Marta Gaia: "Barcelona is at an exceptionally exciting time in digital health"

As an investor, entrepreneur, start-up coach and director of Digital Health at the [Stanford Byers Center of Biodesign](), [Marta Gaia Zanchi]() has a privileged view of the past decade of digital health in Silicon Valley. This May, she shared this view at a talk organized by Biocat. Luckily, we will see her again soon, since she is moving to Barcelona in 2019 for a new initiative, along with a growing team of seasoned digital health advisors, both investors and executives, from the United States and Europe: "If you are a digital health founder or investor, you should get in touch with me," she said.

Marta Gaia holds degrees in Biomedical Engineering and Electrical Engineering from Politecnico Di Milano, Italy (BS, MS) and Stanford University (PhD), and a certificate in Entrepreneurship from the Stanford Graduate School of Business. In 2016, the Silicon Valley Business Journal named her one of the 'Silicon Valley 40 Under 40'.

What separates successful digital health companies from the rest?

Digital health is not a particularly new concept: we have a working definition of this area of technology-enabled innovation since the early 2000's. The best companies are very clear on the target, on the core problem and on the importance of the outcome. For years we have seen an explosion of digital health technologies, but most were nice little tools that did not materially impact patients' quality of health, access to care, or the cost of it; they did not produce significant or quantifiable changes in any meaningful health indicators for the patient, or meaningful metrics for the health provider. These technologies did not solve actual problems that healthcare stakeholders have. The best digital health entrepreneurs understand that technology is only an enabling component of a solution; they leverage it to better scale or change (improve) traditional process and protocols; they embrace the complexity of healthcare and learn as much as they can about unmet clinical needs, sources of friction in the system of patients, providers and payers, barriers to improved outcomes, and opportunities to align stakeholders incentives in a demonstrable way.

Silicon Valley is broadly considered as the healthtech mecca, and some European entrepreneurs think they can only succeed if they settle there. Is it possible to succeed in the sector from Barcelona?

I'd say in Silicon Valley, we have reached a certain level of maturity, with more and more emphasis on companies generating evidence of near-enough-term return on investment and a strong clinical evidence base. We have seen enough shiny new things come and go so quickly. In general, we tend to be more careful about companies

being very clear about their value proposition, about their ability to make a major material difference in time and money, day one. Personally, I am always very appreciative of founders who show that they have learned as much as they can about clinical medicine, and have built a team that is as diverse and the complexity of the problem they are going after requires them to. I believe this is a message entrepreneurs are listening to, and reflects a general trend in this sector.

In Europe, I am blown away by the quantity and quality of both talent and ideas I have been exposed to in the past year. It may have lagged in the previous digital health generation, and perhaps because of it, Europe's best technology hubs want to lead the way on the next one. And I believe they will. I am especially bullish on Barcelona's health technology ecosystem. Here, European talent and ideas have an intrinsic value as high as Silicon Valley's; and if you too know and believe in Buffet's Equation, which observes that Opportunity = (Value − Perception), then you'll agree with me that Europe is at an exceptionally exciting time in digital health – while Silicon Valley suffers from extremely high cost of talent acquisition, difficulty to retain talent, and valuations that all too often outstrip promise.

In fact, you are planning to move to Barcelona. Could you explain some of your next goals?

Yes, I am moving to Barcelona in 2019, and will be visiting often from Silicon Valley for the rest of 2018. Today is not the time for formal announcements: let's just say, I put my money where my mouth is, and I am working on my next initiative along with a growing team of seasoned digital health advisors, both investors and executives, from the United States and Europe. On the US side alone, these include Anil Sethi (Founder, Glimpse and Ciitizen), Matthew Holt (Chairman, Health 2.0 and Founder, Smack.Health), Nina Kjellson (General Partner, Canaan), serial entrepreneur Geoff Clapp, Scott Barclay (Partner, DCVC), serial C-suite executive Lisa Serwin, Manuel López-Figueroa (Venture Partner, Bay City Capital), and more. If you are a digital health founder, or an investor interested in seizing the opportunity to find and seed high-value and young health technology businesses within a strong and growing ecosystem of global impact potential, you should get in touch with me.

Name 5 companies of the digital health space that are worth following. What could other companies learn from them?

Glooko was one of the first companies to leverage digital tech to improve care for a chronic disease: diabetes. It was founded by tech entrepreneur and venture capitalist Yogen Dalal, who set out to address a need he personally experienced—a way to visualize and track his own blood sugar levels in order to better manage his prediabetes. We (my colleagues and I) at Stanford Biodesign wrote a case study on Glooko for our digital health students, and Yogen during an interview reinforces the

important concept of stakeholders alignment for success in digital health (as in health technology more broadly): "*Every need involves more than one stakeholder, so you need to figure out how to align their interests. For instance, if you improve the communication between the physician and the patient through digital health products, then everyone wins because the patient's doing better and the healthcare system is more efficient in using its dollars more wisely,*" Yogen said.

Analytics companies Medical Informatics and HealthReveal are two more I'd like to quote. (Disclosure: DCVC is an investor in Medical Informatics). We can learn from them the importance of contextual data in healthcare, of information that is normalized to the individual and that can produce a real change in outcome for that one person. This is extremely difficult to do well, and a majority of health care analytics I have seen so far produces probabilities that hardly translate into opportunities for their care providers to optimize their patients' health in a way that is timely and individual-centric.

Recently I met the founder of Curai, who studied and lived right here in Barcelona before moving to Silicon Valley several years ago. Working on the cross-roads of data mining, machine learning, software engineering, healthcare and innovation, what founders can learn from it is to not shy away from wicked hard problems that have the potential for good at a very large scale, and to bring physicians in the team (both core and advisory) with relevant clinical expertise.

And finally, I name Ciitizen, a company in Silicon Valley that was founded by Anil Sethi, a good friend, amazing human being, and serial entrepreneur who previously founded Gliimpse, which Apple acquired in 2016 then released the product as Health Records (more on Anil below). Ciitizen focuses on helping cancer patients and those with a serious illnesses access their medical information and turns unstructured records into computable data (e.g. for research, for clinical care, for ML/AI needs). Ciitizen believes that patient mediated data portability helps solve hospital interoperability. A patient or Ciitizen-centric approach allows users to share data with their healthcare providers and donate their information to medical research. What you can learn from Ciitizen is a relentless focus on the need, and on hiring the very best people to help solve it, including the former HHS HIPAA guidance officer and stellar data normalization and informatics team.

In general, I am very excited about deeper compute informatics closest to the patient, deep learning on machine vision applied to specific problems, and founders that see a future where consumers are empowered and clinicians have a partnership in which the machine predicts and the professional has enough information to quickly decide on action. Therapeutic areas such as hypertension, diabetes, heart failure, prevention but also the oncology one are especially ripe for innovation.

What about failed companies: which are the most common mistakes? What could we also learn from them?

I had the pleasure of having Joseph Smith, CEO of Reflexion Health as my guest at Stanford University, and he said it most eloquently and succinctly: "the next frontier of enabling technology in digital health is PROOF." A surprisingly small percentage of companies in digital health has been able to demonstrate or even define clear target outcomes. Granted, it is extremely difficult to design health tech interventions to arrive at measurable results: the current clinical trials framework is just not suited for their iterative development and deployment, complexity, smaller budgets and "soft" or surrogate endpoints. On the latter, this has been a common missed opportunity for digital health companies: for a while many went after engagement outcomes (and that alone is very hard), but we have learned that they do not necessarily translate in behavior outcomes, let alone clinical ones. These "surrogate" outcomes are not always valid, not always durable. My colleague at Stanford University Dr. Mintu Turakhia, Executive Director of Stanford's new Center for Digital Health, has published on this topic and I recommend his articles to anyone interested in learning more.

About digital health studies, one practice that concerns me is the so called "data torturing." xkcd illustrates this concept with a compelling vignette, and describes it as a tendency to "pour data into this big pile of linear algebra, then collect the answers on the other side," stirring the pile "until they start looking right." No matter whether the technology is digital or not, we still live in a world where studies ought to be carried out with both well-reasoned hypothesis and strong scientific rigor.

From your experience, which pieces of advise could you share for startups looking for venture capital investment?

The working relationship between a startup and a Venture Capitalist can last from seven to ten years. Especially at the earliest stages of your company creation, my advice to you is to choose great investors who have depth of expertise in your domain, and the potential for a long-term relationship.

The best Venture Capitalists serve as venture *catalysts* whose close engagement with companies helps them grow. They assist entrepreneurs with their operational skills; with their strategic insight, and with their business contacts. This is not possible without profound domain expertise. Find it in your investors, and you will have a unique and valuable advantage.

Second, find investors that have the courage of their convictions and demonstrate a consistency between their ideas and their actions. Those who have confidence in their strengths and abilities, awareness of their limitations, and authentic, engaging outward behavior, often can offer the most rewarding and productive long-term engagement with entrepreneurs, as their mentors and company's best allies.

Stanford Byers Center for Biodesign is considered as one of the most successful partnerships between academia and the health technology industry. Is this kind of partnership a must for innovation?

I have been at Stanford University for a combined total of nearly eleven years, of which almost four as a doctoral student in electrical engineering and seven as a member of the faculty at Stanford Biodesign, working part time first as a lecturer and then as an adjunct professor. I am a fervent believer that collaboration is a strong advantage in any sector, a must-have in health technology, and is absolutely critical in health technology *innovation*. Stanford's porous walls are part of the DNA of the University, which was founded with a mission "to promote the public welfare by exercising an influence in behalf of humanity and civilization." Stanford Biodesign takes this approach and mission a step further, and is widely regarded as one of the most successful partnerships between academia and the health technology industry anywhere. Both benefit in the process: trainees receive education that is tactical, effective and efficient; industry gives knowing that the Center isn't just responding to an evolving industry, it is helping define it -- and its success in advancing health technology innovation benefits the whole ecosystem. Every one of our trainees receives education that is immersive, experiential and collaborative, through project-based activities that follow the three key phases on the biodesign innovation process: identify (unmet health needs); invent (potential solutions); and, implement (a plan for execution). Throughout, we bring in industry experts with deep experience. Many of our trainees' projects become successful businesses -- 22 (and counting) since I joined the Center, to be exact. But that's beside the point. What matter is, this is the kind of education that produces innovators with lifelong impact.

In 2016 the Silicon Valley Business Journal listed you among the 'Silicon Valley 40 Under 40' (2016) and acknowledged you with the Silicon Valley Women of Influence Award. How is it like to be a woman in a mostly male sector?

First, a preamble: teams with greater diversity have better business results, period. It's not just my conviction: there is ample research supporting these findings. And it's not just gender: teams with diversity on executive teams beyond gender (e.g., LGBTQ+, age/generation, international experience) also perform better. Overcoming both intentional and unintentional bias against diversity in the workplace has been challenging, at times. During my graduate studies and at the start of my career, I was incredibly intimidated at first. But for the most part, as a woman in a male-dominated sector, I find myself in a fortunate position: that to be able to affect positive change. I realized that all I had to do was to be confident in my informed opinion, unafraid to voice it, give my best effort in the present day and stay focused on the long term goals. I credit my mentors, both female and male, for helping advance my career. I encourage all women in a mostly male sector to actively find similar figures (ask me how), and to remain optimistic. Find role models, and then become one for others. The tide has started to turn, and every one of you can help accelerate change.