Global Value Chain studies: taking stock, looking ahead

Proceedings of the Doctorate ad Honorem Awarding Ceremony to Prof. Gary Gereffi and related workshop

edited by

Valentina De Marchi, Marco Bettiol, Eleonora Di Maria

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Introduction

Marco Bettiol and Eleonora Di Maria

University of Padova

This book contains the proceedings of the ceremony and related workshop organized on March 13th, 2023 at the Aula Magna of the University of Padua on the occasion of the conferral of the Doctorate *ad honorem* in Economics and Management to prof. Gary Gereffi, professor emeritus of Sociology and Director of the Global Value Chains Center at Duke University.

There are three reasons that led us to prepare this book (available in English and Italian versions).

The first concerns recognition of the extraordinary scholarly contribution that Gary Gereffi has made to globalization studies and related disciplines. Through the elaboration of the theoretical framework of Global Value Chains (GVCs), Gary Gereffi offers us a powerful intellectual tool to accurately read the organization of economic activities and to understand the mechanisms through which firms, territories, and nations can participate in the international division of labor. If the task of science is to make the "invisible visible", the Global Value Chains model defined by Gary Gereffi has enabled us to see more clearly inside the complex phenomenon of globalization and to understand the principles that govern its evolution over time.

The second reason is to make explicit the contribution that Italian scholars, and in particular the Venetian and Paduan "school" have made to the evolution of the theory of Global Value Chains. If we must identify a date that marks the beginning of this intellectual collaboration, surely, we can refer to 2005 when Gary Gereffi came to Venice International University on the island of San Servolo in Venice for a semester of teaching. It was the occasion to build a very intense dialogue that initially involved a group of researchers and (then) students among whom we recall Stefano Micelli, Giancarlo Corò, Maria Chiarvesio, Mario Volpe, Valentina De Marchi, Giulio Buciuni, Vladi Finotto and Lorenzo Gui, as well as the two of us, and then further expanded over time to include many Paduan colleagues such as Fiorenza Belussi, Roberto Grandinetti, and Silvia Rita Sedita.

On the one hand, this meeting allowed us to compare Gereffi's Global Value Chains perspective with that of the Italian researchers who were studying the evolution of Small and Medium-sized Enterprises (SMEs) and industrial districts under multiple perspectives. It was a very fruitful exchange. As Gary Gereffi himself acknowledged during the ceremony, the knowledge of what was happening in industrial districts made it possible to enrich the GVC theoretical framework and better understand the contribution of local territories and small businesses within Global Value Chains. On the other hand, Italian scholars have been able to read the evolution of districts within the broader processes of globalization and develop a more precise identification of the new strategies that firms and districts must deploy to increase their competitiveness in international markets. In particular, one of the aspects on which important discussion has emerged concerns the role of digital technologies in enabling participation in Global Value Chains.

The third reason is to cast a glance beyond the present and think about the future of globalization. Since the development of the Global Value Chains framework to the present, many changes have occurred at the geopolitical, economic and social levels. A recent example is the war between Ukraine and Russia (a partial return to the conflict between continental blocs), the Covid-19 pandemic and its effects on supply chains, and the reshoring of manufacturing production considered strategic. Other phenomena are on the horizon, such as the issue of environmental sustainability and the introduction of artificial intelligence. All these elements combine to change the framework by introducing new constraints and at the same time opening up new opportunities. The event of the awarding of the honorary doctorate was too important to pass up, which is why together with Valentina De Marchi we organized a workshop in which we would ask many international and Italian scholars who have worked on globalization to make a contribution to outline the challenges to be faced in the coming years.

The book is organized in two parts. The first part contains the full texts of the speeches by Prof. Daniela Mappelli, Rector of the University of Padua, and Prof. Paola Valbonesi, head of the Marco Fanno Department of Economics and Management, which contain the reasons for the award of the honorary doctorate. This section also contains the *Lectio Magistralis* that Gary Gereffi gave in the Aula Magna in which he outlined the evolution of the phenomenon of globalization over the past forty years and provided insights for future research directions.

The second part contains revised, enriched transcripts of the speeches by academics, scholars and entrepreneurs who spoke at the workshop on globalization that was organized to follow the honorary doctorate ceremony, related to the topics of local development, digital technologies and manufacturing as well as sustainability identified as characterizing past and future research streams.

The section opens with the introduction of the workshop by Valentina De Marchi, who also reported the results of a bibliometric analysis of the literature on Global Value Chains and the main directions around which the scientific debate is focusing. Three speeches have been addressed on the above-mentioned topics: at the international level, Stefano Ponte pointed out that environmental and social sustainability is now one of the factors driving the revision of the organization of Global Value Chains with the aim of reducing the impact on the planet. Carlo Pietrobelli focused on the contribution of Global Value Chains to local development. Stefano Micelli delved into the relationship between digital technologies and globalization.

During the following round table, chaired by Marco Bettiol, Roberto Grandinetti pointed out the role that multinationals that have settled in some Italian industrial districts have had on the evolution and growth of the districts themselves. Fiorenza Belussi emphasized the contribution of the Padua school to the theme of Global Value Chains. Giancarlo Corò stressed the importance of interactions between local systems (districts and territories) and global processes. Maria Chiarvesio addressed the issue of reshoring, and thus how manufacturing production that had been located abroad may come back to the home country, and how this phenomenon is affecting the current phase of globalization. Roberta Rabellotti focused her talk of how Global Value Chains can help the green transition. Arianna Rossi from International Labor Office was also present at the round table briefly describing the collaboration Gary Gereffi had with ILO on the topic of social upgrading and sustainability.

Eleonora Di Maria summarized what had emerged from the panel discussion with practitioners she led and which involved Fabrizio Guelpa, Head of the Industry & Banking Research of Intesa Sanpaolo Research Department; Massimo Pavin president and director of Sirmax, a leading company in mechanics; and Gianni Dal Pozzo, managing director and president of Considi, a consulting firm, and president of the University of Padua Alumni Association.

The book closes with final remarks by Gary Gereffi aiming at summarizing what emerged during the workshop and his view on the debate occurred.

Part I
Award Ceremony for Doctorate ad Honorem
Prof. Gary Gereffi

1
The *Laudatio* for doctorate ad honorem to prof. Gary Gereffi

Daniela Mapelli

Rector of the University of Padova

It is with great pleasure that I welcome each and every representative of the academic community, the guests gathered here, and especially Professor Gary Gereffi to whom we have the honor of conferring today an honorary doctorate in Economics and Management.

Professor Emeritus of Sociology at Duke University and Director of the Global Value Chains Center at the same University, Gary Gereffi graduated from the University of Notre Dame, Indiana. He completed his doctorate at the prestigious Yale University and then settled at Duke University, which over the years has become the nerve center of Global Value Chain studies.

The implications for territories with respect to the presence of multinational corporations was what originally stimulated his research interest. In the 1970s he was in Mexico studying the consequences of the presence of U.S. multinationals on local development, studying the pharmaceutical sector in particular. At that time, the issue of development support in Latin American countries was highly politicized and contested, with opposing views on what role such companies could actually play for the contexts in which they opened their own subsidiaries. Delving deeper into other industries, such as textiles, and new geographic contexts, such as Southeast Asia, Professor Gereffi realizes in the field that a profound transformation of the global production and trade model is taking place, which allows for a new perspective on the topic. In fact, since the mid-

1960s, more and more companies have begun to fragment their operations in search of low-cost foreign suppliers. Instead of opening new factories in such countries, companies increasingly outsourced more and more stages of their production, contracting them out to local suppliers, initially involving them in simple assembly activities, carried out from the detailed instructions of American multinationals. In some cases, these activities have expanded to the point of also involving more value-added stages of production, such as new product design or marketing. However, this phenomenon involved few cases, and in fact the fragmentation of activities by multinationals did not, for the most part, lead to a real phenomenon of development of the territories where these activities were outsourced.

In the 1990s and 2000s, sectors and outputs following the global supply chain model grew exponentially, affecting not only manufacturing industries, but also energy production, agribusiness, and all kinds of services from call centers and accounting, becoming what has been called "the backbone and central nervous system of the world economy."

This new wave of globalization obviously did not go unnoticed. Indeed, there had been a boom in imports from developing countries, and a subsequent export surge to more developed countries. This growth was also accompanied by that of new multinationals, such as Nike or Adidas, which had no factory of their own for production while selling increasing quantities of products in international markets. In this context, Professor Gereffi's insight was to grasp the importance of an intermediate level between the countries in which import and export flows are measured and that of individual multinational companies: Global Value Chains precisely. Global Value Chains, as they are known in the international literature, are networks of independent firms in which each is responsible for one or more of the activities required to produce a finished product.

Professor Gereffi and the group of co-authors with whom he has collaborated have identified two key characteristics for understanding under what conditions participation in such chains can be a positive development factor for the territories, workers, firms and institutions that are part of them. The first, called governance, suggests that in Global Value Chains – which involve administratively independent entities located in different parts of the globe – the economic value generated is not distributed evenly among entities. In fact, such chains are rarely coordinated spontaneously through market exchanges; instead, they are governed by leading firms that, in Gereffi's own words, determine *'what is done and by whom, at what price and using what standards'* and that appropriate, therefore, most of the economic value realized. The second key element concerns the strategies implemented by firms, countries and other economic actors to maintain or improve their position in the global economy. Such strategies and actions are called upgrading. This term has been used to highlight the pathways of value chain actors to "climb the chain" itself, appropriating a greater share of the economic value realized through efficiencies in production processes, product improvements, or the ability to perform additional higher value-added activities.

Professor Gereffi's merit was that he recognized a growing phenomenon and developed a theory capable of conceptualizing and analyzing it, thus enabling businesses and policymakers to understand how to take advantage of participation in the global economy aware of its complexity and risks. This conceptual effort has also allowed for guidance in developing ambitious projects, such as those aimed at ensuring decent working conditions even in developing countries in Africa, Latin America and Asia or aimed at identifying the causes of environmental crises at the source.

In addition to the scientific merits, a very intense activity of promoting scientific culture, social participation and civic passion should also be added. In fact, in addition to its content, Gary Gereffi's work also deserves to be celebrated for its method. Having identified this promising line of research, Professor Gereffi does not go it alone but goes out of his way to create a larger working group, composed of colleagues from different disciplines and specializing in different territorial contexts. Between 2000 and 2005, he obtained a major grant from the Rockefeller Foundation to create an interdisciplinary initiative on Global Value Chains, which saw its fulfillment in the founding of the Duke Center on Globalization, Governance & Competitiveness, now renamed to the Duke Global Value Chains Center, founded by Professor Gereffi in 2005 and which has become a multiplier center for scholars, businesses and institutions. At the same time, he tirelessly seeks collaboration with major international and regional institutions – International Labor Organization (ILO), United

Nations Industrial Development Organization (UNIDO), World Bank, African Development Bank to name a few – supporting the progress of important social and economic development initiatives and demonstrating success in balancing a focus on quality publications with attention to societal impact. He worked, for example, with the Ministry of Foreign Trade in Costa Rica to understand the economic opportunities and risks for local businesses related to participation in global value chains in the context of the medical device, electronics, and aerospace sectors; or with the U.S. Environmental Defense Fund, to study compartments where new environmental technologies can help reduce impacts on the environment and create new jobs.

Costa Rica, China, India, Kazakhstan, Mexico. There are so many countries to which Professor Gereffi has traveled, to bring his knowledge and collaborate with local institutions and businesses. Among them, a special role has been played by Italy, and Padua in particular. From the mid-2000s onward, in fact, there followed several periods of study in our territory, which became a privileged observatory for understanding the strategies implemented by small and medium-sized enterprises to take advantage of participation in global value chains, and the implications of such transformations for the prosperity of territories with a high manufacturing vocation – what we call industrial districts. The fruitful professional association with colleagues from our university resulted in 2016 and 2022 in the organization of important international workshops and in 2018 realization of a book that merges the Global Value Chain tradition with the tradition of the analysis of industrial districts and manufacturing firms, an area of research excellence in our department of economics and business sciences.

Here we are today celebrating the scientist who has been able to sweep across a very broad front of issues related to globalization and development – economic, inclusive and sustainable development – by finding the necessary compromise between the analysis of business strategies, with a micro approach, and the policies of territories, with a more macro look. We recently inaugurated the new academic year, following the celebrations for the annus mirabilis that saw us commemorate the 800th anniversary of our university. Throughout his extraordinary career, Professor Gereffi has shown the curiosity in finding solutions, the deep dissemination of knowledge by combining social and civic passion that remind us precisely of the DNA of our University, which we recently celebrated on its birthday, steeped in freedom and the future. Welcome among us Gary Gereffi.

2
Motivation to support the doctoral proposal

Paola Valbonesi

Head of the Department of Economics and Management, University of Padova

Magnificent Rector, kind colleagues, students, authorities, ladies and gentlemen, the Department of Economics and Management at the University of Padua proposes to award Professor Gary Gereffi an honorary doctorate in Economics and Management for developing the theory of Global Value Chains. Beginning as an attempt to understand the internationalization strategies of U.S. multinational corporations from a sociological perspective, this conceptualization, with its economic, socio-political and environmental implications, has had a broad and significant influence on managerial and economic studies of globalization and development.

Gary Gereffi is unanimously recognized as the founder of Global Value Chain theory. His scholarly output is vast and covers a variety of fields – from economic sociology, to economic geography, to international business – in which he has made enormously important contributions.

Beginning in the late 1990s, he made evident the mechanisms underlying the operation of the new, growing wave of globalization that was beginning to emerge in those years and that is now an indispensable feature of productive sectors. Through his scholarly output, Gary Gereffi has contributed to helping us understand that the traditional way through which we read the phenomenon of globalization – import and export flows – are, in fact, more than a trade interchange between two countries. They are a symptom of a more complex system of organizing production, which involves a vast number of enterprises located in different countries, whose activities are coordinated by large multinational corporations that may not have ownership of any manufacturing activities. The great relevance of Gary Gereffi's work lies in making it possible to understand the complexity of these mechanisms for the functioning of manufacturing sectors worldwide, in order to explain whether and how their potential for development can become a reality, offsetting any negative implications of globalization.

By catalyzing perspectives from different disciplines, Gary Gereffi has constructed a theory capable of providing an effective key to understanding the economic transformations taking place in the 1980s and 1990s, and more recently the transformations related to the pandemic-related crisis, during which disruptions in supply made the pervasiveness of value chains dramatically evident to all.

Even more relevant to Professor Gereffi's work has been its ability to become the reference point for academics and public and private institutions concerned with economic growth and sustainable development. Since the early 2000s, virtually all international organizations with a mandate related to economic development have embraced the concept and language of analyzing global value chains. Through constant collaborative work that has also resulted in major research projects and joint publications, Professor Gereffi's intellectual work has indeed been able to materialize into actions and policies designed to support inclusive development, striking a balance between academic acceptance and policy relevance in the swirling controversies over globalization and development.

Professor Gereffi's studies have analyzed the implications of globalization in a variety of contexts – from Latin America to China. Among them, since the late 2000s, Italy has become a particularly relevant observatory. In fact, the Italian context, characterized by small innovative enterprises with manufacturing value, has been a privileged context of observation, because of its specificity in responding to the challenges of globalization and because of the important economic and social implications for the district territories to which these enterprises belong. When Gary Gereffi began his academic career he was interested in understanding the sociological implications of the presence of U.S. multinationals in Latin America. The implications of his studies, however, soon transcended these disciplinary boundaries, becoming a point of reference for disciplines such as international business, development theories, and economics geography. It is therefore an honor and a privilege for me to be able to report to you today that the Department of Economics and Management has unanimously decided on the basis of these reasons and outstanding record, to propose the award of an honorary doctorate in Economics and Management to Gary Gereffi.

3
Lectio Magistralis: Regionalization in a Post-Pandemic Supply Chain World

Gary Gereffi

Duke University

First of all, let me say what a great honor it is for me to be recognized with an honorary doctorate from the University of Padova. I would like to give my deepest thanks to the Rector of the University, to the Director of the Department of Economics and Management, and to all the faculty members here who have helped make this honor possible. Padova is one of the most distinguished and oldest universities in the world, and it's a fantastic honor to receive this degree from this university.

In addition, however, receiving this honor in Italy and in Padova is especially meaningful, both personally and professionally. Personally, I have family ties to Italy because the parents of my father migrated from Southern Italy to the United States in the early 20th century. So I'm part of a very big wave of Italian immigrants growing up in the United States and I've always been very proud of my Italian heritage.

But professionally, it's also extremely important to have this distinction from the University of Padova because it brings together two parts of my professional career. In 2005, as was noted by the Rector in her remarks, it was the end of something called the Rockefeller Foundation Global Value Chains Initiative that gave rise to this framework. When I and a number of colleagues from around the world were trying to create this framework in 2005, I founded the Duke Global Value Chains (GVC) Center at Duke University. So that was important in terms of the GVC framework.

In the spring of 2005, I also had a chance to teach two courses at Venice International University (VIU), which was part of a consortium with Duke University. A number of the faculty who are sitting here, who are connected both with the University of Padova and other universities in Italy, including Ca' Foscari, have been very influential in helping me understand how knowing more about Italy helps us understand more about global value chains.

I would say there are at least three different ways that working in Italy and on Italy has helped the development of the GVC framework. First, I think teaching in Italy and working with my Italian colleagues gave me a much better understanding of the continued dynamism of local places. In particular Italian industrial districts that have been so well-known around the world, despite the trends towards globalization in many other areas. The field research my Italian colleagues have conducted, and I was able to share with many of them, gives deep insights into the continuing value of local places and local competitiveness in the global economy.

The second insight I took away from my time at VIU and subsequent meetings with my Italian colleagues is the importance of a comparative framework. Comparative in two ways because in Italy, these Italian districts were located in different parts of the country, but producing some of the same goods. Valentina De Marchi and I had a chance to look at the gold jewelry district in three different parts of Italy (Valenza Po, Valenza, and Arezzo). Many other industries have that kind of comparative presence. Also, Italy plays a very important role within Europe as a location where competitiveness is important. So comparisons were another thing I drew from my experience here at Venice International University.

And a final topic was the importance of small and medium enterprises and how they participate in the global economy. So all of those things – the importance of place, the importance of comparisons, and the importance of small firms that nonetheless are successful in an era of globalization – were brought into the GVC framework in very important ways. I really attribute that to my work here in Italy at VIU and at Padova as well.

In terms of the main theme for my remarks today, I want to focus on evolving perspectives on globalization.

I titled my talk "Regionalization in a Post-Pandemic Supply Chain World." I want to get us to regionalization by reviewing three main trends in globalization. When I'm referring to globalization here, I'll focus mainly on economic globalization. Trade and foreign direct investment have been very powerful forces in the post-World War II era. Many other factors have been important besides trade and foreign direct investment in the global economy: technology and scientific advances, military and security issues, social and political trends, and increasingly environmental issues. All of those have been important. But I think that economic globalization can be tracked through three major shifts and I'll quickly identify what those are.

The first shift I would call the era of "expanding globalization," which probably dates from around 1960 until 2007-2008. For 50 years, economic globalization, this combination of trade and foreign investment, has expanded to most regions of the world. The process was driven largely by advanced industrial economies – U.S., U.K., Western European economies, and Japan.

But developing regions of the world were also brought into the global economy, even if in very uneven ways, by two main development strategies. On the one hand, a number of developing economies pursued an export strategy. Some of them focused on natural resource exports. Other developing economies, like those in East Asia, focused on manufactured exports. So export strategies were one way to connect to the global economy. But in places like Latin America where I did a lot of work, import-substitution was a different model. By 1980, import substitution fell to the side because of the bank crisis. So we had 50 years of expanding globalization.

In 2007-2008, we entered a second period that I'll call "fragmented globalization" because 2007-2008 was the global economic recession. When the recession hit, the export promotion strategy that many countries were following really was disrupted. For the large countries like Europe, U.S., and Japan, their imports dropped dramatically. Many of the countries around the world were focused on export production, and they also had to begin to change their development strategies.

Big countries like China and India struggled to turn inward and focus more on using their domestic economy as a source of growth. China, in particular, pushed an advanced technology strategy called Made in China 2025, but there are other dimensions to it. China was clearly interested not only in pushing the exports that it's had in the past along with new high-technology areas, but also developing some of the leading technologies around the world.

Other developing economies focused more on regional value chains. In Latin America, you had a group of countries that were focused more on the Americas as part of their chains. In Europe, the EU 27 began to link Western Europe and Eastern and Central European economies in a regional way. And Asia as well had regional value chains. So I think in this era of fragmented globalization, we began to see some shifts because of the trade downturns. But that wasn't the only factor that caused disruptions.

Two other big factors are important. One is economic nationalism. During the 2010s, many countries in the world began to have anti globalization emphases from their local economies. I think first, we saw that with Brexit. When the U.K. withdrew from the European Union, that was telling us that certain parts of the U.K. economy felt that they could gain more outside of regional framework than inside. But this economic nationalism has been much, much broader.

In the United States, we saw that with the Trump administration beginning in 2017, where the campaign slogan, Make America Great Again (MAGA), was partly defined by retreating from the world – a sort of Fortress America. In other places, it might be Fortress Europe. So globalization was defined partly by people who wanted to return to an international economy made up of nation-states.

In the United States, it wasn't just a sentiment of protecting the U.S. against imports from China, but also against Mexico, Canada, and Europe. So the sentiment we had in the U.S. for a period, and it still continues, is again a retreat from globalization to strengthen the domestic economy. We're seeing these same kinds of pressures in many other countries around Europe and the world -- Hungary, Turkey, Iran, Germany, and many others all have strong nationalist political groups. I think that's telling us something important about what globalization did not deliver to different parts of these populations as part of a big political trend.

The final part of fragmentation, of course, was the COVID-19 global pandemic. What the global pandemic did, different from just economic nationalism or economic downturns, is it made supply chains all of a sudden a national security issue. In the United States and elsewhere, when we had shortages of medical supplies like face masks or ventilators or rubber gloves, people began to say that could be a problem of globalization. The supply chains are broken. Maybe we need to rebuild them in the U.S. So this era of fragmentation had different causes, but was leading everybody to question globalization.

What I want to do in the last part of my remarks is return to this theme of where are we now after this long trend of expanding globalization, and a short intense period of about 15 years of fragmented globalization. Where do we go from here?

I think there are two main directions that people point to. One big group says we should focus on deglobalization. Globalization itself has spread things too thin and made countries too vulnerable. So we should retreat into a world built around countries or nation-states trading with one another, like we had 150 or more years ago.

Technically and practically, I think this is an impossible goal even for the largest economies for multiple reasons. Natural resources are global. No one country is going to have all the natural resources they need. So you have to rely on the global economy. But very importantly, industry supply chains are global; every industry is internationally organized. Even the simplest products, like athletic footwear, can't be produced easily in one country. Adidas, the biggest athletic footwear company in the world, tried to set up plants in Germany and the United States to make simple shoes. And they failed. They weren't able to relocate the supply chain parts even for shoes.

I think this is telling us that not only for supply chain reasons, but also economically and politically, deglobalization is too risky. Importantly, international partnerships are still needed today more than ever. We see that not only in the military arena or geopolitical security, as with the current situation of the Russian invasion of Ukraine and other military conflicts. Scientifically, we see it in the importance of COVID-19 vaccines and international cooperation that led to those. On a global scale, there are very important issues like climate change and global health.

What does regionalization mean in this context? What would it look like? I think this is where we should return to some of the key insights of the GVC framework.

In the GVC framework, we focused on global industries of different kinds. In those industries we asked questions: Who controls those global industries? Which firms? There are always symmetries of power in global industries. What do the governance structures of these chains look like? What did the upgrading pathways for different countries that have participated in those industries look like? From a value chain point of view, we want to know: who creates value in the chain, who captures it, and how are the gains distributed to different countries that are part of these value chains?

I would conclude by saying that reglobalization poses four main challenges that our research now has to confront as we move forward. First, how do we rebuild more resilient value chains after the era of fragmentation that I mentioned? There are at least four themes that come out and we can identify others.

One way is we make value chains more domestic by “reshoring” or bringing production back home, whatever our home country is. Second, we could “nearshore.” We could try to make goods not in our home country but in neighboring countries, which would reinforce the regionalization emphasis. There’s an increasing discussion about “friend shoring.” You can cooperate with countries that share your values even if they’re not neighbors. Finally, we also have strategic partnerships. Every country is going to have other countries that they are strategic partners with.

Any of those different ways would reconfigure the value chain in light of how do we rebuild them. Reshoring involves focusing on “what” you make. In the United States, this is a big topic. But what I see in the reshoring discussion from a value chain perspective is that often the most important products to reshore are not final products, but intermediate goods. For example, the Biden administration published a 100-day report in June of 2021. They focused on four critical industries for the United States: semiconductors, active ingredients of pharmaceuticals, electric batteries for electric vehicles, and rare earth minerals. Every one of those industries is an intermediate product that feeds into other industries. Choosing carefully what we would want to reshore is a key issue.

We also have to ask “who” would make it. What we’re seeing in the United States and elsewhere is because production has gone global, many of the firms that are leaders in these industries are international firms. In the United States, the Biden administration passed the CHIPS Act. Many semiconductor plants are being built by a number of multinational firms – Korean, US, European. So that’s step one. We have to figure out how to build more resilient value chains by reconfiguring their location.

The second challenge is geopolitical security. Clearly there is regionalization going on, but there are many ongoing military conflicts every region has to deal with. I mentioned the Russia-Ukraine war, and in Asia, we have China, Taiwan and many other security issues. Other regions, such as Africa and Latin America, have their security issues as well. Those aren’t going to go away. There are always going to be security risks and military conflicts. We need to figure out how to deal with these in this more regional environment.

The third challenge is global inequality. Always there have been large neglected regions of the world that globalization never really touched adequately. There’s a lot of research by European scholars in Sub-Saharan Africa, for example, on different ways of creating new development strategies in that region. I’ve done a lot of work with colleagues on Latin America and elsewhere. I think we have to pay attention to global inequality.

Finally, and of growing importance, the fourth challenge is sustainability. Climate change and sustainable development have been part of what the United Nations has called attention to through its Sustainable Development Goals. But I know a lot of my colleagues here in Italy and elsewhere are focusing on what are the new research questions around sustainability and how can we actually better understand those based on our prior research. The problems in sustainable development are fundamental and complex. But perhaps they can bring the large, technically advanced countries of the world together around helping to propose solutions for the entire world that would involve input from all different regions.

I think we've got a great agenda of important topics going forward. I know that my Italian colleagues who I am particularly close to on many of these issues are already doing extensive research. But I think internationally, these are the challenges we have to face going forward as well.

Globalization is still with us. It's taking on different characteristics. But these themes of regionalization, sustainability, and dealing with continued economic competitiveness will be the challenges for the 21st century. Thank you very much.

Part II
Workshop on Global Value Chain studies: taking stock, looking ahead

Introduction to the workshop "GVC studies: taking stock, looking ahead"

Valentina De Marchi

University of Padova and ESADE Business School

A personal journey within the GVC community

I have many personal reasons to be so proud that the Department of Economics and Management "Marco Fanno" at the University of Padova recognize the amazing career of Gary Gereffi, a generous, passionate, caring human who has been for me the inspiration to enter the academic career in the first place, and the support to keep staying and progressing in this career in tough times later on. I remember meeting him for the first time in Venice, out of his collaboration with Venice International University when the 2005 RIPE article (that now counts more than 10,000 citations) was still a word document that was circulated to get feedback. I remember visiting the Duke Center on Globalization, Governance and competitiveness – now luckily renamed in the much easier to be pronounced 'Duke GVC center' – starting the month after it was inaugurated, when it was so new that the center coordinator – the amazing Mike Hensen – kept saying to me that we were learning together what the center was to be about. I remember coming back to Duke just three years later for a second visiting and admiring the wonderful growth it had over just few years, becoming the center of gravity for researchers and practitioners from all over the world. And I remember all the interesting workshop organized at Padova and the SASE conferences, within the Network O coordinated by Mari Sako, Tim Sturgeon, Eric Thun, Rory Horner, Cornelia Staritz, Jennifer Bair, Matthew Alford and myself and where we admired how the GVC kept growing, deep and wide, across disciplines and countries.

And I am sure many others in this room have many personal reasons to be so happy to celebrate Gary's career. Yet, as Italian academic community, we also have collectively several reasons to be proud, because of the profound impact his intellectual efforts had on the Italian community of scholars working on local development and international business and, viceversa the unique contribution that our academia provided to the worldwide discussions on the field of GVCs.

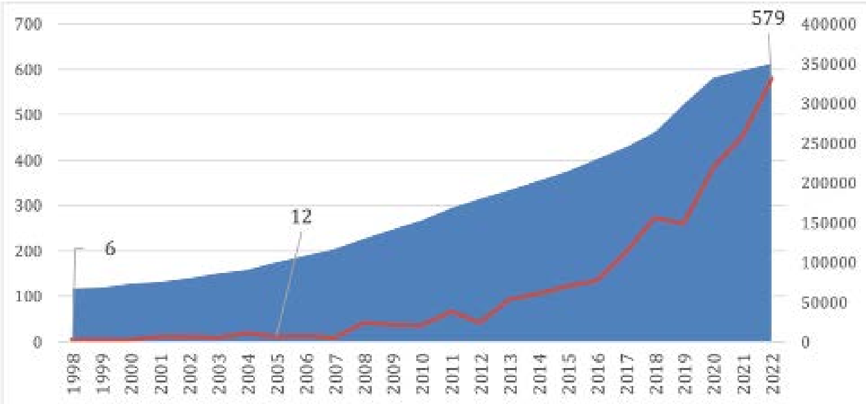
A bibliometric analysis detailing the influence of the GVC literature

Globally, academic interest to Global Value Chains skyrocketed in the past decade. For the sake of this workshop, I took the liberty to replicate and update the bibliometric analysis of the GVC literature Eleonora Di Maria, Ruggero Golini, Alessandra Perri and myself performed back in 2019 (De Marchi et al., 2020). Even just focusing on English written, peer reviewed academic, we easily find more than 2,935 documents in the Scopus database, from 12 articles yearly in 2005 – when the seminal RIPE article by Gary, Tim Sturgeon and John Humphrey was published (Gereffi et al., 2005) – to 579 in 2022, the latest full year available (see Figure 1)[1]. As emerges from the same figure, the growth of this literature has been more than proportional to the general increase in scholarly publications, measured as the total number of publications in social science, economics and business journals, testifying the great ability of the GVC framework to enable understanding of a broad array of phenomena. Such evidence is further testified from the analysis of the major field of the journals where the articles mentioning the GVC framework have been published (Figure 2). While social sciences, business, management and accounting; economics, econometrics and finance makes up the majority of

[1] For a thorough motivation of the methodological choices and description of the search string please read De Marchi et al. 2020. For the calculation of the overall publications a string has been adopted, which used the same criteria than the GVC search but, as textual string to be searched within Title, Keywords or Abstract, used the word "and" and focusing on the subjects: i) social sciences, ii) business, management and accounting; iii) economics, econometrics and finance. Those three fields together, indeed, represent almost 70% of the publications in the sample.

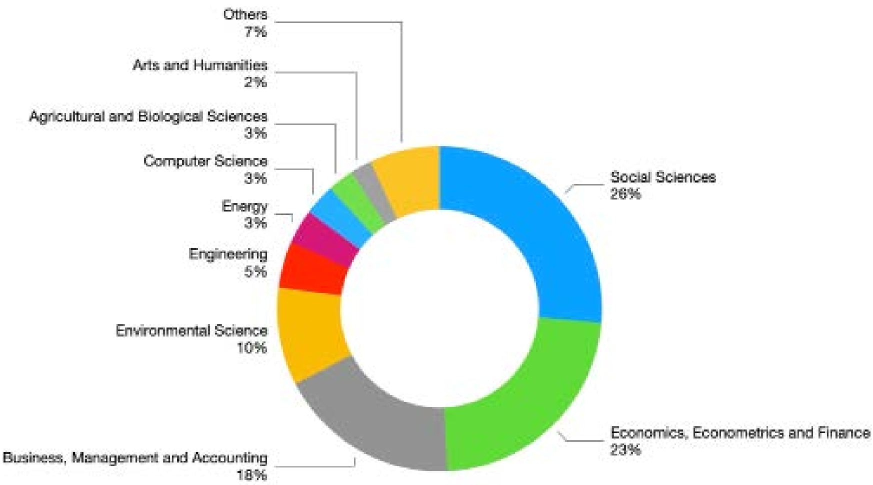
publications (67.3% of the total), a significant proportion is focused on field as diverse as environmental science, engineering, computer science, arts and humanities.

Figure 1 - Number of papers published annually on GVCs (red line) vs overall publications in the social science realm (blue area)



Source: author's elaboration based on Scopus results.

Figure 2 Top fields for contribution to GVC studies, measures as share on total



Source: author's elaboration based on Scopus results.

Authors from all over the world found the GVC a useful tool to analyze different type of phenomena. Within this vast literature, Italy is ranking number four, as a country, together with Germany for number of articles published in this topic (see Table 1), being quite an interesting value considering for the size of the Italian academic community, as respect to bigger ones. Furthermore, among the top-10 by number of citations two have been published by Italian scholars (Table 2), both revolving around the role of innovation in local context, being a landmark of the Italian community, as I will discuss further later on.

Table 1 – Top 10 country, whose scholars contributed to the GVC literature

Rank	Country	Number of publications	% on total
1	China	492	11,7%
2	United Kingdom	484	11,5%
3	United States	418	10,0%
4	Germany	197	4,7%
4	Italy	197	4,7%
6	Netherlands	158	3,8%
7	Denmark	146	3,5%
8	Australia	121	2,9%
9	Japan	112	2,7%
10	Spain	110	2,6%

Source: author's elaboration based on Scopus results.

Table 2 – Most influential GVC articles, as for overall number of citations

Rank	Authors	Title	Year	Source title	Cited by
1	Gereffi G.; Humphrey J.; Sturgeon T.	The governance of global value chains	2005	Review of International Political Economy	4,135

2	Gereffi G.	International trade and industrial upgrading in the apparel commodity chain	1999	Journal of International Economics	1,946
3	Humphrey J.; Schmitz H.	How does insertion in global value chains affect upgrading in industrial clusters?	2002	Regional Studies	1,554
4	Coe N.M.; Hess M.; Yeung H.W.-C.; Dicken P.; Henderson J.	'Globalizing' regional development: A global production networks perspective	2004	Transactions of the Institute of British Geographers	1,056
5	Giuliani E.; Pietrobelli C.; Rabellotti R.	Upgrading in global value chains: Lessons from Latin American clusters	2005	World Development	622
6	Gereffi G.	Global value chains in a post-Washington Consensus world	2014	Review of International Political Economy	554
7	Timmer M.P.; Erumban A.A.; Los B.; Stehrer R.; De Vries G.J.	Slicing up global value chains	2014	Journal of Economic Perspectives	455
8	Pietrobelli C.; Rabellotti R.	Global Value Chains Meet Innovation Systems: Are There Learning Opportunities for Developing Countries?	2011	World Development	455
9	Ponte S.	The 'Latte Revolution'? Regulation, markets and consumption in the global coffee chain	2002	World Development	427
10	Yeung H.W.-chung.; Coe N.M.	Toward a Dynamic Theory of Global Production Networks	2015	Economic Geography	405

Source: author's elaboration based on Scopus results. Citations are as of 1 August 2023

The development of the GVC framework within the Italian community

When the Global Value Chain framework developed by Gary started to get academic recognition worldwide, in the midst 2000s, Italy was amid an important globalization wave. Globalization was at the center of academic and policy debates, with optimistic and concerned views opposing each other fiercely. Italian firms had been renowned since the 1980s for the presence in international markets of their high quality, innovative products. Starting the 2000s, however, it was getting increasingly evident that their participation to international markets was getting more sophisticated, as several firms substituted local suppliers with far-away ones, and others produced for large multinationals instead of producing under their own brand. What was not evident, however, was the magnitude of those processes, and, even more importantly, the implications for the competitiveness of local firms and territories, especially considering for the texture of small, phase-specialized firms that characterized most Italian industries.

It is in this context that the GVC framework found a fertile ground to develop, and where it got hybridized – to continue with botanical metaphors – with the Italian tradition on industrial districts and innovation studies. Starting the 1980s indeed, in several universities of the so-called Third-Italy – the North-Est and the Center of the country – scholars delved into the understanding of 'industrial district', a peculiar way to organize production activities at the territorial level that enabled efficiency, flexibility, innovation for which Italian small and medium sized firms had aroused international admiration starting the 80s. Such a localized context – whose performance was spurred by the interpenetration between production and social structures enabled by co-location – was obviously challenged by the new paradigm in which phase-activities were rather spread across different countries and whose governance was determined by multinationals located elsewhere. Yet our territory was also very rich in examples of firms and context that succeed and excelled in innovation.

It is not by chance accordingly, that GVC became quite widespread within scholars working both within the international business or international economics field, but also working on innovation studies. Several research centers or laboratories have been developed, revolving especially around the "Center for Economic and Social Research Manlio Rossi-Doria" in Roma Tre University, the "Industrial Districts in Global Value Chains" lab at the department of Economics and Management at the University of Padova, the TEDIS center at the Venice International University in Venice. The strong connection and presence of Gary Gereffi boosted this development, taking the forms of summer schools (i.e the Duke VIU International Summer Workshops, who gathered young scholars from all over the world), research workshops (i.e. the workshop "Evolving IDs within Global and Regional VCs and the role of manufacturing and innovation capabilities", hosted at the University of Padova) and the frequent visits and research seminars, which created opportunities for contamination and the start of new research projects. The publication of the book "Local Clusters in Global Value Chains: Linking Actors and Territories Through Manufacturing and Innovation" in 2018 (De Marchi et al., 2018) is another testimony of the great connection between Gary Gereffi and several Italian scholars, working on local development and innovation.

The legacy of the Padova and Italian community at large

Padova scholars and the Italian community had been very prolific and impactful, especially along three lines, which are also still hot topics in GVC contributions worldwide. The first, as discussed above, has been the implications of globalization for local development and industrial districts or clusters, in particular. To detail the relevance of this field, I am taking the 20 most cited articles as exemplar of the literature. As emerges from Table 3, several of the most cited GVC publications by Italian scholars are indeed revolving around this topic (in particular paper 1, 7, 11, 13 as for Table 3), mostly with a focus on Italian companies – and especially the small and medium sized enterprises acting as suppliers in GVCs, whose agency have been long overlooked in the GVC literature. Several articles, however, are also focused on Latin American clusters too, in line with the traditional focus of GVC studies to investigated emerging economies and informed by the Italian tradition of clusters and agglomeration economies (e.g. paper 1, 2, 14, 15 as for Table 3).

More recently, two lines additional lines have developed: one on the role of new technologies, digitalization to support firms upgrade (e.g., 3, 7, 9) and a third on opportunities and challenges to upgrade sustainably (e.g., 4, 8, 18), especially from an environmental standpoint.

Table 3: Top GVC publications by scholars affiliated to Italian universities.

	Authors	Title	Year	Source title	Cited by
1	Giuliani E.; Pietrobelli C.; Rabellotti R.	Upgrading in global value chains: Lessons from Latin American clusters	2005	World Development	622
2	Pietrobelli C.; Rabellotti R.	Global Value Chains Meet Innovation Systems: Are There Learning Opportunities for Developing Countries?	2011	World Development	455
3	Strange R.; Zucchella A.	Industry 4.0, global value chains and international business	2017	Multinational Business Review	320
4	De Marchi V.; Di Maria E.; Micelli S.	Environmental Strategies, Upgrading and Competitive Advantage in Global Value Chains	2013	Business Strategy and the Environment	178
5	Saliola F.; Zanfei A.	Multinational firms, global value chains and the organization of knowledge transfer	2009	Research Policy	150
6	Hernández V.; Pedersen T.	Global value chain configuration: A review and research agenda	2017	BRQ Business Research Quarterly	108
7	Chiarvesio M.; Di Maria E.; Micelli S.	Global value chains and open networks: The case of Italian industrial districts	2010	European Planning Studies	96
8	Johns T.; Powell B.; Maundu P.; Eyzaguirre P.B.	Agricultural biodiversity as a link between traditional food systems and contemporary development, social integrity and ecological health	2013	Journal of the Science of Food and Agriculture	91
9	Li K.; Kim D.J.; Lang K.R.; Kauffman R.J.; Naldi M.	How should we understand the digital economy in Asia? Critical assessment and research agenda	2020	Electronic Commerce Research and Applications	88
10	Gui L.; Paolo Russoz A.	Cruise ports: A strategic nexus between regions and global lines-evidence from the mediterranean	2011	Maritime Policy and Management	88

11	Pietrobelli C.; Saliola F.	Power relationships along the value chain: Multinational firms, global buyers and performance of local suppliers	2008	Cambridge Journal of Economics	84
12	De Marchi V.; Giuliani E.; Rabellotti R.	Do global value chains offer developing countries learning and innovation opportunities?	2018	European Journal of Development Research	83
13	De Marchi V.; Grandinetti R.	Industrial districts and the collapse of the marshallian model: Looking at the italian experience	2014	Competition and Change	81
14	Amendolagine V.; Presbitero A.F.; Rabellotti R.; Sanfilippo M.	Local sourcing in developing countries: The role of foreign direct investments and global value chains	2019	World Development	74
15	Mancini M.C.	Geographical Indications in Latin America Value Chains: A “branding from below” strategy or a mechanism excluding the poorest?	2013	Journal of Rural Studies	68
16	Lema R.; Rabellotti R.; Gehl Sampath P.	Innovation trajectories in developing countries: Co-evolution of global value chains and innovation systems	2018	European Journal of Development Research	65
17	Pananond P.; Gereffi G.; Pedersen T.	An integrative typology of global strategy and global value chains: The management and organization of cross-border activities	2020	Global Strategy Journal	57
18	De Marchi V.; Di Maria E.; Ponte S.	The greening of global value chains: Insights from the furniture industry	2013	Competition and Change	57
19	De Marchi V.; Di Maria E.; Golini R.; Perri A.	Nurturing International Business research through Global Value Chains literature: A review and discussion of future research opportunities	2020	International Business Review	55
20	Eckhardt J.; Poletti A.	The politics of global value chains: import-dependent firms and EU–Asia trade agreements	2016	Journal of European Public Policy	52

Source: author’s elaboration based on Scopus results. Citations are as of 1 August 2023

Accordingly, to celebrate Gary during the ceremony for his doctorate *honoris causa* we have invited scholars from all over Italy and Europe to share, on each of those three topics, how GVC studies contributed (*taking stock*) and what are the next research frontiers (*looking ahead*). Following, a group of distinguished colleagues from Padova and nearby university will add insights and comment on those topics.

In particular, Roberto Grandinetti, Fiorenza Belussi, Giancarlo Corò and Maria Chiarversio and Carlo Pietrobelli will reflect on the evolution of the local-global nexus and the implications for local territories; Stefano Micelli on the role of industry 4.0 technologies on manufacturing and the organization of GVCs; Roberta Rabellotti and Stefano Ponte on GVCs and sustainability, especially in the context of developing countries.

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4
Global Value Chains and sustainability

Stefano Ponte

Copenhagen Business School

Thank you for the invitation. Sorry I couldn't be there with you today. I really miss your company and being with Gary as well, and also to get to know all the other colleagues in the room. It's a real honor to be asked to speak at this event for Gary's honorary doctorate, both as an alma mater (I have a degree from the University of Padova in political science from 1993) and as a scholar that has followed Gary's footsteps. I also collaborated in several projects with University of Padova colleagues, especially Valentina De Marchi, Eleonora Di Maria, and Marco Bettiol.

I actually met Gary for the first time in 1998. I was based in North Carolina and I was trying to finish my PhD. The PhD was not about Global Value Chains, but I had been offered a postdoc in Copenhagen with Peter Gibbon for a larger project that was going to look at global value chains in Africa. I was sent to Duke University to 'check him out'. When I met with Gary the first time, what I found was a very accessible and nice person and scholar, who is a volcano of ideas and has a lot to say about pretty much everything -- this combination is very rare in prominent scholars! I really appreciate who Gary is: he has provided great intellectual leadership but also has a very nice personality and generosity in terms of the feedback and engagement that he has given us all these years. Now look at the situation, 25 years later, and we have had a large uptake of his ideas globally in academia and policy realms, and a large cohort of scholars engaged in Global Value Chain analysis, including those featured in the pictures that you have been showing on the screen. If you look at the one from SASE conference last year, you get a sense of the diversity of this group as well.

There is also a new generation of scholars that are coming into the fray. In particular, there has been quite a large group of younger Italian scholars, both based in Italy and abroad that have been working on value chains, clusters, and industrial districts. But let me move on to what Valentina De Marchi had asked me to talk about today, which is taking stock, first of all, of Gary Gereffi's contribution to Global Value Chains and sustainability.

First of all, we should remember that when Gary started working on these issues, the general understanding in scholarly circles was that one, to understand the international economy, would need to either look at free markets, whatever that means, or to vertically-integrated multinational corporations. Gary then pointed out that there are also all these networks that are in between markets and vertically-integrated multinational corporations. He also argued that, even when we look at multinational corporations, we should not keep looking only at large producers; we should actually pay attention to the key role of played by 'global buyers' that are becoming more and more important as they externalize their production functions to lower cost producers in the Global South. So, we need to pay attention to retailers and former manufacturers that have become branded merchandisers. This contribution was no small feat, it was really revolutionary.

Second, Gary developed a strong argument in favour of examining how value chains are actively managed. These are not markets, but they are not managed directly through ownership either. He offered us different types of governance that we need to look at, and later on also told us that we should reflect upon the social and labour outcomes of these governance dynamics. From there, the step to try to understand economic development trajectories was a logical one – through the analysis of economic upgrading trajectories of firms, value chains and nations. The first explicit step in the realm of what we understand broadly as sustainability nowadays, came with a large project called 'Capturing the Gains' where Gary was one of the main movers and shakers together with colleagues at the University of Manchester. 'Capturing the Gains' was the first major effort to try to understand the relation between social and economic upgrading in Global Value Chains. To make a long story short, the main finding of that project was that economic upgrading is a necessary but not sufficient condition for social upgrading. This later led to the expansion of this kind of analysis to environmental upgrading, especially around the work of a group of scholars at the University of Padova, and in particular Valentina De Marchi. The environmental side of sustainability has become very important in terms of understanding how international business operates and what kind of impacts it has on biodiversity, the availability of natural resources and climate change.

Having spent a couple of minutes to take stock of Gary's contribution, I would now like to look ahead at what a research agenda on Global Value Chains and sustainability could look like for the next few years – not only in the academic realm but also in relation to policy and strategy.

First of all, I think that an effort should continue in further unpacking the links between Global Value Chain governance and environmental upgrading. As Gary taught us throughout these years, different kinds of governance have different effects on upgrading. Therefore, we cannot assume that the dynamics that we observe in one value chain would be the same in another value chain. And therefore, we need to be value chain-specific when we look at the policy and strategy tools that are related to the environmental aspects of sustainability.

Second, we need to unpack the interactions between economic, social and environmental upgrading. We now understand quite well the links between economic and social upgrading, and have started to unpack those between economic and environmental upgrading. But we are still missing an organic integration of the three and a proper understanding of their mutually reinforcing mechanisms, trade-offs and combined outcomes.

Third, fieldwork that I carried out in the past couple of years suggests that carbon footprint is becoming a major feature of the sustainability demands that are now being made by global buyers, including global retailers, to their suppliers. There is an urgent need for value chain research that explores the implications of a veritable current scrambling among buyers and suppliers in trying to figure out how in the world they are going to do proper carbon footprinting, especially in relation to Scope 3 emissions.

Fourth, we need to better understand the *drivers* of sustainability practices and how they are (re)shaping global value chains. This is work is now starting to be published, especially in terms of going beyond the vertical top-down drivers of sustainability, which are the ones we usually research (generally, how large global buyers ask their suppliers to change their operations). But, as I have learned from many of our Italian colleagues, bottom-up vertical drivers are at play as well. These arise from suppliers that are moving into the environmental sustainability field because it is part of what they see as their first-mover advantage and/or their innovation strategy. Horizontal drivers are also important, arising from the activities of industry associations, civil society movements and/or local or regional governments. Research, however, should not limit itself to understanding practices and drivers of sustainability, but also whether and how they can make a difference in terms of actual environmental outcomes.

Fifth and last, we need to address what I have called in some of my more recent work the 'sustainability supplier squeeze'. How do we address a situation where, in many value chains, retailers and large buyers are asking for more and more sustainability content, especially environmental, but without paying a premium on the price of the products they buy? In some cases, in the long term, suppliers will be able to use these innovations to cut costs and improve efficiency in their operations. But in other cases, especially in the short term, there are increasing costs that suppliers have to absorb and/or find other shortcuts in order to recover profitability in other ways, for example, by casualizing labor. How do we ensure that better environmental sustainability does not come at the cost of lower profitability among suppliers or at the cost of working conditions for labour?

5
Global Value Chains and local development*

Carlo Pietrobelli

Roma Tre University and UNU-MERIT

The relationship between Global Value Chains (GVCs) and local development has always been central in Gary Gereffi's research. This was already clear since his Phd thesis, and his early interest for Mexico and the pharmaceutical industry, and for the role played by multinational corporations therein. Later, this interest further developed and expanded in his work on East Asia, and the dramatic experiences of fast industrialization of many countries in the region. The comparison with the experiments with import subsidizing industrialization of other countries was easy and natural, together with the insights he gained from the structuralist and dependency school in Latin America (Cardoso and Faletto, 1979), as well as the influence that Carlos Diaz Alejandro and Yale had on the young Gary, student and researcher. He then began what he recently defined "…four decades of theoretical and empirical work on linking the study of global industries to development theories" (Gereffi, 2022). All these encounters and his "hitchhiker" view and experiences of the world reinforced in him the idea that development is the final and definitive aim of any study on firms, global industries and value chains.

* The ceremony granting a honorary Doctorate to Prof. Gary Gereffi, at the University of Padua on March 13, 2023, offered me the opportunity to develop these ideas. I wish to thank Valentina De Marchi, Eleonora Di Maria and Paola Valbonesi for giving me this opportunity. Most of all, I would like to thank Gary for his generosity to share insights and engage in detailed and insightful discussions for many years, that helped shape and improve my own research.

In this short note, I would like to argue that the link between value chains and local development, enterprise clusters and regions has accompanied Gary all along his prolific research trajectory, and has allowed him to contribute original and relevant insights to the development of these ideas. To make this point, I will comment on two pieces of research, one authored by him and two coauthors (Sturgeon, Van Biesenbroeck and Gereffi, 2008), and the other one by Roberta Rabellotti and myself (Pietrobelli and Rabellotti, 2007) that was hugely influenced by Gary's work on clusters and value chains. I will then conclude with some remarks for future research.

In 2008, Gary, together with Tim Sturgeon and Jo Van Biesenbroeck published a noteworthy paper on GVCs and networks and clusters in the auto industry in the *Journal of Economic Geography*. The authors made a very clear epistemological effort to build a methodology and propose an approach to move ahead and beyond the economics tools traditionally employed in similar analyses, such as the law of demand and supply, and the theories of national comparative advantage. The stated aim of the study was to offer a clearer understanding of the details and the richness of the process of industrial development, with a highly nuanced and original approach. In the paper, the authors argue and demonstrate how firms can have substantial power, that managers, workers, and consumers have agency, and that institutions, labor unions, industry associations, legal and cultural norms, industry specific standards all matter. Later, we have come to know this from different strands of literature, but these ideas were already strongly stated and stressed in their early and influential work. An expression that they use and that I especially like, and that allows me to link this paper to my present argument, is that "the tug and flow of place and history continuously shape and reshape industry structures and relationships". The tug and flow of places and history. History and path dependence influence today's and future development, together with geography, the distinctive nature of different places that impact the development trajectories of these places and their interactions with large firms, value chains, and firms' networks. This became very clear in the specific experience of the auto industry.

Gary, together with his co-authors, discovered the prevailing tendency towards a relational form of governance in this industry, that was partly explained by rising product complexity, low codifiability and the paucity of industry level standards. Secondly, they discovered that lead firms and suppliers were increasingly being forced to develop relational linkages to exchange complex and uncodified information and tacit knowledge. Thirdly, national political institutions can create pressure for local content. Production is therefore driven closer to final markets, which is where local and regional forms of organization prevail. Here the link between GVC organization and governance, and the local and regional (location-specific) organization of production, becomes absolutely clear and central.

A second study that I would like to discuss briefly to make the point, and that was strongly influenced by Gary's work, is the book that we wrote with Roberta Rabellotti for Harvard University Press, on upgrading to compete in clusters and Global Value Chains in Latin America (Pietrobelli and Rabellotti, 2007). Let me add a personal note here. I was very proud when, several years ago, Gary told me that he recommended the paper that came out of this book in *World Development* as a compulsory reading for his students for many years, emphasizing and discussing the interlinkages between GVCs, clusters and SMEs in several countries in Latin America (Giuliani et al., 2005). The focus of this research reflects what Gary considered absolutely central in his work, the influence that GVCs can have on local economic development in developing countries.

The book built on the early lessons of Alfred Marshall and Giacomo Becattini, and Hubert Schmitz and several scholars after them, where the existence of Industrial districts was explained by the "collective efficiency" prevailing in such contexts. The "knowledge in the air", the local labor and machinery markets would all offer opportunities for useful external economies. However, traveling to many developing countries, we gradually discovered how small enterprises were increasingly facing a dual market for their products. They would at the same time produce for local consumers, but also face large foreign firms and buyers, that would establish their procurement divisions and operate locally, and possibly offer local enterprises an additional market.

We tried to study this evidence in our research, and explored whether these interactions with foreign buyers and corporations of different kinds could offer meaningful development opportunities. We studied local clusters and firms interacting with value chains and their leaders, and the possible mutually reinforcing channels for learning, innovation, creation and strengthening of local capabilities. In many instances, such linkages could open the way to the capture of larger shares of value added, and to innovation and economic upgrading (Gereffi, 2019). Specifically, we singled out different learning mechanisms in GVCs, from the pressure to accomplish standards, to the transfer of knowledge embodied in standards, to the mutually interdependent, face to face, learning processes, deliberate knowledge transfer, and imitation. Power, local governance, relationships within the GVC, all influenced the learning processes (Pietrobelli and Rabellotti, 2011).

Of course, this research leads directly to remarkable policy implications. Public policies have been a persistent theme in Gary's work. In 2014 I enjoyed the privilege of sharing several weeks of policy work with Gary and the Mexican government. Then we often sat with the Ministry of the Economy, that had expressed the desire to design and implement a program to develop and strengthen several value chains in the country. We often discussed how GVCs could offer powerful opportunities for enterprise development, and how this needed to be accompanied by a variety of specific measures and policies. We managed to convince the government, and our work helped instil the idea of public policies for GVCs in the Mexican policy debate. It was an exciting intellectual journey trying to translate the outcomes of research into policy advice and concrete proposals.

Looking ahead, at how research may further develop the insights offered by Gereffi and his work on GVCs and local development, I think of at least three main areas that will need to attract our research interests.

The first area has to do with the balance between efficiency and resilience in corporations' choice of sourcing strategies and value chain governance. Gary reminded us of this in today's keynote speech. To what extent is globalization going ahead? What shape is future globalization going to take? How will geopolitics and resilience and robustness of value chains enter this discussion? It is already clear that these elements are already inevitably part of the debate. While we may easily visualize a trade-off between the idealized concept of a perfect division of labour and specialization according to relative comparative advantage, and the emerging 'second-best' choice of backshoring, some elements of resilience and robustness may be incorporated into value chain design and management, to reduce the sub-optimality of the choice. The new terminology that is coming forward includes not only "backshoring", but also "nearshoring", "friendshoring", and the like. Another one, that could enjoy substantial success soon, is the "green energy shoring", that implies sourcing inputs and intermediate goods and locating production activities where energy can be obtained with greener and sustainable processes. These dimensions will need to be addressed in our future research.

A second major element echoes what Stefano Ponte has been discussing in a lot of his recent research: what happens to local communities with the globalization process? Recently, my research on value chains in the extractive industries has expanded (Pietrobelli et al., 2018, and 2023). In addition to discovering that the extractive industries are also increasingly following a model of organization that resembles a value chain very much, we discovered that local communities play an increasingly relevant role in influencing the governance and the organization of the value chain. Let me give you two recent examples.

In Chile, the Association of Mining Companies, *Consejo Minero*, recently declared that the "social license", the agreement that mining firms need to reach with local communities before beginning any extraction process enjoys top priority in their strategies. This is the thing they fear most, and they are developing internal corporate divisions to figure out how to develop and reach a deal with local communities.

Another example is related to the intense use of resources, and specifically water, that the mining industry makes. One mine alone is likely to consume in one day as much water as required by a town of 30,000 people. Unless the technologies and the social contracts are employed and agreed upon to make the mining extraction process sustainable, no mining value chain would develop and there would be no future for extractive activities in many countries. In 2022 in Peru, almost 50 percent of new extractive investments were halted because of social unrest related to the environmental implications of mining, and the difficulty of reaching a social license. This is only one example of the growing role and influence of local communities.

A third area of future research that will need to attract our interest is the role and influence that GVCs and their governance may have on the local adoption and use of different technologies, and the ensuing effect of this on local development. Let me refer to two examples to make the point. First, the adoption of green sustainable technologies may interact in multiple ways with GVC integration. Some initial evidence on the European regions shows that the existence and the participation in GVCs can boost the adoption of green technologies (Colozza et al., 2021). Secondly, the diffusion of technologies related to the so-called Industry 4.0 and new Industrial Revolution technologies is often related to the extent of GVC integration (Delera et al., 2022).

A fourth area of future research is again on GVC-oriented policies. How do we translate all these concepts of value chain governance, upgrading, innovation, into policies? The notion of GVC-oriented policy, a thoroughly multidimensional concept, acknowledges the intrinsic difficulty of implementing such policies, because several actors are involved in the design and implementation of these policies (Pietrobelli et al., 2021). Obviously, these actors need to interact, carry out transactions and reach agreements, and overcome the possible duplications and overlapping of different policies. This is very difficult to achieve in any country, at any level, but it is a challenge that cannot be forgotten if research aspires to be relevant and useful. This is a lesson that Gary taught us, and that we will need to follow up with vision and determination.

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6
Industry 4.0 technologies and manufacturing

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Dear Gary, dear colleagues, it is a pleasure for me to be able to speak this afternoon in front of my friend Gary Gereffi on a topic, technologies 4.0 and manufacturing, that has intersected and enriched that of Global Value Chains over the past three decades. In this long-time span, technologies have been an essential enabling factor in organizing processes of division of labor on a global scale. Technologies have not been the only factor of change in the international economy. The evolution of the geopolitical framework has been a key determinant in redefining the logics that have governed the division of labor. Other variables related to innovation in transportation and infrastructure creation have created the conditions for a new economic geography and a new geography of trade. Certainly, it should be emphasized, the evolution of digital over the past three decades has irreversibly marked the logics by which businesses have interpreted globalization and benefited from it.

The topic of Industry 4.0 technologies has been of great relevance in Italy and abroad since the middle of the last decade. In Italy since 2016, that is, since then-Minister Calenda kicked off a plan of incentives of particular to support the technological upgrade of the country's manufacturing system. A mixed group of technologies from 3D printers to new distributed sensing, from virtual reality to artificial intelligence, has set in motion a real revolution in the economic field. I think it is useful to place this "revolution" in the context of a medium- to long-term trajectory that has marked three decades of profound technological transformation. I would like to point out how over these three decades other technological "revolutions" have marked the same three stages of globalization. In order to understand the 4.0 revolution, it is appropriate to retrace the other two "revolutions" that preceded it and constitute its antecedent. I will try to reason by decades by summarizing in a few minutes the stages of economic transformation that helped redefine the international as well as the local economic environment.

The first phase on which I want to focus your attention on is that which opened with the fall of the Berlin Wall and the inclusion in the processes of division of labor of an entire continent. Until the late 1980s we had known multinationals interested in replicating in different countries a model of commercial presidium that benefited from economies of scale guaranteed by the efficiency of stabilized processes in the countries of origin. With the rise of a new geopolitical scenario, the transnational enterprise takes shape and consistency. Unlike the multinational enterprise, the transnational enterprise grows by enhancing what characterizes individual national contexts. This is the time when large companies begin to discover the potential of offshoring not only by taking manufacturing to China and the Far East but also by taking call center services to India, communications, and advertising to the United Kingdom, and by promoting research and development activities at top international universities. The introduction of technologies that we call ERP has been the enabling condition of this new organizational model by giving the possibility to move from a bureaucratic, functional set-up to a process-based, responsive, dynamic division of labor formula capable of responding to market transformations. It is thanks to these technologies (and the revolution they triggered) that "the giants learn to dance" to borrow the title of Elizabeth Ross Kanter's famous book. Multinational corporations become "transnational" enterprises thanks to a new digital infrastructure. Their new operating system, for once a European technology (SAP is still the market leader in the ERP market), boosts their competitiveness through a new and original way of structuring business organization and business processes.

In the next decade, in the following decade, when Gary arrived in Italy in 2004, we were discussing something different. Beginning in 2000 the next decade opens a new phase of internationalization of capital trades thanks to the Internet and the spread of electronic commerce, particularly through B-to-B e-commerce. Transnational businesses evolve, and with them a generation of medium-sized companies willing to seize the opportunities offered by the Web. Portals such as Alibaba.com represent the new infrastructure on which even small medium-sized enterprises can benefit in Europe in the United States from the service production potential that has opened in China and the entire Far East. It is the beginning of a new world: a more "democratic" phase of internationalization is opening up, in which it is possible to buy and sell practically everywhere thanks to the support of new players who become accredited on the Web relatively quickly (as in the case of the platforms promoted by Jack Ma). It was during the first decade of the 2000s that Italian companies discovered the potential of globalization that was surprisingly intertwined with investment in communication and e-commerce technologies. Let me make a personal comment on this. It was during these years that I had the opportunity to cross paths with Gary Gereffi in my research and it was through his contribution that we developed important considerations about the Italian growth model and its potential in an interconnected world.

The decade we have just left behind us is one that opens with a major crisis, a crisis that marks a slowdown of globalization in the ways we had known it. The numbers on international trade, capital flows and mobility of people tend to stabilize as indicated by the valuable study sponsored by Pankaj Gemawhat with other colleagues at New York University. Globalization becomes, first and foremost, the globalization of knowledge. From TV series to patents, it is knowledge that prolongs the globalization trend that marked the previous two decades. It is precisely in these years of rethinking that the revolution (the third revolution in thirty years) that we in Europe have called Industry 4.0 takes shape. Industry 4.0 promotes a major technological paradigm shift to encourage the introduction of all digital manufacturing technologies, from 3D printers to IOT, from blockchain to the innovative use of artificial intelligence. Over the past 10 years, the implementation of Industry 4.0 pathways related to large and small enterprises has experienced significant results contributing to structural changes in manufacturing processes and business management. We saw and analyzed an impressive number of cases where we saw the impact of these technologies in terms of reshoring and in terms of gains of efficiency. I think it is interesting to see the impact of these technologies that we analyzed here with Marco Bettiol, Eleonora Di Maria and Maria

Chiarvesio just to mention a few of the people that have been working on this field with very productive studies.

Let me make some remarks related to recent current events. The Covid 19 crisis and the Russian aggression of Ukraine are considered by many as a point of no return with respect to the geopolitical scenario we have known in the 30 years we are leaving behind. Since February 2020 we have been asking the question of what the world will be like at the conclusion of the pandemic and this war. We can hardly answer that it will be similar to what we left behind. The events of the past two years have highlighted to us the risks of a division of labor that has aspects that deserve serious consideration. We are unlikely to leave Taiwan a monopoly on chips for our economic future. And the list could go on.

In addition to these geopolitical considerations, I think it is useful to remember the need for greater attention to the middle class in the Western world, that middle class that Branco Milanovich correctly saw as the big loser in the process of wealth redistribution over the past three decades in Europe in the United States. Bringing technologically advanced manufacturing back to Europe and the United States is an opportunity to strengthen social cohesion and to strengthen especially low-density territories that experience manufacturing job opportunities as particularly important.

There is a third reason why today we are sensitive to new logics of division of labor: I am talking, of course, about the issue of sustainability. We can no longer imagine that a pair of jeans travels more than 15,000 kilometers before it reaches the consumer, and we cannot imagine it being used seven times and then remaining our closet until we buy another pair. A sustainable economy needs to bring production and consumption closer together by transforming the logic by which we use raw materials and finished products.

These three factors-increasing geopolitical risks, the need to create good jobs, and acceleration on the environmental sustainability front-push toward 4.0 technology solutions consistent with a new reading of continental-scale labor division processes. Technology today seems to be the qualifying element of a new phase of development. The 4.0 revolution is likely to be the engine for a geographical reconciliation between production and consumption, the opportunity to provide new job opportunities for those who invest in training and research, the tool to ensure an attractive future for generations in Europe who have felt excluded from the prosperity generated by globalization, and the way to reduce waste and foster a truly circular economy.

I think that in the next decade we will all be called upon to reflect on what has happened in the past years and what is happening, particularly in Europe. The available data show us a trend toward regionalization of trade with an increased focus on social and environmental responsibility. Global access to information and knowledge will remain global, barring exceptional happenings. Certainly, Gary Gereffi's scholarly contribution will be most useful in clearly analyzing the dynamics at work and in dealing with the problems that await us in the near future.

Let me just say one final remark. Much of what we are discussing now deals with the creation of human capital. Whether technology 4.0 succeeds in reconciling production and consumption, it will largely depend on the amount of resources we will devote to education. Much of the human capital is the key variable, and we didn't see that at the time we discussed with Gary at that, but we did not fully realize how important it was. Human capital is the key variable that will stabilize many of the opportunities I've been pointing out. Obviously, we will have to deal with the new consumption cultures, we will have to deal with technological innovation. I would say human capital will be key. Not just an individual level but a community level. I think this is the challenge we will ask to be aware of and to deal with in the near future. Thanks to Gary, we have all the tools we need in order to face that challenge. Thank you.

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7
When multinational corporations enter industrial districts: the Italian experience

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The perspective of analysis I have adopted in this contribution is that of *Local Clusters in Global Value Chains*, which is the title of the book published in early 2018 following and related to Gary Gereffi's time as Visiting Professor at the Department of Economics and Management, University of Padova.

In the conclusions of that volume, summarizing the various contributions of the book but also outlining directions for future research, De Marchi, Di Maria and Gereffi emphasize three points that seemed crucial to me at the time and I believe are still crucial today: 1) the increasing diversity (heterogeneity) between industrial districts (IDs) or clusters[1], particularly diversity in relation to the ability of these systems to reproduce and evolve; 2) the co-evolution between industrial districts and Global Value Chains (GVCs); 3) the presence and diversity of key actors, which the authors define as "local and global actors that are determining the evolution of IDs" (De Marchi et al., 2018a, p. 216).

With these considerations in mind, the focus of my analysis is the Italian IDs. Precisely, there are two issues I wonder about: a) how the presence of multinational corporations in them has been a phenomenon that is not comparable to what has been observed in the clusters of developing countries; b) what newness the current phase of mature or

[1] We speak indifferently of industrial districts and (geographical) clusters, as proposed by Lazzeretti, Sedita and Caloffi (2014) and Grandinetti (2019).

"pandemic" globalization has brought with respect to this presence in Italian IDs.

Multinational corporations within industrial districts of developing countries

The link between GVC framework and IDs was established in Bair and Gereffi's (2001) article on Torreon's blue jeans cluster (Mexico), even before the GVC concept was fully developed in the most cited contribution of the GVC approach (Gereffi, Humphrey and Sturgeon, 2005). Bair and Gereffi (2001) use its antecedent, i.e., the concept of commodity chains as proposed in Gereffi and Korzeniewicz (1995). When the authors study the Torreon cluster in the years after the NAFTA, it had become part of the GVC that was headed by the large U.S. players in the jeans industry: cluster suppliers are full-package manufacturers, each of which hierarchically organizes the work of a set of subcontractors, while the group of external leader firms includes manufacturers such as Wrangler, brand marketers such as Calvin Klein, and retailers like Wal-Mart. In light of the well-known framework of the five types of GVC governance by Gereffi et al. (2005), the GVC that includes Torreon is relational, where relationships or, to be more precise, interactions involve a leader firm and one or more first-tier suppliers, that Gereffi and colleagues call relational suppliers.

Bair and Gereffi find that the development of full-package networks in the Torreon cluster involved some upgrading at the industry level, at the firm level, and of the local skill base. This upgrading is in line with what Rabellotti (1995) found in another Mexican cluster (the Guadalajara footwear cluster) that had developed direct links with U.S. brokers. Works done in later years confirmed that many clusters in developing countries were upgrading their production operations (process upgrading), moving into more sophisticated outputs (product upgrading), or adding new value-creating activities (functional upgrading) (Humphrey and Schmitz, 2002; Pérez Sáinz, 2003; Giuliani, Pietrobelli, & Rabellotti, 2005; Pietrobelli and Rabellotti, 2007). These same works have delved into upgrading pathways by highlighting factors that can make them difficult. A recent literature review conducted by Gereffi (2019) also reports cases of downgrading trajectories.

Multinational corporations within Italian industrial districts: threat or opportunity?

IDs, since their discovery by Marshall (1890), have been seen as the "populational" alternative to the concentration of production in a single large company: if we consider the Italian case, when observed by Becattini (1979, 1989) in Tuscany, and by other scholars in other regions (Bagnasco, 1977; Grandinetti and Grandinetti, 1979; Anastasia and Rullani, 1981; Brusco, 1982), firms were always many in each district but their total employment never exceeded that of a large, not even very large, firm. However, during the 1990s there is a phenomenon of increasing concentration in many IDs, due to the emergence of leading firms within them, and it is at this stage that the entry of outside multinationals into district contexts begins to be detected (Carminucci and Casucci, 1997; Camuffo and Grandinetti, 2011). In the words of Camuffo and Grandinetti (2011, pp. 835-836): "Leader firms are district firms that are usually larger and older than average within a given ID. Often, they enjoy some performance, technological, status or reputational differential vis-à-vis the other district firms, and are organized in business groups (Corò and Grandinetti, 1999; Cainelli, Iacobucci and Morganti, 2006). In general, they tend to position themselves downstream in the segment of the supply chain the ID operates and, hence, tend to be assemblers of finished goods. They can be family owned business, with the founder/entrepreneur and/or family members running it. But, in some cases, actual ownership can be in the hands of other actors, including private equities, other institutional investors or multinationals that bought them as profitable businesses or eager to get insidership within the ID. For example, various changes in ownership from local entrepreneurs to multinationals have been observed in the footwear district of Montebelluna (Sammarra and Belussi, 2006) or in the Mirandola biomedical district, specialized in the production of disposables and medical appliances (Biggiero, 2002; Sammarra, 2003)".

The presence of foreign multinationals in Italian IDs did not fail to raise strong concerns among local policy makers, business associations and labor unions. However, studies have since shown that: multinationals were not interested in "occupying" the districts and transforming their governance, but in benefiting from a local ecosystem rich in knowledge and skills useful to them; multinationals typically enter IDs by acquiring an existing firm that falls within the narrow élite of district leaders and key actors in the evolution of the districts; the presence or absence of multinational corporations in IDs is one of the parameters that describe their diversity (Corò and Grandinetti, 2001; Biggiero, 2002; Belussi and Sedita, 2009; Rabellotti, Carabelli and Hirsch, 2009; Castellani, Rullani and Zanfei, 2017; Belussi, Caloffi and Sedita, 2018; Bettiol et al., 2018; De Marchi, Gereffi and Grandinetti, 2018; Hervas-Oliver and Parrilli, 2018).

Industrial districts within globalization: the real threat

We thus find clear diversity regarding the coupling between multinationals and clusters of developing countries versus clusters in developed countries such as Italy. While the former may have benefited from the upgrading triggered by the presence of multinationals, for the latter the relationship appears at least symmetrical. Broadening the focus, IDs that have become more integrated into GVCs have certainly benefited from this opening (Chiarvesio, Di Maria and Micelli, 2010).

Regarding the ability of district systems to reproduce themselves over time, it has not been threatened by the entry of multinationals into districts but by globalization as a process whose intensity and complexity have been increasing. The effects are well summarized by the three points mentioned in the introduction: the increased diversity among IDs, the co-evolution between IDs and GVCs, and the presence of key actors of district (co-)evolution (De Marchi et al., 2018a). It should be added the overcoming of the Marshallian model, which is well documented in the Italian experience as indicated by the review of empirical studies conducted by De Marchi and Grandinetti (2014). The authors speak of collapse of the Marshallian model due to a number of concauses: "globalization and its effects on the firm population of each district and its fabric of interorganizational relationships; the impact of immigration on how the social structure and the production structure mutually interpenetrate; the shrinking reproducibility of the entrepreneurial factor; the diversification of the local production structure; an increased concentration of the turnover and workforce within the districts; and a weakening of the fabric of relations between enterprises" (p. 70)[2].

On the other hand, even with regard to the loss of " Marshallianity", the reality of Italian IDs shows differences. Consider, in particular, the districts producing quality wines, studied by De Marchi and Grandinetti (2016)

2 For a different interpretation of the transition of Italian IDs than the collapse of the Marshallian model reported by De Marchi and Grandinetti (2014), see: Dei Ottati (2018); Bellandi, De Propris and Santini (2019); Corò, Plechero, Rullani and Volpe (2021).

from the GVC perspective. In one aspect, they seem more Marshallian than others, especially these days: the existence and reproduction within them of a community factor and shared identity. To understand the peculiarity of these IDs, "we need to bear in mind that the district's end product incorporates local raw materials and the territorial specificity permeates the quality and distinctive characteristics of this end product (Bernetti, Casini, and Marinelli, 2006). In other words, winemakers operating in these districts owe their success primarily to the quality of their products and the inseparable link between these products and their terroir, i.e., the particular geographical area and environment that give their grapes and wines their distinctive features (Vaudour, 2002). On the one hand, the community factor – an exquisitely intangible value – remains anchored to distinctly tangible grounds. On the other, this factor tends to be reproduced even in the absence of a dense network of supply relationships. In fact, the district's firms (even the most internationalized among them, and those investing the most in their own company brand) exploit the fact of belonging to a region acknowledged for the prestige of its wines as a reputational resource, making it an essential part of their market strategy" (De Marchi and Grandinetti, 2016, p. 23).

Pandemic globalization, multinational corporations and industrial districts

It has been a few years since *Local Clusters in Global Value Chains* was published, but in this short time many things have happened about. The most important in the perspective of our analysis is certainly the havoc that the Covid-19 pandemic has wreaked on supply chains, havoc that is all the greater the longer these chains are (Queiroz et al., 2022). On the other hand, similar effects may have other pandemic phenomena, not only health-related, generated by disruptive events that spread rapidly on a global scale, with the presence of these phenomena seemingly becoming a structural component of globalization (Galiani, 2022; Rullani, 2022). As a result, a new season of back reshoring has opened: the former due primarily to errors in internationalization strategies made by some firms; the latter imposed by an exogenous factor that has increased the score of suppliers' geographic proximity within the framework of location decisions (Barbieri et al., 2020). This renewed reshoring is still largely to be explored, in general and with specific reference to IDs.

I believe that considering and connecting the three points already mentioned – IDs diversity, IDs-GVCs co-evolution, and key actors of evolution – continues to provide a good framework for understanding the changes taking place. In particular, looking at some IDs especially from the North-East Italy, the following hypothesis emerges: multinationals with district subsidiaries may represent key actors of the district evolution; precisely, this evolution is co-evolution between local clusters and multinationals with their GVCs; this co-evolution is favored in the era of pandemics; the presence of multinationals as key actors of district evolution constitutes an important factor (perhaps the main one) in explaining the current diversity among IDs. Clearly, this is a far cry from the cited hypothesis formulated in the early 1990s under which the growth of multinationals was generally portrayed as a process expected to hinder the development of industrial districts (Amin and Malmberg, 1992).

A case in point is the Belluno eyewear district. Both of the world's two leading multinationals in the eyewear industry – EssilorLuxottica and Kering Eyewear – have something to do with the district. The first was born from the merger of a lens maker with a frames maker: the French Essilor and Luxottica, headquartered in the Belluno district (Flaig, Kindström and Ottosson, 2021). The second represents an anomalous case (anomalous for a district firm) of strong and extended integration of the value chain from manufacturing operations to retailing: the great weight this firm has acquired on the total revenue of the ID has led to talk for this local system of hierarchization (De Marchi et al., 2018b). Kering Eyewear was recently started (2014) by Kering Group, a world leading organization in the inter-industry luxury segment with brands such as Gucci, Saint Laurent, Bottega Veneta, and others (Cabigiosu, 2020). Kering Eyewear follows Kering's established business model, based on the coupling of concentration on high added-value activities such as R&D and marketing and outsourcing of manufacturing (as opposed to Luxottica) for which it uses a large number of subcontractors, most of them located in the Belluno district. Kering Group is based in Paris, Kering Eyewear is based in Padova but has deep roots in the Belluno district partly by virtue of the fact that its CEO was a successful local entrepreneur. Paradoxically, the foreign multinational (Kering) helps the district evolve by reproducing the district form much more than the local multinational (Luxottica).

The nearshoring or local sourcing strategy followed by Kering in general, and particularly in the specific case of Kering Eyewear, has proven to be an important source of competitive advantage as the impact of COVID-19 on supply chains has been seen across the world (Tam and Lung, 2023). Most importantly, this is not an isolated example. In fact, several empirical studies point to the emergence of a horizontal-vertical model of production internationalization, followed, for example, by lean companies of large or medium-large size (Grandinetti, 2023), where the production of different finished products is allocated to multiple subsidiaries based in different countries, each of which manages a network of suppliers located around it, on a regional or cluster basis.

These cases show how useful it is to "resume" studying industrial districts at the current time. On this research front, too, the conceptual framework developed by Gary Gereffi proves to be of great value.

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8
The international influence of studies regarding the global supply chain initiated by prof. Gary Gereffi

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The fragmentation of the international economy and the contribution of prof. Gereffi

At the end of 1990s, prof. Gereffi started to analyse the new distribution of productive chains involving firms localised in different contexts, with uneven technological capabilities and differential labour costs. The study of the American economy suggested that from large organisations (both in manufacturing and in commerce) many activities were delocalised, and outsourced in the less advanced economies with the purposes of reducing the general costs of items produced, and thus improving the values of the entire economy, both in advanced and emerging countries. The discussion of these trends occurred initially in UK, at the institute of IDS, in the university of Sussex (Gereffi, Humphrey, Kaplinsky & Sturgeon, 2001), and then developed in a larger area of studies (Bair, & Gerffi, 2001; Gereffi, 2001a; Gereffi, 2001b; Bair, & Gereffi, 2003) in different disciplines, such as sociology, political science, management, and international economics.

In the middle of 2000s this work was consolidated in a quite integrated series of theoretical hypotheses, empirical evidences, and regularities (Gereffi, 2005; Gereffi, Humphrey, and Sturgeon, 2005; Gereffi, & Lee, 2012; Gereffi, 2018; Fernandez-Stark, & Gereffi, 2019, just to mention the most important contributions). At the hart of this stream of analyses two topics deserve a particular attention.

The first is the idea of upgrading. Despite the fact that markets can be considered a very efficient tool for distributing information and for equilibrating supply and demand, global supply chains provide a more efficient distribution new knowledge and new techniques to local firms in developing countries helping to transfer knowledge from the most advanced situation, activating in this way significant processes of learning, which greatly improves local economies, and contributes to reduce the economic gap between advanced and developing countries.

The second issue regards the governance and power within the various actors involved in the global supply chain, which define he distribution of profits among the supply chains. The five typologies discussed in Gereffi, Humphrey, and Sturgeon (2005), markets, modular with turn-key, modular with suppliers, dominated by lead firms, and captive, well represent the wide variety of existing modalities with which firms interact, varying from quasi-market to quasi-integration. They offer room for political interventions and trade union governance.

The university of Padua contribution

The first analyses of the Padua group date back to 2005 (Belussi & Samarra, 2005), and they are rich of empirical content. In particular the perspective moves from the processes of offshoring of district firms located in the Veneto region (the sport-system of Montebelluna, the tanning district of Arzignano-Vicenza, the riviera del Brenta shoes district, etc). The main characteristics of these studies is the fact that they are using a diversified terminology such as business networks (Belussi & Sammarra, 2009), open networks (Di Maria & Micelli, 2007; Chiarvesio, Di Maria, & Micelli, 2010); open learning systems (Belussi & Sedita, 2012), multiple path dependency (Belussi & Sedita, 2012), regionalisation of the global value chain (Bettiol, Burlina, Chiarvesio, & Di Maria, 2022), design-driven systems (Bettiol, Chiarvesio, & Micelli, 2010), smart networks (Bettiol, De Marchi, Di Maria, & Grandinetti, 2013), inter-firm networks (Cainelli, Montresor, & Vittucci Marzetti, 2012), and place-anchored value chains (Belussi, Caloffi, & Sedita, 2017). In this variety of concepts perhaps the specificity of the issue of global value chain lost its international impact on the international literature.

For a long times Padua studies developed quite apart, while in 2018, after several joint seminars, a common joint work, a book, local clusters in global value chains, was published (De Marchi,, Di Maria, & Gereffi, 2018). On the one hand, the contributions of the Padova group benefit a lot from the brilliant and inspiring writing of prof. Gereffi. On the other hand, they enriched the existing literature with numerous interesting European cases, developing in particular the themes of the ecological and social sustainability of the global value chains (De Marchi, Giuliani & Rabellotti, 2018), and the role that MNEs may play in future as international connectors (Belussi, 2017).

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9
A great social scientist who continues to teach us the global interconnectedness of local production systems

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I have no difficulty in admitting that Gary Gereffi's works have been among those that have most influenced my research paths in recent years. First of all for the way he helped change the perspective of analysis on industrial districts that I had inherited from the Marshallian school.

I still remember the first time – about twenty years ago – I met Gary in the San Servolo Island, where he was doing a visiting period at Venice International University. Since then, there have been many occasions to meet, compare and research, in Italy, the United States, and other parts of the world. And on each occasion, I have always appreciated Gary's effort to advance the analysis on development studies, address emerging topics, include new research perspectives, and look at the economic and social implications of his research. One of the aspects that always impressed me about his approach to research was the focus on useful actions in improving economic conditions that, in different ways, involve development actors – be they companies, workers, local communities, national economies. Looking closely, I believe the concept of "upgrading" has been one of the most important in his analysis on innovation and economic development, maybe the guiding criterion for much of his research, and certainly the richest in political and moral implications.

As it was for many other scholars, thanks to Gary the concept of Global Value Chains has accompanied my research on local development, industrial districts, and regional innovation policies.

Prior to Gary, our approach to the analysis of industrial districts was mostly constrained by a conceptual scheme that, in fact, saw economic relations between companies as essentially closed within a "relational local value chain". Instead, thanks to Gary's studies, we understood how industrial districts were open economic systems at different stages of the production cycle, not only in the upstream (procurement and resources supply), and then in the downstream (marketing and distribution). And we realised the importance of looking at the governance models of value chains, at the position each company takes within international production networks, in which goods and tasks are exchanged, but above all, knowledge is shared.

In other words, Gary made us understand the importance and complexity of the economic relationships that link different territories. He even made us realise how GVCs are networks of interdependencies governed by productive, commercial, but ultimately also social and political logic. A local production system that wants to upgrade and grow sustainably must therefore be aware of this interdependence, and learn how to participate in its governance.

The idea of GVC has proved particularly fruitful in explaining the emerging organisation of production over the last thirty years, but it must now respond to new conceptual and operational challenges. I will limit to listing three of them, which from my point of view constitute stimuli and commitments for further research.

The first is the changing character of globalisation, where politics - for better or worse - clearly intends to regain a sovereignty that the economy had taken away from it. I do not believe that globalisation is over, both because there are too many advantages that societies would give up, and because knowledge, the main fuel for innovation and prosperity, needs economies of scale, extensive division of specialised labour systems, and ever more sharing processes. However, globalisation is bound to become more selective in geographical, environmental, and political terms, and new barriers to trade will raise the costs of interconnections between economies in different geo-economic areas. The GVC concept will have to recognise this phenomenon, proposing new analyses that consider the "political factor" as underlying feature in the new international division of labour.

The second challenge concerns digital technologies and the virtualisation of some GVCs. Processes of integrated automation, additive manufacturing, virtual reality and AI are reshaping the geography of production for two main reasons. One of these is the shift of many manufacturing operations – the phase of GVCs that has been offshored the most in search of low labour costs – to capital-intensive activities. This reduces the incentive for Western companies to relocate processing activities to emerging economies, seeking, if anything, to stretch GVCs in the direction of end markets, or towards technological and human capital-rich ecosystems. The other reason, linked to the previous one, is the partial substitution (sometimes even total, as in the case of additive manufacturing) between physical and information flows along GVCs. This process therefore tends to overcome many trade barriers, reshaping the business models of companies, and pushing towards new and more advanced forms of international economic integration.

The third challenge is the relationship of GVCs with the territory and local societies, with the concrete places where the economic value created in global chains is generated and distributed. While the development of GVCs has transferred capital and knowledge to emerging economies, fostering global convergence processes, on the other hand it has often deepened the distance between centres and peripheries within industrial economies, and often in the emerging ones too. This is a phenomenon with not only economic but also political implications, as the growth of populist and sovereigntist movements in many advanced democracies shows. Trying to achieve a better balance between the creation and distribution of economic value among different communities – not only the efficiency of production processes – will be one of the issues on which research will also have to work harder in the future. Moreover, if the GVC analysis has contributed to recognizing the importance of the processes of globalization of the economy which had manifested since the 1990s, now research must contribute to rethink globalization, with the aim of promoting a more sustainable and inclusive one.

I am convinced that Gary Gereffi’s contribution will continue to be fundamental for all of us in this direction as well.

10
Reshoring as a new opportunity for Global Value Chains

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I'm very pleased to have the opportunity to be here and to celebrate Gary Gereffi and 20 years of research with all the friends who have been invited today. I would like to reflect on a topic that has already been mentioned, which is related to de-globalization and reshoring.

Indeed, one of the words that I have frequently heard among entrepreneurs, especially small and medium-sized business owners operating in industrial districts/clusters, in recent years is "de-globalization". This term often refers to the concept of bringing back domestic activities that were previously relocated abroad within a production organization model that, due to the pandemic, revealed its inherent fragility.

In fact, 20 years ago, when we started our first research on the digitalization and internationalization of industrial districts, we were concerned about the limited openness of our businesses. The research work conducted over the years, particularly with Eleonora Di Maria, Stefano Micelli, and Marco Bettiol, aimed to understand the level of convergence between the production model of small and medium-sized enterprises and industrial districts, which are networks deeply rooted in the territory, with the opportunities offered by network technologies and international markets. These three elements together, networks, technologies, and global markets, seemed like an opportunity that needed to be seized in order to keep up and remain competitive in a changing landscape where competition rules and market demands had shifted.

However, the research conducted at that time revealed challenges in this regard. The convergence between business networks and network technologies was far from guaranteed (Chiarvesio, Di Maria, Micelli, 2004), and it was even less clear how local production systems would face the new challenges of internationalization (Chiarvesio, Di Maria, Micelli, 2006, 2010). SMEs in the sectors that characterize industrial districts, and more broadly, the Made in Italy industries, had a historical inclination toward international trade. However, on one hand, this mainly involved finished product manufacturers rather than suppliers, and on the other hand, companies struggled to rethink their production organization by looking beyond national borders in search of less expensive factors of production (suppliers) and/or better skills. Yet, this was seen as an essential path to sustain competition from new countries, particularly emerging ones.

Nevertheless, our research revealed a new generation of companies that we referred to as "open networks" (Chiarvesio, Di Maria, Micelli, 2010). These were innovative companies capable of fully leveraging the opportunities presented by international markets, both upstream and downstream, and actively participating in global value chains, using the terminology and concepts thanks to the work of Gary Gereffi and the discussions we had together.

Analyzing the profile of open networks revealed interesting elements. They were lead firms that selectively reorganized the value chain between local and global across all the value chain activities (from commercial activities to production, services, research and development). To be competitive and achieve good performance, internationalization alone was not enough. It was necessary to support new strategies with innovation in organization, processes, products, and technologies. From the perspective of industrial districts, this presented opportunities and challenges. Open networks provided an opportunity to introduce new knowledge into the district context, renew and enhance traditional skills. On the other hand, they posed a challenge to the traditional model of district firms and, more broadly, the district as a model of economic development, which was required to rethink itself, with the support of policies capable of understanding these new trajectories.

At the time, we lamented the scarcity of successful open network companies. Paradoxically, today it seems that there are even too many open networks, and we find ourselves discussing the opposite theme: to what extent is it still advantageous to remain within global value chains?

This debate began well before the Covid pandemic, but the pandemic and even the Russia-Ukraine conflict have showed all the risks of excessive exposure and dependence on international markets. This debate has been developing around the theme of back-shoring or, more generally, re-shoring for at least a decade. However, for some years, it seemed to heat the hearts of policymakers more than businesses. Some emphasized back-shoring as an opportunity to recover jobs and advocated policies in this direction. However, businesses were not as responsive. In fact, despite many reconsiderations of past choices and strategies, observers noted low numbers.

Experiences of off-shoring implemented by companies have indeed started to reveal certain limitations or dissatisfactions, which are well-documented in the literature (e.g., Fratocchi et al., 2016). In terms of costs, not all expected advantages were always achieved, especially considering that over time, some ogìf them, such as labor costs, have increased, and coordinating activities can be complex. Moreover, low-skilled workers can impact product quality or overall efficiency. On the demand side, increased attention to country-of-origin, quality, and sustainability of production and products, for example, leads to a reevaluation of the value of manufacturing locations even in relation to final demand. These are just a few factors that lead companies to reassess past offshoring decisions and consider back-shoring or near-shoring strategies.

Additionally, the separation of production from research and design has had a negative impact on companies' innovation capabilities, in line with studies on co-location. Indeed, this was one of the reasons behind the resistance of small firms in local development systems toward the internationalization of production. Traditionally, the knowledge related to manufacturing practices has supported the competitive advantage of these firms in close connection with innovation. This link may have appeared less significant in larger companies, but in reality, the separation between operations and R&D has gradually reduced learning opportunities and the effectiveness of the innovation process itself (Pisano, Shih, 2009; Shih, 2014).

Finally, the digitalization of production processes can support these strategies to the extent that it impacts production efficiency and thus addresses some of the motivations behind offshoring. Certain technologies and solutions, such as robotics, smart logistics, vertical and horizontal integration, are expected to increase plant and production system productivity. They enable shorter time-to-market and development cycles, including customized production at lower costs. The adoption of these technologies is likely to influence decisions regarding production localization in the future (Chiarvesio, Romanello, 2018).

A significant body of research has sought to measure the extent of this phenomenon through surveys or systematic collection of backshoring cases. However, despite an increasing number of identified cases, the absolute value remained relatively small compared to the total number of offshoring cases over time. Why is this?

The reasons primarily laid in the difficulties of revising past decisions. Significant investments in foreign plants and facilities are not easily reversible, especially for small and medium-sized enterprises. These companies often took years to establish operations abroad, and going back is not straightforward. They are not like “mobile factories” as seen in many multinational corporations. Secondly, years of offshoring have transformed the countries and production contexts in the home country. On one hand, at the local level, reproducing a production model with a high number of human resources is no longer feasible due to labor shortages. On the other hand, certain skills have been lost or are not available in sufficient quantities, leading to a loss of industrial commons (Pisano, Shih, 2009). The same base of suppliers has diminished, and when it is present, it may not always be capable of meeting the needs of client companies wishing to reshore. In this regard, companies are now questioning how to reorganize global value chains, while also addressing the aforementioned challenges. A combination of investment in digitalization (Industry 4.0) and internal company training, along with training at the territorial level, can serve as a partial solution to look at.

Regardless of the challenges, that exist, does this emphasis on the need to rethink global value chains implies, in practice, the necessity (at least felt if not fully achievable) to have a lesser reliance on global value chains?

In my opinion, it does not necessarily mean staying less within global value chains. Rather, it involves conducting a more careful analysis of the geography of production, the locations of value creation, and associated risks. It requires making investments where appropriate, considering the role of manufacturing, relationships, and consumer demands more thoughtfully. This does not automatically imply back-shoring. In collaboration with colleagues (Bettiol et al., 2019), we have highlighted that this theme should be incorporated into a broader reflection on the geography of production within global value chains. Companies today have the option not only to bring back previously relocated production but also to invest and develop local activities that were once outsourced or delocalized. This can involve rebuilding a system of skills and suppliers that may have been lost. More specifically, the analysis of company cases reveals complex strategies that, in the face of a changing economic, political, and social landscape, lead to an overall and organic revision of past and future strategies. It is not just about evaluating whether dissatisfaction with past decisions or new market demands should lead to back-shoring or near-shoring. Instead, it is about understanding how to redefine the organization of production, including the locations of production, in light of new needs.

In this context, back-shoring can only be partial, as it may not be fully feasible for the reasons mentioned earlier, and it can be focused on specific product lines. For example, it may involve products targeted at higher market segments, where the made-in effect matters and price sensitivity is relatively lower. Similarly, only certain activities within the value chain, such as those critical in terms of skills and innovation, can be reshored.

Within this framework, there are also decisions that are not strictly related to back-shoring but fall within the same line of thinking regarding post-offshoring perspectives. For instance, launching new product lines in the home country or choosing to maintain specific high-quality productions in the country of origin, which require manufacturing and design expertise, despite extensive internationalization. Investment decisions in product and process innovations, as well as diversification strategies that leverage the qualified skills of the company and the home country, can also be part of this context.

It is important to emphasize that these different alternatives can coexist. A partial back-shoring activity can be accompanied by the decision to launch a new product line in the home country and further offshoring of low-end, high-volume product lines.

In general, the re-evaluation of production locations does not seem to question Global Value Chains themselves but rather the ways companies use to participate in them. Paradoxically, the ongoing debate can lead to staying more within global value chains. Companies, even when acknowledging past mistakes or recognizing the need to review past offshoring decisions, can better define the elements that add value to the offerings and produce products that are highly valued in international markets. A different strategy can allow a supplier of components or a machinery manufacturer to remain part of international supply chains, for example. In such cases, we could say that "less is more": less emphasis on the overall Global Value Chain as the company may choose to maintain certain activities at the local level, but more emphasis on international expansion because the resulting products are of higher value. By selectively combining the value of local production with the value of international production, the company can potentially become more competitive on an international level.

Therefore, the rethinking of production locations and strategies can lead to a more refined approach that maximizes the value of both local and international production, enhancing competitiveness in international markets.

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11
The green transition in latecomer countries. How can the GVC framework help?

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Gari Gereffi's Doctorate Honoris Causa is a well-deserved recognition for an exceptional scholar. I deeply admire him for his outstanding intellect, creativity, and intellectual honesty as well as for his generosity. However, Gary' award is not only a tribute to him, but also to the entire Global Value Chain (GVC) community, of which I have been proud member since its inception.

This is an opportunity to discuss a topic which I have recently started to investigate: the green transition in latecomer countries. I would like to explore how the GVC framework can be used to determine whether and how the green transition can create opportunities for these countries. My focus will not only be on the potential for latecomer countries to become markets for technologies developed in advanced countries and a few emerging countries such as China, but also on their ability to participate in the production and innovation of these technologies.

In my previous work, I introduced an analytical model to examine the green transition in latecomer countries (Lema & Rabellotti, 2023; Lema, Fu & Rabellotti, 2020). The model is based on the concept of green windows of opportunity (GWO), which are created by institutional and policy changes rather than technological or market factors. For instance, in Brazil, the 1973 oil crisis led to the implementation of industrial policies aimed at promoting the use of biofuels. Similarly, in China the introduction of a renewable energy law in 2006 stimulated the initial development of the biomass industry. Furthermore, solar energy ‘missions’ such as the Rooftop Subsidy and the Golden Sun Demonstration Programs played a crucial role in the initial development of the solar photovoltaic (PV) industry.

The transformation of green windows of opportunity into upgrading and international competitiveness is not automatic and it is contingent on sectoral specific preconditions and the active responses of public and private actors. The GVC framework is instrumental in this regard as it enables a comprehensive understanding of the entire value chain, accounting for possible differences in terms of governance and upgrading opportunities across different green industries. For examples, in the solar PV industry, China dominates the manufacturing chain, producing approximately 75% of the solar panels sold globally, and controlling key components such as wafers, polysilicon, modules and cells. China is also home of the top-10 suppliers of solar PV equipment, including Longi, Trina, Suntech and Jinko (IEA, 2022). However, for most other emerging economies, high entry barriers exist in the manufacturing chain, but upgrading opportunities are possible in the deployment chain (e.g., balance of system components and services) (Lema, Gentile & Rabellotti, 2023).

The biomass industry differs in terms of governance from the solar PV industry, as it is characterized by high levels of vertical integration. The lead firms are typically project organizers with a high degree of service content and little organization of the backward manufacturing chain due to low and sporadic purchase volumes and the generic nature of most components (Binz et al., 2017). Biomass power plants are highly customized systems tailored for different feedstocks (i.e., fuelwood, charcoal, agricultural and forestry wastes, and renewable wastes from the paper and pulp industry). These plants integrate components in unique constellations depending on project specifications. Therefore, lead firms in this industry are typically engineering, procurement and construction (EPC) project organizers, who integrate critical components such as boilers and steam turbines, as well as peripheral components such as conveyor systems. Critical components are produced by specialized Original Equipment Manufacturers (OEM) with product portfolios designed for different feedstock types, volumes, moist levels etc. Although the components are carefully selected, they are standard, which reduces the bargaining power of specialized supplier OEMs versus system integrator EPCs. Governance patterns in this industry combine elements of hierarchy (EPCs with a degree of vertical integration) that source components with varying requirements for information exchange, ranging from low (market) to high (modular).

Therefore, while firms in the solar and wind GVCs tend to specialize in their technologies, firms in the biomass GVC tend to be more diversified, serving the biomass and other sectors. In addition, unlike solar and wind, the manufacturing and deployment chains are much more integrated in the biomass GVC. There is evidence that firms in developing countries have opportunities for upgrading due to localization dynamics and access to global sources of learning outside the GVC (Hansen and Lema, 2019). In addition to China (Hansen & Hansen, 2020), there are other notable cases of upgrading in middle-income countries, such as the Thai biogas industry (Reinauer & Hansen, 2021).

The above evidence highlights the importance of investigating green industries through a GVC lens focused on governance to understand their global industrial dynamics and how different lead firms influence upgrading opportunities. While high entry barriers exist in the manufacturing chains, latecomer countries may find opportunities in the deployment chain (services and peripherals) (Lema, Gentile & Rabellotti, 2023). However, the question of whether upgrading routes starting from the services domain of these renewable energy industry value chains can be successful remains a key challenge for future research.

In addition, there are major challenges related to the green transition that need to be addressed. First, the cost-effectiveness of renewable energy technologies remains a major barrier, especially for developing countries with limited financial resources. Second, the development of sustainable supply chains for green technologies requires attention to environmental and social impacts, such as land use, resource depletion and labor standards.

There is an urgency to address the environmental impact of green GVCs. While renewable energy technologies are critical to addressing the climate crisis, they are not exempt from negative environmental impacts. For example, some of the inputs used in their value chains can be harmful or scarce in supply, there can be negative influences on biodiversity and large amounts of waste are produced by the decommissioning of the obsolete systems. In the wind industry, for instance, there are critical issues concerning the use of rare earth for the manufacturing of permanent magnets for turbine generator, and there are problems with waste management of blades, made from non-recyclable materials such as glass or carbon fibers. Furthermore, offshore structures are typically made of steel, which is a highly polluting industry. To address these issues, a circular approach to renewable energies GVCs is necessary. This approach should include eco-design to reduce resource use, high-standard maintenance and reuse procedures, adoption of remanufacturing and retrofit practices and improvement of recyclability and reusability of materials.

Moreover, there are important tradeoffs between environmental and social impacts that need to be investigated in order to improve our understanding of the possible uneven distribution of costs, benefits, and rewards of the green transition. This is an area that we have just only begun to explore, and that will become increasingly important in the future. Recent tensions in Sweden and Norway with the Sami community have gained international attention, following Greta Thunberg's condemnation (The Guardian February 22, 2023). In Sweden the Sami community is protesting against the rare earth mine recently inaugurated in Kiruna, Lapland, arguing that it will destroy grazing areas and cut off the only viable migratory route for reindeer. This is just an example of the possible social impacts of the green transition on local communities that cannot be ignored. New research is needed to identify possible solutions to these conflicts, which should go beyond the sharing of economic benefits and also involve new models for sharing agency and decision-making power. Addressing these challenges will require coordinated efforts among governments, businesses, and civil society organizations to ensure a just and equitable transition to a sustainable energy future.

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12
The challenges of Global Value Chains: the perspective of analysts and practitioners

Eleonora Di Maria

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In order to discuss the perspective of Global Value Chains with practitioners, a round table was organized with the participation of Fabrizio Guelpa, Head of the Industry & Banking Research of Intesa Sanpaolo Research Department; Massimo Pavin president and CEO of Sirmax; and Gianni Dal Pozzo, CEO of Considi and President of the University of Padua Alumni Association. We report below the main contributions that emerged from the speeches.

Measuring Global Value Chains

An initial insight is offered by Fabrizio Guelpa, who within the Research Department has been analyzing and studying the topic of globalization and economic dynamics for many years.

Fabrizio Guelpa first points out the importance of Global Value Chains, but the need to also provide numbers and measure them. Indeed, until recently, there was no statistical apparatus that could quantify them as opposed to traditional import-export statistics, which are unable to capture the contribution of different countries to GVCs. An example might be German luxury cars in which there is a lot of Italian components, not only mechanical inputs but also leather for sofa that comes from Arzignano cluster. Thanks to the international World Input Outpt Database project there was a way to understand how important global value chains are and how much they are evolving.

In his talk Fabrizio Guelpa provides some numbers to give evidence of the dimension of the international aspect. Considering 100 the production in Italy of manufacturing, in 2000 81 percent of inputs was originated in Italy and only 19% from abroad. In 15 years, the foreign percentage has risen to about 26%, a remarkable increase. However, 74% of production remains domestic, so the trend is clear, but the majority of production still remains domestic. Guelpa points out how the dynamics are broadly similar for other countries as well. The Italian-level data available are from 2014, so not particularly recent. Compared to Italy's 74%, in Germany the percentage is 72%, in France indicatively 68% as well as Spain.

In this picture, one has to ask how much of the production is truly global, also considering the European context. For Italy of the approximately 25% that comes from abroad, more than half comes from the Europe-15, a percentage that rises to two-thirds considering also Eastern European countries. In contrast, Asia weighs roughly 5 points. Guelpa thus emphasizes how for Italy the picture still shows a profoundly domestic scenario, which is similar for all sectors. In the future scenario, the debate is considered open. There are, according to Guelpa, a few dynamics of reorganization of production in which, for example, there is a shift from Asia to Europe for some inputs. In fashion, a growth of Turkey has been observed at the expense of Asian firms. In general, however, the weight of the weakining of Asian production is negligible.

Looking instead at the domestic sphere, from data internally available to Intesa Sanpaolo on trade and supply transactions (about 25,000 firms for about 6 million transactions), a map of local labor relations was reconstructed, distinguishing between district and non-district firms. The analysis showed that the average supply distance in districts is around 100 kilometers, while for non-district enterprises this value reaches 120 Km. It is therefore a domestic very local supply chain. Comparing firms by size, no significant differences emerge yet, as well as at the sectoral level. There are, however, differences when comparing firms geographically: the South, which has a territory poor in component suppliers and is more competitively disadvantaged, shows relationships at much greater distances (for example, firms in the districts of Apulia on average have a supplier distance of 280 kilometers, that of Emilia-Romagna about 70). The pandemic has impacted these dynamics, with firms managing to find suppliers locally during the lockdown, but also with increased distances. Overall, therefore, a situation without major changes taking place.

Global Value Chains, multinational corporations, and the perspective of specialized suppliers

Massimo Pavin presents the experience of Sirmax, a specialized and innovative supplier operating in several global chains. Over the past 30 years, Sirmax has positioned itself in 4 continents with 13 factories around the world, following automotive and home appliance customers who were already present in different places, following a "glocal" strategic choice. In fact, according to Pavin, in order to work with large automotive or home appliance manufacturers, one needs to be global, that is, to be able to supply them all over the world, but at the same time local, that is, to be part of their local value chain (proximity between production plants). Thus, the path followed by Sirmax is not one of relocation, but of internationalization as a garrison of markets, while still being able to follow Sirmax's culture of managing local suppliers. In a few years, after installing factories in the United States, India, Brazil, and Poland Sirmax has developed a relationship of true long-term partnership with local suppliers. These partnerships have enabled the acquisition and enhancement of innovations by bringing them to the market through Sirmax's products (semi-finished plastic products for car parts and household appliances). Through this strategy Sirmax was able to grow a lot by becoming among the top independent players in EMEA (Europe-Middle East-Africa) and the world.

In the pandemic and then post-pandemic period Massimo Pavin points to Sirmax's ability to be able to react and gain market share precisely because of the truly glocal business model adopted. The subsequent commodity crisis and supply difficulties starting in 2021 meant that companies with localized value chains were favored. The subsequent picture of strong instability (war in Ukraine, energy crisis, inflation, rising rates and recession in various economies) generated a slowdown in investment and a greater focus on reshoring. On this point, Pavin points out, there are two different reactions. On the one hand, an approach like that followed by the Germans or the Japanese, who have learned from the pandemic and post-pandemic experience and are more cautious in managing supply from Asia, taking advantage of the more competitive prices, but being more careful in moving critical production or supplies (e.g., semiconductors, particular plastics). On the other hand, on the other side are the Americans with a more short-term oriented approach, where they take advantage of the competitive arbitrage opportunities offered by Asia. In this dual scenario the truly glocal enterprise is rewarded. Sirmax has retained some centralized functions - such as R&D, controlling, casting with services provided to the entire world.

However, Massimo Pavin brings two examples of de-globalization processes that have involved Sirmax customers. A first case concerns Whirpool, which had invested in the past in Europe with acquisitions in Germany and also in Italy (Ignis, Merloni). Within six months, Whirpool, as a global company, decided to disinvest from Europe (selling a majority stake to the Turkish company Arçelik), following disinvestment in China and Russia. Sirmax now relates to Whirpool as an American partner with a presence in India. A second example relates to India and the government's role in de-globalization, where, as a result of Modi's Made in India policy (in India Sirmax is fortunate to have a 50-50 joint venture with an Indian company), local companies are emerging in the automotive sector. Tata Mayndra and Maruti (which split from Suzuki) are controlling up to 80% of the Indian automotive market. This is forcing large players such as Volkswagen out of the market (despite having a brand-new plant in Pune), highlighting how some markets are closing due to the emergence of domestic companies.

Reshoring, Industry 4.0 and the revitalization of Made in Italy

Gianni Dal Pozzo illustrates two examples of companies that were supported by Considi in the competitive renewal process related to the pandemic through investments in Industry 4.0 technologies within a rethinking of production location choices.

The first case concerns Bianchi, a historic Italian bicycle brand, which was struggling in 2018, but thanks to the pandemic faced exponential growth in the leisure and personal-related consumption market. In three years, the company multiplied its turnover by two through a complete reconstruction of the industrial process that had been marked by cost-driven offshoring (producing frames in this case by taking advantage of cost advantages, a strategy widely applied in the industry). The loss of frame production from Italy and Europe had meant during the pandemic a waiting time of 18 months, too long to make the bikes. The company then decided to invest in 4.0 technologies - also taking advantage of related incentives - to build a fully 4.0 plant that allowed Bianchi to become the first entirely Made in Italy bike manufacturer, with an extraordinary competitive advantage.

A second case cited by Gianni Dal Pozzo concerns Manfrotto, a company that is no longer Italian and a leading manufacturer of camera tripods (the other top 5 manufacturers are Asian). In order to compete with the costs of Asian production, it turned to technology for the implementation of a complete reshoring strategy initiated by the company to Italy. This allowed the company to be able to enhance a Made in Italy production in all products, even those on the shelf sold through different channels (including via Amazon) to the end consumer.

Like the previous example, Gianni Dal Pozzo points out, investment was made in technologies to completely redesign the logistics-production process as part of the redefinition of location choices.

Global Value Chains and geographic proximity

With Fabrizio Guelpa, the topic of geographic proximity was then addressed within the broader framework of globalization, in view of the research that Department periodically conducts through the Districts Monitor. Fabrizio Guelpa points out that not only global value chains can have problems, but also local ones. A first problem is technological and concerns the processes of digitization, which can push to have contacts and information exchanges with even more distant suppliers than companies did in the past. A second, more complex factor concerns the sources of innovation. Whereas in the past disruptive innovations took place within the value chain and thus proximity may also have had value, today disruptive innovations often come from other value chains, thus involving different communication paths not related to physical proximity. This may suggest that there is less benefit in local value chains. According to Fabrizio Guelpa, however, there is one factor that can instead signal the importance of proximity, and it concerns investments in 4.0 technologies. At a very early stage these investments were experienced due to incentives mainly as a push to buy technologies, software and training that are available on the market. In reality, however, in order to transform into enterprise 4.0, it is not enough to buy technologies, but rather to start a process of complete reengineering, which is a particularly complex process. In this scenario if the enterprise is in an environment that fosters the exchange of experience, information exchanges within the supply chain or among those with full experience this can generate a real competitive advantage. Firms that have this fabric of relationships may have greater adaptability than others.

Sustainability in Global Value Chains

Massivo Pavin delves into Sirmax's experience regarding the issue of environmental sustainability and how it has been approached taking into account its presence within global chains. From a product perspective, environmental sustainability is declined differently depending on the regions in which Sirmax operates. Europe is the area that started first because it is most sensitive to the issue, although the United States has shown a strong acceleration. As a strategy Sirmax has invested more than one hundred million on the issue in the last four years, particularly on post-consumer plastics recovery in Europe. As a post-industrial origin and source control in the U.S. Sirmax is able to recycle materials and use up to 30 percent of them in virgin products. This gives the opportunity-certified through a collaboration with the University of Padua-to certify that Sirmax products, when used in the final component of a car or household appliance, reduce CO2 emissions into the atmosphere by 25%. Being "glocal" in this scenario is advantageous because you apply these investments to the whole world.

However, it is a priority to be close to the sources of materials collection to take advantage of the benefits, and so Sirmax has invested to control the entire collection value chain (from the receipt of the waste to the creation of the compound that then becomes part of a high-tech component in its use). This investment strategy of Sirmax on the environmental sustainability front has also been recognized by external actors, as evidenced by the projects in this area funded with 9 million euros under PNRR with the University of Padua and other international partners. As a second distinguishing aspect Pavin emphasizes the competitive advantage related to the control of the entire value chain up to which they can spend towards customers, where in particular recently they can enhance the 50-50 participation in a spin-off of the University of Padua that is an engineering firm that designs the components of cars and household appliances using plastic from the supply chain controlled by Sirmax that starts right from waste.

Value chains, human capital and Industry 4.0

A final aspect discussed in the Workshop concerns the role of skills and human capital and is explored by Gianni Dal Pozzo, who also serves as President of the University of Padua Alumni Association. Gianni Dal Pozzo agrees with what was mentioned during the Workshop by Prof. Micelli who pointed out that in an Industry 4.0 scenario, human capital is still a key asset. While this statement is taken for granted today, it was not when the Industry 4.0 plan was introduced in Italy. There was a technology-driven vision, in which it was emphasized that it will be the technologies that will drive the processes and drive the people; it would be enough just to buy the technologies. This is important to remember because the tax incentives were driving a rush to invest to be made by 12/31 each year, otherwise it would not have been a competitive advantage. Ten years later-because Industry 4.0 was born as a concept in 2012-instead, Gianni Dal Pozzo points out, it was then realized that this approach was wrong and that only those companies that invested in parallel in people, as well as in processes, were the ones that gained the real competitive advantage.

This change in vision was then also adopted by the European Commission, which began to "upgrade" the Industry 4.0 paradigm to Industry 5.0. Looking at the statistics, it seems that many companies are 4.0, but in reality the investments to plant fully 4.0 require many millions of investment, and therefore the truly full 4.0 factories are very few. Talking about Industry 5.0, on the other hand, means bringing humans back to the center, in which human capital becomes essential to enable technologies. However, while technologies grow exponentially, people's culture grows, Dal Pozzo reiterates, in a linear fashion, and this is a substantial difference in the introduction of new technologies.

In such a context, another "upgrade" element concerns resilience, that is, the ability to leverage these technologies not only on the production efficiency front. In 2016 when Minister Calenda introduced the Industry 4.0 plan in Italy, the productivity aspect was emphasized above all. Today productivity is an element to be considered, but more important the issue of flexibility is emerging, which is given precisely by the opportunity to bring value chains closer together.

According to Gianni Dal Pozzo, Industry 4.0 technologies can become 5.0 with the approach that the Japanese have and linked to a 5.0 society, in which the goal is precisely to bring back the concept of technology as a tool, not as an end goal that becomes on the contrary the well-being of man on the planet. In this perspective, the prosperity of companies must come through people on the one hand and certainly the preservation of the planet on the other.

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Final comments on the workshop

Gary Gereffi

Duke University

First of all, I wanted to thank again the organizers for bringing together so many researchers and practitioners to extend our discussion, and especially thanks to the moderators who had a tough role, Valentina, Marco, and Eleonora. I just want to mention three points that I think cut across the presentations of both researchers and practitioners. One is place, the second is human capital, and the third is sustainability.

I found it interesting that place takes on two different meanings. When we heard about reshoring, involving recreating local supply chains – which is extremely important – we heard cases like automobiles and bicycles. Partly, it's a matter of finding firms who can do things and also finding the skills needed to do that. But place also came up a bit when we heard about Industry 4.0, where place seems less relevant. So we have two different visions of places: place becoming more important when we talk about concrete, local supply chains that need to be rebuilt. But in other ways, perhaps place is becoming a little less important when we talk about disruptive innovation.

If you look at Google as a key generator of electric cars, who would have thought that the same company could move into such really different industries? I think what ties those two definitions of place together is this idea of human capital that Stefano Micelli mentioned. Something that's happening in the US that I didn't hear as much about here is a tremendous concern with shortages of human capital. As the US is trying to rebuild a lot of industries like semiconductors, like electric batteries, and others, there is this big concern that there is not enough skilled labor needed for these different activities. For example, the semiconductor plants, which are now being built with the Biden CHIPS Act: for every one of those plants it takes four or five years to build, 70% of the workers require two-year technical degrees, 20% require Masters degrees, and 10% require PhDs. All of the semiconductor companies are saying in the different places around the US, there are not enough skilled workers currently to deal with that.

It seems there are two possible solutions. One is train more workers, but training takes time. In the US, the community colleges are becoming very active partners with the firms in trying to do that training and I think that's important. But the other way to do it – shorter term – is migration or immigration. I think that has become an extremely controversial topic all around the world, but certainly in the US. One question from a practitioner and a research point of view is: if place matters, both more and less, but human capital is critical to solving those problems, how do we best create the human capital we need? Certainly, universities and alumni networks are important. Community colleges are important. Immigration could be part of that solution. But what's the right balance? What's the right mix?

The final topic is sustainability. We've raised that again and again. I think one of the themes that would be very amenable to a global value chain approach that's underdeveloped is the whole idea of recycling networks. I think recycling tied to manufacturing industries, but even to some mining industries, offers a lot of opportunities to create value in particular places. And the question is, what do we know about what's working where, and how would we be able to accelerate that process? I think that's one of the critical ideas moving forward that the GVC researchers need to pay more attention to. If I have a chance, I think tomorrow in the class we have at the Department of Economics and Management it is a theme I would like to address because it is on the radar screen for GVC-style research, but not as much has been done as needs to be done.

Also I wanted to really thank the practitioners for their insights which feed into a lot of the observations of the researchers. I've learned a lot just listening. Thank you very much.

Appendix
Pictures of the awarding ceremony and workshop

Figure 1 – Prof. Daniela Mapelli Rector of University of Padova and Prof. Gary Gereffi

Source: University of Padova

Figure 2 – Prof. Gary Gereffi during his *Lectio Magistralis*

Source: University of Padova

Figure 3 – Prof. Gary Gereffi at the stage

Source: University of Padova

Figure 4 – Prof. Gary Gereffi with the governance of University of Padova and professors of the Department of Economics and Management

Source: University of Padova

Figure 5 – Prof. Gary Gereffi and round table of practitioners

Source: Department of Economics and Management, University of Padova

How to study the globalization of the economy? What are the scenarios for globalization processes in the post-pandemic era? This book takes stock of the current debate starting with the studies of Prof. Gary Gereffi (Duke University), who developed the theory of Global Value Chains and made a fundamental contribution to the understanding of the dynamics of international trade and the organization of production on a global scale. A research path that led important opportunities to visit and compare with the Italian and Veneto context in particular, through Prof. Gereffi's numerous visiting periods between Venice and Padua. For these reasons, the University of Padua awarded Prof. Gary Gereffi an Honorary Doctorate in Economics and Management (based on the proposal of the Department of Economics and Management "Marco Fanno") on March 13th, 2023. The volume contains the proceedings of the ceremony and the workshop organized with scholars who have collaborated with Prof. Gereffi and enriched studies on Global Value Chains through the Italian perspective. Insights from business practitioners are also included.