</sup> Preamble and Art. 17 of the Charter. Art. 17: "International co-operation for development is the shared goal and common duty of all States. Every State should co-operate with the efforts of developing countries to accelerate their economic and social development by providing favourable external conditions and by extending active assistance to them, consistent with their development needs and objectives, with strict respect for the sovereign equality of States and free of any conditions derogating from their sovereignty."

<sup>102</sup> S. Hobe, *Die Zukunft des Völkerrechts im Zeitalter der Globalisierung*, *ArchV* 37 (1999), p. 253, 278.

<sup>103</sup> Res. 73, ITU Plenipotentiary Conference (Minneapolis, 1998), UN GA Res. 56/183 of 21 December 2001.

<sup>104</sup> Paras. 1, 17 of the Geneva Declaration of Principles of 12 December 2003, WSIS-03/GENEVA/DOC/4.

<sup>105</sup> Para. 65 of the Geneva Declaration of Principles.

<sup>106</sup> Plan of Action of 12 December 2003, WSIS-03/GENEVA/DOC/5.

<sup>107</sup> Para. 27 of the Geneva Declaration of Principles.

<sup>108</sup> Para. 7 of the Tunis Commitment of 18 November 2005, WSIS-05/TUNIS/DOC/7.

<sup>109</sup> Paras. 83 *et seq.* of the Tunis Agenda for the Information Society of 18 November 2005, WSIS-05/TUNIS/DOC/6(Rev.1).